

Appendix 7.1: Ornithology



MacArthur
Green

Dunside Wind Farm Ornithology Appendix 7.1

Date: 10 May 2023

Tel: [REDACTED]

Web: www.macarthurgreen.com

Address: 93 South Woodside Road | Glasgow | G20 6NT

Document Quality Record

Version	Status	Person Responsible	Date
0.1	Draft	S. Sanders	20/04/2023
0.2	Reviewed	R. Dewar	10/05/2023
1	Internal Approval	S. Sanders	10/05/2023

MacArthur Green is helping to combat the climate crisis through working within a carbon negative business model. Read more at www.macarthurgreen.com.



CONTENTS

1	INTRODUCTION	1
2	LEGAL PROTECTION	1
3	FIELD SURVEY METHODS	1
4	FIELD SURVEY RESULTS	2
4.1	Flight Activity.....	2
4.1.1	Flightlines Used in Collision Risk Modelling.....	3
4.1.2	Collision Risk Model Outputs	4
4.2	Breeding Birds.....	5
4.3	Winter Walkover	5
4.4	Scarce Breeding Birds	6
4.5	Black Grouse.....	6
ANNEX A	Ornithological Legal Protection	
ANNEX B	Ornithological Survey Methods	
ANNEX C	Ornithological Survey Effort and General Information	
ANNEX D	Ornithological Survey Results	
ANNEX E	Collision Risk Assessments	
ANNEX F	Preliminary Report – Wood Group UK	
ANNEX G	Review of the Effects of Artificial Light on Birds in Relation to Deployment of Obstruction Lighting on Wind Turbines	
APPENDIX 7.2	Confidential Ornithology	

1 INTRODUCTION

MacArthur Green was commissioned by EDF Energy Renewables Ltd ('the Applicant') to complete ornithological surveys at the proposed Dunside Wind Farm, near Longformacus in Scottish Borders Council area (hereafter referred to as 'the Proposed Development'). The surveys were conducted between November 2021 to November 2022 to inform an assessment of the potential ornithological effects of the Proposed Development on the species assemblage present. This technical report summarises the methods employed and the results of the field surveys and is supported by the following Annexes.

Surveys by Wood Group UK Limited (hereafter referred to as 'Wood') were undertaken between September 2020 and August 2021. The data was provided to MacArthur Green in shapefile and excel format. A summary of the data gathered by Wood is provided in this technical appendix and **Annex F** provides the interim report provided to the Applicant by Wood.

Annex A	Ornithological Legal Protection
Annex B	Ornithological Survey Methodologies
Annex C	Ornithological Survey Effort & General Information
Annex D	Ornithological Survey Results
Annex E	Collision Risk Assessments
Annex F	Preliminary Report – Wood Group UK
Annex G	Review of the Effects of Artificial Light on Birds in Relation to Deployment of Obstruction Lighting on Wind Turbines

Confidential information relating to species listed on Annex 1 of the EU Birds Directive or Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) is detailed in **Confidential Appendix 7.2** (this includes confidential information provided by Wood).

A range of surveys were employed to accurately record baseline conditions within the Proposed Development and appropriate survey areas (detailed in **Annex B**). In this technical appendix, associated **Annexes A – E**, **Confidential Technical Appendix 7.2** and **Chapter 7 (Ornithology)** of the Environmental Impact Assessment Report, terms referred to are as follows:

- 'the Site' refers to the area within the red line boundary;
- 'survey area' is defined as the area covered by each survey type for the Proposed Development; and
- 'study area' is defined as the area of consideration of effects on each species at the time of assessment.

2 LEGAL PROTECTION

With limited exceptions, all wild birds and their eggs are protected by law. Specific levels of protection are determined by a species' inclusion on certain lists. **Annex A** to this report details the various levels of legal protection afforded to UK bird species.

3 FIELD SURVEY METHODS

The following surveys were undertaken at the Site between September 2020 and August 2021, and November 2021 to November 2022:

- Flight activity surveys (two breeding seasons and two non-breeding seasons, **Figure 7.2** and **Figure 7.3**);
- Breeding bird surveys (two breeding seasons), 500 m survey buffer;
- Winter walkover surveys (one non-breeding season), 500 m survey buffer;
- Scarce breeding bird surveys (two breeding seasons), 2 km survey buffer; and
- Black grouse surveys (one breeding seasons), 1.5 km survey buffer.

Survey methods followed the recommended NatureScot (SNH 2017ⁱ) guidance available at the time and methods are described in detail within **Annex B**. Where possible, each survey was carried out beyond the Site within a buffer distance specific to that method (e.g., 2 km buffer for the scarce breeding bird surveys) and these are detailed within **Annex B**.

The relative importance of the data collected was determined by the specific level of protection assigned to those species recorded, coupled with their perceived susceptibility to potential effects resulting from the Proposed Development. The resulting ‘target species’ and ‘secondary species’ lists are a standard assessment tool for wind farm ornithological studies (see **Annex B**).

4 FIELD SURVEY RESULTS

All valid surveys were undertaken during suitable weather conditions (as described within **Annex B**). Where weather conditions deteriorated below acceptable conditions (see definitions in **Annex B**), surveys were either suspended or additional surveys were undertaken. In the case of flight activity surveys, any time where the visibility was <1 km was excluded from total survey effort and subsequent analysis (further detail in **section 4.1**). Schedule 1/Annex 1 surveys were carried out by appropriately licensed surveyors. All survey data were reviewed, inputted, and analysed by MacArthur Green.

A total 96 bird species were recorded within, or adjacent to, the Site during the various ornithological surveys conducted. Survey effort and results of the field surveys are detailed within **Annex C** and **Annex D**. The following sections summarise the results from each survey undertaken.

4.1 Flight Activity

The flight activity surveys recorded all target species’ flight activity within the Site and beyond. These data have been used in the collision risk modelling. The flights used included those within the ‘Collision Risk Analysis Area’ (CRAA) (i.e. the area to be occupied by operational turbines, together with a 500 m buffer).

Flight activity surveys across the 2021 and 2022 breeding seasons and 2020/2021, 2021/2022 and 2022/2023 non-breeding seasons were undertaken across six VPs (up to the end of the 2021/2022 non-breeding season) and then four VPs (2022 breeding season onwards). Valid survey effort¹ is detailed in **Table 7-1-1** and full details of flight activity surveys are contained in **Annex C** with methodology in **Annex B**.

¹ Hours where visibility was >1 km are not considered valid for use in collision risk modelling as less than half the 2 km viewshed can be seen.

Table 7-1-1 Summary of total hours of valid survey per VP in each season

Period	VP1	VP2	VP3	VP4	VP5	VP6	VP7	VP8	VP9	VP11
2020/2021 non-breeding season	41.5	43	43.02	42	42	41.5	-	-	-	-
2021 breeding season	42	42	43.25	42	42	42	-	-	-	-
2021/2022 non-breeding season	34	30.5	30	33	34	34	-	-	-	-
2022 breeding season	-	-	-	-	-	-	36	36	36	36
2022/2023 non-breeding season	-	-	-	-	-	-	11	16	16	16

A total of 15 target species were recorded during the flight activity surveys (further details are provided in **Annex D**). For each species across the whole flight activity survey period, **Table 7-1-2** shows the total number of flights recorded and the total number of birds recorded². The bird seconds are calculated for each observation as the product of flight duration and number of individuals. This is then summed per species to give the total bird seconds recorded across the entire surveyed period.

Table 7-1-2 Target species recorded and total number of flights recorded during flight activity surveys, 2020-2022

Species	Total number of flightlines recorded	Total number of birds recorded	Total bird seconds recorded
Curlew	77	127	7816
Golden eagle	2	2	913
Golden plover	247	4389	1341207
Goshawk	17	18	2220
Greylag goose	173	915	57703
Hen harrier	27	27	2185
Herring gull	18	78	4439
Lapwing	31	254	11442
Marsh harrier	6	6	925
Merlin	8	8	157
Peregrine falcon	75	77	6199
Pink-footed goose	35	2388	228381
Red kite	22	23	3675
Short-eared owl	49	52	5752
White-tailed eagle	2	2	70

4.1.1 Flightlines Used in Collision Risk Modelling

Only flightlines identified to be within the CRAA and recorded within the 2 km viewshed of the associated VP were considered in the collision risk modelling and **Annex E** provides details of the bird seconds from flights identified to be ‘at-risk’.

- ‘At-risk’ is defined as – a flight having at least part of its duration (i) at Potential Collision Height (PCH)³; (ii) within the CRAA; and (iii) recorded within the 2 km viewshed of the associated VP.

² This includes flights that would not technically be ‘at-risk’ of collision (e.g. recorded outwith the CRAA and/or not at rotor height).

³ In some cases, only part of a total flight duration was recorded at PCH, and it is assumed that this proportion is applicable for that part of the flight within the CRAA and 2 km viewshed area.

- PCH is defined as – the altitude between the minimum and maximum blade height⁴ (taken to be 48-220 m for the Proposed Development).

Merlin and short-eared owl were recorded during flight activity surveys but no flights were considered to be ‘at-risk’⁵. Full survey results detailing the findings from each survey visit (including target species’ flightlines considered not ‘at-risk’ and secondary species information) can be found within **Annex D**. Only bird seconds for observations identified as within the CRAA and associated viewshed are considered in the following discussions. Full target species results are detailed within **Annex D** and the collision risk calculations are detailed in **Annex E**.

4.1.2 Collision Risk Model Outputs

The bird seconds for target species flights within the CRAA at PCH were then input into a Collision Risk Model (CRM) to calculate the predicted collision rates per season. The CRM calculations for each species can be found in **Annex E. Table 7-1-3** and **Table 7-1-4** provide the estimated collision rates and number of seasons per collision for each species.

Table 7-1-3 Estimated collision rates

Species	2020/2021 non-breeding season	2021 breeding season	2021/2022 non-breeding season	2022 breeding season	Mean breeding	Mean non-breeding	Mean annual
Curlew	n/a	n/a	0.0059	0.1208	0.1208	0.0059	0.1267
Golden eagle	-	-	-	0.0164	0.0082	-	0.0082
Golden plover	8.5250	0.1076	53.9901	0.0392	0.0734	31.2575	31.3310
Goshawk	0.0018	-	-	-	-	0.0009	0.0009
Greylag goose	0.1283	0.0147	0.0047	-	0.0073	0.0665	0.0738
Hen harrier	0.0070	-	-	-	-	0.0035	0.0035
Herring gull	-	-	0.0004	0.0095	0.0048	0.0002	0.0050
Lapwing	n/a	n/a	0.0032	-	-	0.0032	0.0032
Marsh harrier	-	0.0010	-	-	0.0005	-	0.0005
Peregrine falcon	0.0421	0.0271	0.0180	0.0208	0.0240	0.0301	0.0540
Pink-footed goose	0.1063	-	0.1557	-	-	0.1310	0.1310
Red kite	-	0.0754	-	0.020138846	0.0478	-	0.0478
White-tailed eagle	-	0.0080	-	-	0.0040	-	0.0040

Table 7-1-4 Estimated number of seasons per collision

Species	2020/2021 non-breeding season	2021 breeding season	2021/2022 non-breeding season	2022 breeding season	Mean breeding	Mean non-breeding	Mean annual
Curlew	n/a	n/a	169	8.28	8.28	169	7.89
Golden eagle	-	-	-	61	122	-	122
Golden plover	0.12	9.29	0.02	25.52	13.62	0.03	0.03

⁴ Where the actual rotor blade altitude differs from the pre-defined survey height bands, the collision risk model accounts for this difference on the assumption of an even flight distribution within each particular survey height band, and an adjustment can be made to estimate total flight duration at actual rotor blade altitude.

⁵ i.e. the flights were either not within the CRAA and associated viewshed or were only recorded flying above 150m.

Species	2020/2021 non-breeding season	2021 breeding season	2021/2022 non-breeding season	2022 breeding season	Mean breeding	Mean non-breeding	Mean annual
Goshawk	541	-	-	-	-	1082	1082
Greylag goose	7.80	68	212	-	136	15.04	13.54
Hen harrier	144	-	-	-	-	287	287
Herring gull	-	-	2423	105	210	4846	201
Lapwing	n/a	n/a	314	-	-	314	314
Marsh harrier	-	1034	-	-	2068	-	2068
Peregrine falcon	23.74	37	55	48	42	33.25	18.51
Pink-footed goose	9.40	-	6.42	-	-	7.63	7.63
Red kite	-	13.26	-	50	20.93	-	20.93
White-tailed eagle	-	124	-	-	249	-	249

4.2 Breeding Birds

Two complete breeding bird seasons (comprising of four visits each) were surveyed in 2021 and 2022 (April to July). Surveys recorded nine wader species, of which seven were considered to be breeding (**Table 7-1-5**). Ringed plover and wood sandpiper were also recorded in 2022 but were not considered to be breeding. Full details of the breeding bird surveys are provided within **Annex C** and **Annex D** and survey methodology is provided within **Annex B**.

Table 7-1-5 Breeding wader territories, 2021 and 2022 – (number of territories within 500 m study area)

Species	Number of territories 2021	Number of territories 2022
Common sandpiper	2-4	6-10
Curlew	11-12	31-43
Golden plover	9-12	13-25
Lapwing	6-15	32-36
Oystercatcher	5-10	11-22
Redshank	No evidence of breeding	2-3
Snipe	18-21	21-35

4.3 Winter Walkover

Winter walkover surveys were conducted during the 2021/2022 non-breeding season. Surveys recorded 28 species of which eight are considered to be target species (**Table 7-1-6**). Full details of the winter walkover surveys are provided within **Annex C** and **Annex D** and survey methodology is provided within **Annex B**.

Table 7-1-6 Winter walkover: target species records, 2021/2022

Species	2021/2022 non-breeding season	
	Number of records	Total number of birds
Golden plover	14	88
Goshawk	1	1
Greylag goose	2	6
Hen harrier	1	1
Herring gull	1	2
Lapwing	1	3
Merlin	1	1
Peregrine falcon	4	4

4.4 Scarce Breeding Birds

Scarce breeding bird surveys were conducted during the 2021 (April to July) and 2022 (March to August) and breeding seasons.

Merlin and short-eared owl were confirmed to be breeding and barn owl roosting within the survey area and activity is summarised in **Table 7-1-7. Confidential Technical Appendix 7.2** contains the full details of all breeding activity.

Table 7-1-7 Scarce breeding bird summary

Species	2021	2022
Barn owl	Birds present at one roost location but no evidence of breeding	Birds present at two roost locations but no evidence of breeding
Merlin	One territory, failed early in the season	No evidence of breeding
Short-eared owl	Two territories, minimum two chicks fledged	Four probable territories, breeding success unknown

Golden eagle, goshawk, hen harrier, marsh harrier, osprey, peregrine falcon and red kite (target raptor species) were also recorded during surveys but were not considered to be breeding/no breeding attempts were located.

Buzzard, kestrel and sparrowhawk (secondary raptor species) were also recorded across the survey area and are likely to have bred within the wider area.

Full details of the scarce breeding bird surveys are provided within **Annex C** and **Annex D** and **Confidential Technical Appendix 7.2** and survey methodology is provided within **Annex B**.

4.5 Black Grouse

Surveys to identify areas of black grouse activity, locate lek locations and establish lek size were conducted in the 2022 breeding season during April and May. Surveys identified no lek locations and no black grouse or signs of black grouse were recorded during any baseline surveys. Full details of the black grouse surveys are provided within **Annex C** and **Annex D** and survey methodology is provided within **Annex B**.

ⁱ Scottish Natural Heritage (2017) Recommended Bird Survey Methods to inform impact assessment of Onshore Windfarms.

ANNEX A. ORNITHOLOGICAL LEGAL PROTECTION

In Scotland, all wild birds are protected under the Wildlife and Countryside Act 1981 (the 'Act'), as amended by the Nature Conservation (Scotland) Act 2004. This protection also extends to their eggs and nests, with it being an offence to intentionally or recklessly¹:

- Kill, injure or take any wild bird²;
- Take, damage, destroy or otherwise interfere with the nest of any wild bird while it is being built or is in use³;
- At any other time take, damage, destroy or otherwise interfere with any nest habitually used by any wild bird included in Schedule A1 (Protected Nests and Nest Sites for Birds: white-tailed eagle and golden eagle)⁴;
- Obstruct or prevent any wild bird from using its nest⁵; or
- Take or destroy an egg of any wild bird⁶.

It is also an offence to have in possession or control any live or dead wild bird or any part thereof; or any egg or part of an egg of any wild bird⁷.

Further special protection under this legislation is afforded to those species listed on Schedule 1 of the Act. For these species, it is an offence to:

- Intentionally or recklessly disturb any wild bird listed on Schedule 1 while it is nest building, or is in, on or near a nest containing eggs or young, or disturb the dependent young of such a bird⁸;
- Intentionally or recklessly disturb any wild birds included on Schedule 1 which leks, while it is doing so⁹ (capercaillie is the only bird this offence applies to in Scotland);
- Intentionally or recklessly harass any wild bird included in Schedule 1A¹⁰. Section 1, subsection 5B states, '*Subject to the provisions of this Part, any person who intentionally or recklessly harasses any wild bird included in Schedule 1A shall be guilty of an offence*'. At this time, Schedule 1A includes golden eagle, hen harrier, red kite and white-tailed eagle. This updated legislation was introduced on 16 March 2013; or

¹ Exceptions to these offences exist under various circumstances (e.g. controlling pest species; taking birds during specific season; and killing sick or injured birds etc.).

² Wildlife and Countryside Act 1981, Section 1(1)(a)

³ Wildlife and Countryside Act 1981, Section 1(1)(b)

⁴ Wildlife and Countryside Act 1981, Section 1(1)(ba)

⁵ Wildlife and Countryside Act 1981, Section 1(1)(bb)

⁶ Wildlife and Countryside Act 1981, Section 1(1)(c)

⁷ Wildlife and Countryside Act 1981, Section 1(2)

⁸ Wildlife and Countryside Act 1981, Section 1(5)

⁹ Wildlife and Countryside Act 1981, Section 1(5A)

¹⁰ Wildlife and Countryside Act 1981, Section 1(5B)

- Intentionally or recklessly take, damage, destroy or otherwise interfere with any nest and/or nest site habitually used by any bird on Schedule A1 at any time. At this time, Schedule 1A includes golden eagle and white-tailed eagle¹¹.

It is also an offence to knowingly cause or permit to be done an act which is made unlawful by any of the above provisions.

Further protection is described under the EU Birds Directive which requires member states to maintain wild bird species in favourable conservation status¹² and promote the conservation of bird species listed within Annex 1 of the Birds Directive through the protection of their habitat. This is achieved via the designation of Special Protection Areas (SPAs).

Red List bird species are those deemed to be globally threatened and to be suffering population declines within the UK. Although not legally enforceable, the conservation of Red List bird species represents a material consideration, in planning terms.

¹¹ This reflects the changes introduced by the Wildlife and Countryside Act 1981 (as amended by: Variation of Schedules A1 and 1A (Scotland) Order 2013).

¹² While the term 'favourable conservation status' is not used in the Birds Directive, EU court cases over recent years have progressively interpreted the concept as meaningful in a Birds Directive context (SNH, 2006).

ANNEX B. ORNITHOLOGICAL SURVEY METHODOLOGY

A range of ornithological surveys have been conducted at the proposed Dunside Wind Farm (the Proposed Development). The methodologies used in these surveys are summarised in the sections below; more detailed descriptions are provided in the NatureScot guidance (SNH 2017ⁱ) on which these surveys are based.

Survey Areas

Surveys by Wood were undertaken during the 2020/2021 non-breeding and 2021 breeding seasons. **Annex F** provides the interim report provided to the Applicant by Wood and the survey methodology followed is detailed in Section 2 of this report.

Surveys by MacArthur Green were undertaken during the 2021/2022 non-breeding, 2022 breeding and 2022/2023 non-breeding¹ seasons. All surveys were buffered from the potential developable area provided by the Applicant at the time of the surveys.

B.1 Flight Activity Surveys

The aims of the flight activity (vantage point) surveys are: (1) to record flight activity within the vicinity of the Site in order to identify areas of importance to birds; and (2) to quantify flight activity within 500 m of proposed turbine locations in order to estimate the likelihood of collision (SNH 2017ⁱ P.14-19).

Timing

- A survey period of 36 hours is recommended as the minimum level of sampling intensity at each VP for each season (breeding, non-breeding, migratory) (SNH 2017ⁱ P.17);
- Watches were spread as evenly throughout the year as possible to ensure that temporally representative data are collected (see **Annex C**). Specific consideration was given to the period around dawn and twilight for breeding waders and to changing raptor behaviour across seasons (SNH 2017ⁱ P.17);
- Watches were suspended and resumed to take account of changes in visibility (e.g. fluctuations in cloud base). Watches were undertaken in conditions of good ground visibility when the cloud base was higher than the most elevated ground being observed; and
- Watches were conducted in a range of weather conditions and were spread throughout the day (see **Annex C** and **Annex D**).

Field Methods

- Viewshed analysis was conducted using Arc GIS to confirm suitable Vantage Point (VP) locations and their associated visible areas at 20m above ground level²;
- Reconnaissance surveys were undertaken to refine VP locations;

¹ Surveys during the 2022/2023 non-breeding season only consisted of flight activity surveys between September and November 2022.

² The viewsheds are based on a 5m DTM to provide a representation of visibility from the observer locations; this is confirmed and refined through field site visits.

- The VP locations and associated viewsheds are shown in **Figure 7.2** and **Figure 7.3**;
- Care was taken to maximize the area visible whilst minimising disturbance to birds;
- The aim of viewshed selection is to achieve coverage of all the proposed turbine locations such that no turbine was more than 2 km from a VP. Wood selected six viewsheds to cover the proposed turbine area, which achieved coverage of the majority of the turbines, although one turbine (T14) was not covered by any of the viewsheds. Following changes to the turbine layout, the viewsheds were revised to four new locations for the 2022 breeding season, which achieved coverage for the majority of the turbines, although one turbine (T9) was not covered by any of the viewsheds. **Annex E** details how turbines outwith the viewsheds is taken into account in the collision modelling;
- A maximum 180° view arc was scanned by surveyors. This rule did not however apply when tracking migratory waterfowl, raptors or divers across the Site;
- Each watch lasted a maximum of three hours but was suspended and then resumed to take account of changes in visibility (e.g. fluctuations in the cloud base).

For each target and secondary species the following data were recorded (SNH 2017ⁱ P.17-18):

- The flightlines by individuals or flocks of birds;
- The time the target bird was detected and the duration (seconds) spent flying over a defined survey area (the viewshed);
- The birds' flight heights, defined into four prescribed height bands by Wood (0-10 m, 11-150 m, 151-200 m and >201 m) and into five height bands by MacArthur Green (0-20 m, 21-40 m, 41-100 m, 101-150 m and >151 m⁴) were recorded at the point of detection and at 15 second intervals thereafter. From this the proportion of time spent flying below, within (referred to as Potential Collision Height (PCH)) and above approximate rotor height could be estimated. The actual planned rotor height is 48-220 m above ground level. This difference is accounted for within the collision risk models on the assumption of even flight distribution within each height band;
- The route followed was plotted in the field onto 1:25,000 scale maps;
- Observations of target species took priority over recording secondary species if both species were present simultaneously;
- The number of birds recorded were the minimum number of individuals that could account for the activity observed; and
- Observers only recorded perched birds and birds on waterbodies once only on arrival at the VP. Thereafter only flying birds and newly noticed perched/swimming birds were included in the activity summaries.

B.2 Moorland Breeding Bird Survey

Upland breeding bird survey methodology was employed as detailed within NatureScot (SNH 2017ⁱ P.11). In summary, surveys involved the following:

- Open upland (including hedgerows, scrub, isolated trees and copses) was surveyed using an intensive version of the Brown and Shepherd (1993ⁱⁱ) method for upland bird survey;

- The objectives were to map the distribution of breeding bird territories within 500 m of the Site and estimate the approximate size of breeding bird populations;
- After each survey visit one overview map was then produced showing all target species. The maps from all four survey visits from that year were then compared, enabling the estimation of numbers of breeding territories. This was done by grouping the observations into territories using the methodology described by Bibby *et al.* (2000ⁱⁱⁱ). Due to the cryptic nature of many breeding birds and the necessary assumptions made when plotting territories, a minimum and maximum number of territories was identified for each target species;
- The survey covered all areas within 500 m of the Site; and
- All upland wader species were recorded during the breeding bird survey.

Timing

- As recommended in Calladine *et al.* (2009^{iv}), four survey visits were undertaken between April and July;
- Fieldwork was undertaken between sunrise and 1800hrs; and
- Fieldwork was not undertaken in conditions considered likely to affect bird detection rates, for example in winds greater than Beaufort Scale Force 4, persistent precipitation, poor visibility (less than 300 m), or in unusually hot weather.

Field Methods

- Walk-routes which optimised ground visibility were used;
- Surveyors paused at appropriate vantage and listening points;
- Isolated trees, copses and patches of scrub were approached and examined;
- Streams, ditches and hedgerows were walked;
- All other areas were approached to within 100 m; and
- Registrations were mapped at the first location that behaviour indicative of breeding was observed; and
- Standard British Trust for Ornithology (BTO) activity codes were used.

B.3 Winter Walkover

Winter walkovers were performed in the non-breeding seasons to map wintering populations of birds within 500 m of the Site.

- The area was surveyed three times during each non-breeding season;
- These surveys involved following a route that optimised ground coverage, such that observers walked within 250 m of every point; and
- Observers periodically stopped at appropriate viewing and listening points along the route and longer vantage point watches were included within the walkover to allow potentially important areas to be monitored in greater detail.

B.4 Scarce Breeding Bird Survey

The aim of the scarce breeding bird surveys was to determine the distribution of occupied nests/territories for target raptor and owl species within 2 km of the Site and record breeding success. Secondary species such as buzzard, sparrowhawk and kestrel were also noted but location of their nests was not the key focus of the surveys. Surveys were undertaken by experienced and licensed³ field ornithologists. Extreme care was taken to avoid unnecessary disturbance to breeding birds.

Guidance from NatureScot (SNH, 2017ⁱ P.11-14), 'Bird Monitoring Methods' (Gilbert *et al.* 1998^v) and 'Raptors: a field guide to survey and monitoring' (Hardey *et al.* 2013^{vi}) were all consulted to inform survey methodology and are referenced where appropriate in the species methodologies below.

Barn Owl

- The surveys followed methodology outlined in Gilbert *et al.* (1998), as mentioned in NatureScot guidance (SNH, 2017ⁱ P12-13);
- Surveys were undertaken within 1 km of the Site; and
- Surveyors checked for signs of occupation (moulted feathers, pellets) in all suitable buildings within this 1 km buffer.

Golden Eagle

Methodology outlined in Hardey *et al.* (2013^{vi}) was used as guidance. Extreme care was taken not to disturb potential nests, especially where nesting was confirmed or during periods of extremely wet, hot or cold conditions (Hardey *et al.* 2013^{vi}).

- All habitats within 2 km of the Site with the potential to accommodate golden eagle were searched including; Caledonian pine woodland, montane areas, heather moorland, open and unimproved habitat;
- Searches carried out between January and March focussed on watching for territorial displays and nest building activities. Occupancy of the home range was confirmed by seeing two adult birds together, or by seeing one bird incubating in the later months (Hardey *et al.* 2013^{vi});
- When searches of a nesting site were carried out, they were done so from a distance, so as to not cause disturbance to any displaying, nesting or incubating birds; and
- Where breeding was confirmed, scans of the nests were carried out in June, to check for the presence of young. Further scans were carried out in late July to search for fledged young.

Goshawk

Methodology outlined in Hardey *et al.* (2013^{vi}) was used as guidance for the surveying of areas for potential goshawk breeding. Extreme care was taken not to disturb potential nests especially around the time of year when females were likely to be laying or incubating.

³ All surveyors hold SNH Schedule 1 Licences.

- Areas of suitable woodland were observed for the presence of nests. Searches for goshawk nests were focused on mature forestry blocks, although their presence was not ruled out of other wooded areas;
- Searches carried out between March and April focussed on observing territorial and nest building behaviours;
- Where nests were known to be present, scans were carried out between mid-March and May to confirm breeding. Scans were kept brief – carried out for between 5-10 minutes and from a distance; and
- When breeding was confirmed, searches for further nests were deferred until such a time as the young had hatched. Searches were then undertaken between late May and late June for evidence of provisioning young and then between late July and early August to watch for fledgling activity, this included listening for the begging calls of newly fledged young.

Hen Harrier

Methodology outlined in Hardey *et al.* (2013^{vi}) was used as guidance for the surveying of areas for potential hen harrier breeding. Extreme care was taken not to disturb potential nests especially around the time of year when females were likely to be laying or in cold/wet weather when females were likely to be incubating or brooding. Areas of suitable habitat⁴ were visited during four time periods across the breeding season to:

- Check for territory occupancy (between March and mid-April) – this consisted of watching over suitable habitat from a good vantage point for displaying males (and females) and checking all areas of suitable habitat to within 250 m (watching out for signs of kills);
- Locate incubating females (between mid-April and late May) by listening for female begging calls and watching for food passes between the male and female – surveyors watched for at least four hours as Hardey *et al.* (2013^{vi}) notes that when the female is incubating it can be up to six hours between feeding visits from the male, but on average it is less than every four hours. Surveys were undertaken between 06:00 to 12:00 or 16:00 to 20:00;
- Check for young or breeding evidence (between late May and late June) again by listening for female begging calls and watching for food passes between male and female when the female is brooding and watching for the male and female provisioning the nest with food once brooding has ended– surveyors should watch for at least two hours as Hardey *et al.* (2013) notes that an adult bird will visit the nest every 1-2 hours. Surveyors should also watch for display behaviour which could indicate a failed breeding attempt; and
- Check for fledged young (between late June and late August).

Merlin

Methodology outlined in Hardey *et al.* (2013) was used as guidance for the surveying of areas for potential merlin breeding.

⁴ Unsuitable habitat areas include: land above 600 m; improved pasture and arable land; extensive areas of degraded land with no heather cover and low vegetation; the vicinity of cliffs, rocky outcrops, boulder fields and scree; areas within 100 m of hill farms and occupied dwellings.

- Areas of suitable nesting habitat (including forest edge where trees are >5 m high) were closely observed between 20th March and 30th April;
- Boulders, fence lines, isolated posts, stone dykes, grouse butts, hummocks, stream banks, crags, trees and recently burnt areas of heather were checked for signs of occupation (e.g. plucked prey, moulted feathers, pellets and faeces);
- If merlin were observed, or signs found, areas were visited at least twice to verify occupation of the territory; and
- Potential nest areas were watched for 4-6 hours if necessary.

Osprey

Methodology outlined in Hardey *et al.* (2013^{vi}) and Gilbert *et al.* (1998^v) was used as guidance for the surveying of areas for potential osprey breeding. Care was taken when carrying out the searches so as not to disturb any displaying or nesting birds, with nests checked from a distance.

- All wooded areas within the study area were searched for the possible presence of nests, especially those located close to freshwater lochs and rivers that could provide feeding sites. Artificial platforms were also checked;
- If breeding was suspected within the study area, the location was visited between April and May until nesting was confirmed;
- In line with the methods suggested by Gilbert *et al.* (1998^v) and Hardey *et al.* (2013^{vi}), proof of occupancy was determined by:
 - Two ospreys seen on the same eyrie on more than one occasion (with a week separating observations), incubation, or feeding of chicks;
- Further scans were undertaken between late May and early July to try and observe any young in the nests.

Peregrine Falcon

- Potential nest sites were visited and checked for evidence of occupation between March and April;
- Sites checked included crags and steep banks identified from OS maps and searches of the survey area;
- Surveyors checked for signs of occupation (e.g. faecal splash, fresh plucked prey);
- If occupied sites were found they were re-visited to verify incubation; and
- Searches were made for eyries. Where this was not possible sites were watched from a suitable vantage point for 3-4 hours or until a nest was located.

Red Kite

Care was taken not to disturb any birds, especially between mid-March and mid-April when disturbance to displaying red kites can cause them to move to another area (Hardey *et al.* 2013^{vi}).

- Wooded areas were scanned from outside for the presence of nests, with signs occupation searched for between February and March;

- Potential territories were watched for 1-2 hours between March and April to observe any breeding or nest-building behaviour; and
- Where breeding was confirmed, nests were scanned to determine the breeding success between late April and late June/early July.

Short-Eared Owl

- At least two visits between early April and the end of May were carried out;
- Suitable habitat was visited and checked for evidence of hunting males, territorial activity and other signs of presence; and
- If breeding was confirmed, a further visit was to be made in June to watch birds, locate nest-sites and confirm breeding behaviour wherever possible.

White-Tailed Eagle

Methodology outlined in Hardey *et al.* (2013^{vi}), as mentioned in NatureScot (SNH, 2017ⁱ P.12) was used as guidance for the surveying of areas for potential white-tailed eagle breeding. Active nests were observed from a distance so as to minimise disturbance.

- All suitable habitats (including open coastal or fresh water, large and small crags and suitable trees) within a 2 km radius were checked for signs of nest sites, breeding territories or communal roosts;
- Surveys within nesting ranges were carried out between November and mid-February, focussing on locating refurbished nest sites;
- Surveys between mid-March and August focussed on locating active nests and young; and
- All suitable crags and trees within nesting ranges were checked for signs of roosts. These include droppings, down, feathers and pellets.

B.5 Black Grouse Survey

The survey methodology used is detailed in NatureScot (SNH 2017ⁱ P.12). A summary is provided below.

- Breeding black grouse were surveyed within 1.5 km of the Site by counting total numbers of males and females at leks, most lekking activity taking place at or soon after dawn in spring.
- Known lek sites and other areas of suitable habitat which can host leks were identified and visited during April and May within 2 hours of dawn on calm dry days with good visibility;
- Visits involved listening and scanning for lekking black grouse from strategic locations (avoiding disturbance of leks) and during walks between these locations ensuring that all potential habitat was covered;
- The maximum count of males in the 2 hours around dawn gives the standard count estimate but the maximum number of females seen was also presented; and
- Leks that were at least 200 m apart within the same year were treated as separate leks.

ⁱ Scottish Natural Heritage (2017) Recommended bird survey methods to inform impact assessment of onshore windfarms.

ⁱⁱ Brown, A. F. and Shepherd, K. B. (1993) A method for censusing upland breeding waders. *Bird Study*, 40: 189-195.

ⁱⁱⁱ Bibby, C. J., Neil D. Burgess, David A. Hill and Simon H. Mustoe (2000) *Bird Census Techniques*, 2nd Edition, London, Academic Press.

^{iv} Calladine, J., Garner, G., Wernham, C., & Thiel, A. (2009) The influence of survey frequency on population estimates of moorland breeding birds. *Bird Study*, 56: 3, 381-388.

^v Gilbert, G., Gibbons, D. W. and Evans, J. (1998) *Bird Monitoring Methods*. RSPB, Sandy.

^{vi} Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. and Thompson, D. (2013) *Raptors: a field guide for surveys and monitoring* (3rd edition). The Stationery Office, Edinburgh.

ANNEX C. ORNITHOLOGICAL SURVEY EFFORT & GENERAL INFORMATION

Table C-1 shows the system used for recording weather conditions on all the surveys (sections C.1 to C.5 below).

Table C-1 Key to meteorological conditions recorded during all surveys

Wind speed				Rain	
Calm	0	Moderate gale	7	None	0
Light air	1	Fresh gale	8	Drizzle/Mist	1
Light breeze	2	Strong gale	9	Light showers	2
Gentle breeze	3	Whole gale	10	Heavy showers	3
Moderate breeze	4	Storm	11	Heavy rain	4
Fresh breeze	5	Hurricane	12		
Strong breeze	6				
Cloud height		Cloud cover		Visibility	
<150m	0	In eighths		Poor (<1km)	0
150-500m	1	e.g.	3/8	Moderate (1-2km)	1
>500m	2			Good (>2km)	2
Frost		Snow			
None	0	None	0		
Ground	1	On site	1		
All day	2	High ground	2		

C.1 Flight Activity Surveys

Flight activity surveys were undertaken during the 2022 breeding season and 2021/2022 and 2022/2023¹ non-breeding seasons. Details of the flight activity surveys undertaken across each Vantage Point (VP) location are supplied in **Table C-2** (survey hours per VP per season are summarised in **Technical Appendix 7.1**) and the associated weather data recorded is detailed in **Table C-3**. Refer to **Annex B** for survey methodology and **Annex D** for survey results.

Table C-2 Summary of flight activity surveys undertaken at Dunside (sorted chronologically)

Date	Season	Observer	VP	Survey start time	Survey finish time	No. hours ² surveyed
03/11/2021	2021/2022 NBR	JR	5	1045	1345	3
03/11/2021	2021/2022 NBR	JR	5	1415	1615	2
03/11/2021	2021/2022 NBR	MW	6	1030	1330	3
03/11/2021	2021/2022 NBR	MW	6	1400	1600	2
04/11/2021	2021/2022 NBR	MW	2	0730	1030	3
04/11/2021	2021/2022 NBR	MW	2	1100	1300	2
04/11/2021	2021/2022 NBR	JR	3	1000	1300	3
04/11/2021	2021/2022 NBR	JR	3	1330	1530	2
05/11/2021	2021/2022 NBR	JR	1	0830	1130	3
05/11/2021	2021/2022 NBR	JR	1	1200	1400	2
05/11/2021	2021/2022 NBR	MW	4	0700	1000	3
05/11/2021	2021/2022 NBR	MW	4	1030	1330	3
13/12/2021	2021/2022 NBR	JM	4	1110	1410	3
14/12/2021	2021/2022 NBR	JM	5	1230	1430	2

¹ Surveys during the 2022/2023 non-breeding season only consisted of flight activity surveys between September and November 2022.

² Note: only valid hours (i.e. where visibility was at least 1 km) are presented in this column.

Date	Season	Observer	VP	Survey start time	Survey finish time	No. hours ² surveyed
14/12/2021	2021/2022 NBR	JM	6	0900	1200	3
16/12/2021	2021/2022 NBR	JM	2	0840	1140	3
10/01/2022	2021/2022 NBR	JM	1	1035	1335	3
11/01/2022	2021/2022 NBR	JP/JM	3	0935	1235	3
12/01/2022	2021/2022 NBR	JM	5	0910	1210	3
12/01/2022	2021/2022 NBR	JM	5	1240	1440	2
12/01/2022	2021/2022 NBR	JP	6	0915	1215	3
12/01/2022	2021/2022 NBR	JP	6	1245	1445	2
13/01/2022	2021/2022 NBR	JM	3	0855	1155	3
13/01/2022	2021/2022 NBR	JM	3	1225	1425	2
13/01/2022	2021/2022 NBR	JP	4	0845	1145	3
13/01/2022	2021/2022 NBR	JP	4	1215	1415	2
24/01/2022	2021/2022 NBR	JP	2	1020	1320	3
24/01/2022	2021/2022 NBR	JP	2	1400	1600	2
24/01/2022	2021/2022 NBR	MW	3	0815	1115	3
24/01/2022	2021/2022 NBR	MW	3	1145	1345	2
25/01/2022	2021/2022 NBR	MW	1	0800	1100	3
25/01/2022	2021/2022 NBR	MW	1	1130	1330	2
25/01/2022	2021/2022 NBR	JP	4	0910	1210	3
26/01/2022	2021/2022 NBR	JP	5	0920	1220	3
26/01/2022	2021/2022 NBR	JP	5	1250	1450	2
26/01/2022	2021/2022 NBR	MW	6	0800	1100	3
26/01/2022	2021/2022 NBR	MW	6	1130	1330	2
27/01/2022	2021/2022 NBR	JP	4	0925	1125	2
28/01/2022	2021/2022 NBR	JP	2	0820	1120	3
28/01/2022	2021/2022 NBR	JP	2	1150	1350	2
14/02/2022	2021/2022 NBR	SP	1	0930	1230	3
14/02/2022	2021/2022 NBR	SP	1	1300	1500	2
21/02/2022	2021/2022 NBR	JRM	1	0915	1215	3
21/02/2022	2021/2022 NBR	JRM	1	1245	1545	3
21/02/2022	2021/2022 NBR	SP	4	0935	1235	3
21/02/2022	2021/2022 NBR	SP	4	1305	1505	2
21/02/2022	2021/2022 NBR	EB	5	1030	1330	3
21/02/2022	2021/2022 NBR	EB	5	1400	1600	2
21/02/2022	2021/2022 NBR	SK	6	1015	1315	3
21/02/2022	2021/2022 NBR	SK	6	1345	1545	2
22/02/2022	2021/2022 NBR	JRM	1	1050	1350	3
22/02/2022	2021/2022 NBR	JRM	1	1420	1620	2
22/02/2022	2021/2022 NBR	SK	5	1100	1400	3
22/02/2022	2021/2022 NBR	SK	5	1420	1630	2
22/02/2022	2021/2022 NBR	EB	6	1100	1400	3
22/02/2022	2021/2022 NBR	EB	6	1430	1630	2
01/03/2022	2021/2022 NBR	JR	3	1230	1530	3
01/03/2022	2021/2022 NBR	JR	3	1600	1700	1
02/03/2022	2021/2022 NBR	JR	3	0920	1220	2.5
02/03/2022	2021/2022 NBR	JR	3	1250	1350	0
03/03/2022	2021/2022 NBR	JR	1	0835	1135	3
03/03/2022	2021/2022 NBR	JR	1	1205	1505	2
04/03/2022	2021/2022 NBR	JR	5	0750	1050	0
04/03/2022	2021/2022 NBR	JR	5	1120	1320	0
14/03/2022	2021/2022 NBR	JRM	5	1015	1315	3
14/03/2022	2021/2022 NBR	JRM	5	1345	1645	3
14/03/2022	2021/2022 NBR	JR	6	1015	1315	3
14/03/2022	2021/2022 NBR	JR	6	1345	1645	3

Date	Season	Observer	VP	Survey start time	Survey finish time	No. hours ² surveyed
15/03/2022	2021/2022 NBR	JRM	3	0950	1250	3
15/03/2022	2021/2022 NBR	JRM	3	1320	1620	3
15/03/2022	2021/2022 NBR	JR	4	0920	1220	3
15/03/2022	2021/2022 NBR	JR	4	1250	1550	3
24/03/2022	2022 BR	SK	7	1130	1430	3
24/03/2022	2022 BR	MW	9	0730	1030	3
24/03/2022	2022 BR	MW	9	1100	1400	3
24/03/2022	2022 BR	SK	11	1515	1815	3
25/03/2022	2022 BR	SK	8	1015	1315	3
25/03/2022	2022 BR	SK	8	1345	1645	3
25/03/2022	2022 BR	MW	11	0700	1000	3
25/03/2022	2022 BR	MW	11	1030	1330	3
13/04/2022	2022 BR	SK	9	0945	1245	3
13/04/2022	2022 BR	SK	9	1315	1615	3
13/04/2022	2022 BR	EB	11	0945	1245	2.75
13/04/2022	2022 BR	EB	11	1315	1615	3
14/04/2022	2022 BR	EB	7	0920	1220	3
14/04/2022	2022 BR	EB	7	1250	1550	3
14/04/2022	2022 BR	TH	9	0930	1230	2
14/04/2022	2022 BR	TH	9	1300	1600	3
02/05/2022	2022 BR	TH	7	0930	1230	3
02/05/2022	2022 BR	TH	7	1300	1615	3
03/05/2022	2022 BR	TH	9	0950	1250	3
03/05/2022	2022 BR	TH	9	1320	1620	3
04/05/2022	2022 BR	TH	8	0930	1230	3
04/05/2022	2022 BR	TH	8	1300	1600	3
05/05/2022	2022 BR	JRM	11	0845	1145	3
05/05/2022	2022 BR	JRM	11	1215	1515	3
18/05/2022	2022 BR	SK	8	0650	0950	3
13/06/2022	2022 BR	JRM	8	1100	1400	3
13/06/2022	2022 BR	JRM	8	1430	1630	2
14/06/2022	2022 BR	SK	7	1000	1300	3
14/06/2022	2022 BR	SK	7	1330	1630	3
14/06/2022	2022 BR	JRM	9	1000	1300	3
14/06/2022	2022 BR	JRM	9	1330	1630	3
15/06/2022	2022 BR	SK	11	0945	1245	3
15/06/2022	2022 BR	SK	11	1315	1615	3
20/07/2022	2022 BR	TH	11	1000	1300	3
20/07/2022	2022 BR	TH	11	1330	1630	3
21/07/2022	2022 BR	TH	8	0845	1145	3
21/07/2022	2022 BR	TH	8	1215	1515	3
22/07/2022	2022 BR	TH	7	0830	1130	3
22/07/2022	2022 BR	TH	7	1200	1500	3
22/07/2022	2022 BR	SK	9	0800	1100	3
22/07/2022	2022 BR	SK	9	1130	1430	3
02/08/2022	2022 BR	JRM	7	0845	1145	3
02/08/2022	2022 BR	JRM	7	1215	1515	3
02/08/2022	2022 BR	JRM	7	1545	1645	1
03/08/2022	2022 BR	JR	8	0805	1105	3
03/08/2022	2022 BR	JR	8	1135	1235	1
03/08/2022	2022 BR	JRM	11	0730	1030	3
03/08/2022	2022 BR	JRM	11	1140	1155	0.25
22/08/2022	2022 BR	MW	8	0830	1130	3
22/08/2022	2022 BR	MW	8	1200	1500	3

Date	Season	Observer	VP	Survey start time	Survey finish time	No. hours ² surveyed
23/08/2022	2022 BR	MW	7	0700	0900	2
23/08/2022	2022 BR	MW	9	0930	1030	1
13/09/2022	2022/2023 NBR	MW	11	0730	1030	3
13/09/2022	2022/2023 NBR	MW	11	1100	1400	3
15/09/2022	2022/2023 NBR	MW	8	0745	1045	3
15/09/2022	2022/2023 NBR	MW	8	1115	1415	3
16/09/2022	2022/2023 NBR	MW	9	0645	0945	3
16/09/2022	2022/2023 NBR	MW	9	1015	1315	3
19/09/2022	2022/2023 NBR	MW	7	0730	1030	3
19/09/2022	2022/2023 NBR	MW	7	1100	1400	3
24/10/2022	2022/2023 NBR	JR	7	1000	1300	3
24/10/2022	2022/2023 NBR	JR	7	1330	1530	2
24/10/2022	2022/2023 NBR	TH	9	1000	1300	3
24/10/2022	2022/2023 NBR	TH	9	1330	1530	2
25/10/2022	2022/2023 NBR	JR	8	0845	1145	3
25/10/2022	2022/2023 NBR	JR	8	1215	1415	2
26/10/2022	2022/2023 NBR	TH	11	0900	1200	3
26/10/2022	2022/2023 NBR	TH	11	1230	1430	2
16/11/2022	2022/2023 NBR	JRM	8	1030	1330	3
16/11/2022	2022/2023 NBR	JRM	8	1400	1600	2
16/11/2022	2022/2023 NBR	TH	9	1030	1330	3
16/11/2022	2022/2023 NBR	TH	9	1400	1600	2
17/11/2022	2022/2023 NBR	JRM	11	1000	1300	3
17/11/2022	2022/2023 NBR	JRM	11	1330	1530	2
18/11/2022	2022/2023 NBR	TH	7	0800	1100	0

Table C-3 Meteorological conditions during flight activity surveys at Dunside (sorted chronologically)

Date	Observer	VP	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
03/11/2021	JR	5	1045	1345	1	3	NNW	2	7	2	2	0	0
03/11/2021	JR	5	1045	1345	2	3	NNW	2	7	2	2	0	0
03/11/2021	JR	5	1045	1345	3	2	N	2	7	2	2	0	0
03/11/2021	JR	5	1415	1615	1	2	N	0	6	2	2	0	0
03/11/2021	JR	5	1415	1615	2	2	N	0	5	2	2	0	0
03/11/2021	MW	6	1030	1330	1	5	NW	0	8	2	2	0	0
03/11/2021	MW	6	1030	1330	2	5	NW	0	8	2	2	0	0
03/11/2021	MW	6	1030	1330	3	5	NW	2	8	2	2	0	0
03/11/2021	MW	6	1400	1600	1	5	NW	2	8	2	2	0	0
03/11/2021	MW	6	1400	1600	2	5	NW	3	8	2	2	0	0
04/11/2021	MW	2	0730	1030	1	4	NW	0	1	2	2	1	0
04/11/2021	MW	2	0730	1030	2	5	NW	0	2	2	2	1	0
04/11/2021	MW	2	0730	1030	3	5	NW	0	3	2	2	0	0
04/11/2021	MW	2	1100	1300	1	6	NW	0	3	2	2	0	0
04/11/2021	MW	2	1100	1300	2	6	NW	0	4	2	2	0	0
04/11/2021	JR	3	1000	1300	1	2	NNW	0	1	2	2	1	0
04/11/2021	JR	3	1000	1300	2	2	NNW	0	1	2	2	1	0
04/11/2021	JR	3	1000	1300	3	2	NNW	0	1	2	2	0	0
04/11/2021	JR	3	1330	1530	1	3	NNW	0	2	2	2	0	0
04/11/2021	JR	3	1330	1530	2	3	NNW	0	2	2	2	0	0
05/11/2021	JR	1	0830	1130	1	3	W	0	6	2	2	0	0
05/11/2021	JR	1	0830	1130	2	3	W	0	5	2	2	0	0
05/11/2021	JR	1	0830	1130	3	3	W	0	4	2	2	0	0
05/11/2021	JR	1	1200	1400	1	3	W	0	5	2	2	0	0
05/11/2021	JR	1	1200	1400	2	3	W	0	7	2	2	0	0
05/11/2021	MW	4	0700	1000	1	5	NW	0	4	2	2	0	0
05/11/2021	MW	4	0700	1000	2	5	NW	0	5	2	2	0	0
05/11/2021	MW	4	0700	1000	3	6	W	0	5	2	2	0	0
05/11/2021	MW	4	1030	1330	1	6	WSW	0	5	2	2	0	0
05/11/2021	MW	4	1030	1330	2	6	SW	0	6	2	2	0	0
05/11/2021	MW	4	1030	1330	3	6	SW	0	6	2	2	0	0
13/12/2021	JM	4	1110	1410	1	2	SW	0	6	2	2	0	0

Date	Observer	VP	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
13/12/2021	JM	4	1110	1410	2	2	SW	0	7	2	2	0	0
13/12/2021	JM	4	1110	1410	3	3	SW	0	7	2	2	0	0
14/12/2021	JM	5	1230	1430	1	6	SW	0	8	2	2	0	0
14/12/2021	JM	5	1230	1430	2	6	SW	0	8	2	2	0	0
14/12/2021	JM	6	0900	1200	1	5	SW	0	6	2	2	0	0
14/12/2021	JM	6	0900	1200	2	5	SW	0	5	2	2	0	0
14/12/2021	JM	6	0900	1200	3	6	SW	0	6	2	2	0	0
16/12/2021	JM	2	0840	1140	1	1	SW	0	7	2	2	0	0
16/12/2021	JM	2	0840	1140	2	3	SW	0	5	2	2	0	0
16/12/2021	JM	2	0840	1140	3	3	SW	0	2	2	2	0	0
10/01/2022	JM	1	1035	1335	1	5	S	0	8	2	2	1	0
10/01/2022	JM	1	1035	1335	2	4	S	0	8	1	2	1	0
10/01/2022	JM	1	1035	1335	3	4	S	0	8	1	2	1	0
11/01/2022	JP/JM	3	0935	1235	1	2	SW	0	1	2	2	1	0
11/01/2022	JP/JM	3	0935	1235	2	3	SW	0	1	2	2	1	0
11/01/2022	JP/JM	3	0935	1235	3	3	SW	0	1	2	2	1	0
12/01/2022	JM	5	0910	1210	1	6	WSW	0	7	2	2	1	0
12/01/2022	JM	5	0910	1210	2	5	WSW	0	7	2	2	0	0
12/01/2022	JM	5	0910	1210	3	5	WSW	0	7	2	2	0	0
12/01/2022	JM	5	1240	1440	1	5	SW	0	8	2	2	0	0
12/01/2022	JM	5	1240	1440	2	6	SW	0	8	2	2	0	0
12/01/2022	JP	6	0915	1215	1	4	W	0	7	2	2	0	0
12/01/2022	JP	6	0915	1215	2	5	W	1	8	2	2	0	0
12/01/2022	JP	6	0915	1215	3	5	W	2	8	2	2	0	0
12/01/2022	JP	6	1245	1445	1	5	W	3	8	2	2	0	0
12/01/2022	JP	6	1245	1445	2	6	W	4	8	2	2	0	0
13/01/2022	JM	3	0855	1155	1	7	WSW	0	6	2	2	0	0
13/01/2022	JM	3	0855	1155	2	6	W	0	7	2	2	0	0
13/01/2022	JM	3	0855	1155	3	6	W	0	6	2	2	0	0
13/01/2022	JM	3	1225	1425	1	6	W	0	7	2	2	0	0
13/01/2022	JM	3	1225	1425	2	6	W	0	6	2	2	0	0
13/01/2022	JP	4	0845	1145	1	5	W	0	7	2	2	0	0
13/01/2022	JP	4	0845	1145	2	6	W	1	6	2	2	0	0

Date	Observer	VP	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
13/01/2022	JP	4	0845	1145	3	6	W	2	7	2	2	0	0
13/01/2022	JP	4	1215	1415	1	4	W	3	8	2	2	0	0
13/01/2022	JP	4	1215	1415	2	4	W	4	7	2	2	0	0
24/01/2022	JP	2	1020	1320	1	5	S	0	4	2	2	0	0
24/01/2022	JP	2	1020	1320	2	5	W	0	7	2	2	0	0
24/01/2022	JP	2	1020	1320	3	5	W	0	6	2	2	0	0
24/01/2022	JP	2	1400	1600	1	5	W	0	6	2	2	0	0
24/01/2022	JP	2	1400	1600	2	4	W	0	3	2	2	0	0
24/01/2022	MW	3	0815	1115	1	4	SSW	0	8	2	2	1	0
24/01/2022	MW	3	0815	1115	2	4	SSW	0	8	2	2	1	0
24/01/2022	MW	3	0815	1115	3	5	SSW	0	8	2	2	0	0
24/01/2022	MW	3	1145	1345	1	5	SSW	0	8	2	2	0	0
24/01/2022	MW	3	1145	1345	2	5	SSW	0	7	2	2	0	0
25/01/2022	MW	1	0800	1100	1	5	WSW	0	8	2	2	0	0
25/01/2022	MW	1	0800	1100	2	5	WSW	0	8	2	2	0	0
25/01/2022	MW	1	0800	1100	3	5	WSW	0	8	2	2	0	0
25/01/2022	MW	1	1130	1330	1	5	WSW	0	8	2	2	0	0
25/01/2022	MW	1	1130	1330	2	5	WSW	0	8	2	2	0	0
25/01/2022	JP	4	0910	1210	1	5	SW	0	8	2	2	0	0
25/01/2022	JP	4	0910	1210	2	5	SW	0	8	2	2	0	0
25/01/2022	JP	4	0910	1210	3	5	SW	0	8	2	2	0	0
26/01/2022	JP	5	0920	1220	1	7	W	0	7	2	2	0	0
26/01/2022	JP	5	0920	1220	2	7	W	0	7	2	2	0	0
26/01/2022	JP	5	0920	1220	3	8	W	0	8	2	2	0	0
26/01/2022	JP	5	1250	1450	1	8	W	0	8	2	2	0	0
26/01/2022	JP	5	1250	1450	2	8	W	0	8	2	2	0	0
26/01/2022	MW	6	0800	1100	1	6	WSW	0	8	2	2	0	0
26/01/2022	MW	6	0800	1100	2	6	WSW	0	7	2	2	0	0
26/01/2022	MW	6	0800	1100	3	7	WSW	0	8	2	2	0	0
26/01/2022	MW	6	1130	1330	1	6	WSW	0	8	2	2	0	0
26/01/2022	MW	6	1130	1330	2	6	WSW	0	8	2	2	0	0
27/01/2022	JP	4	0925	1125	1	5	W	0	2	2	2	0	0
27/01/2022	JP	4	0925	1125	2	6	SW	0	2	2	2	0	0

Date	Observer	VP	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
28/01/2022	JP	2	0820	1120	1	2	W	0	8	2	2	0	0
28/01/2022	JP	2	0820	1120	2	3	SW	0	8	2	2	0	0
28/01/2022	JP	2	0820	1120	3	3	SW	0	8	2	2	0	0
28/01/2022	JP	2	1150	1350	1	5	SW	0	8	2	2	0	0
28/01/2022	JP	2	1150	1350	2	6	SW	0	8	2	2	0	0
14/02/2022	SP	1	0930	1230	1	4	NW	2	7	2	2	0	0
14/02/2022	SP	1	0930	1230	2	4	NW	0	6	2	2	0	0
14/02/2022	SP	1	0930	1230	3	5	NW	0	6	2	2	0	0
14/02/2022	SP	1	1300	1500	1	4	NW	0	7	2	2	0	0
14/02/2022	SP	1	1300	1500	2	4	NW	0	7	2	2	0	0
21/02/2022	JRM	1	0915	1215	1	5	NW	0	4	2	2	0	1
21/02/2022	JRM	1	0915	1215	2	5	NW	0	6	2	2	0	1
21/02/2022	JRM	1	0915	1215	3	5	NW	0	8	2	2	0	1
21/02/2022	JRM	1	1245	1545	1	5	NW	0	3	2	2	0	1
21/02/2022	JRM	1	1245	1545	2	5	NW	0	4	2	2	0	1
21/02/2022	JRM	1	1245	1545	3	4	NW	0	2	2	2	0	1
21/02/2022	SP	4	0935	1305	1	6	WNW	0	4	2	2	0	1
21/02/2022	SP	4	0935	1305	2	5	WNW	0	5	2	2	0	1
21/02/2022	SP	4	0935	1305	3	5	WNW	2	7	2	2	0	1
21/02/2022	SP	4	1235	1505	1	5	NW	0	4	2	2	0	1
21/02/2022	SP	4	1235	1505	2	5	NW	0	4	2	2	0	1
21/02/2022	EB	5	1030	1330	1	5	W	0	8	1	2	0	0
21/02/2022	EB	5	1030	1330	2	5	W	2	7	1	2	0	0
21/02/2022	EB	5	1030	1330	3	5	W	0	6	1	2	0	0
21/02/2022	EB	5	1400	1600	1	5	W	0	3	1	2	0	0
21/02/2022	EB	5	1400	1600	2	5	W	0	3	1	2	0	0
21/02/2022	SK	6	1015	1315	1	5	WNW	0	7	1	2	0	1
21/02/2022	SK	6	1015	1315	2	7	WNW	2	8	1	2	0	1
21/02/2022	SK	6	1015	1315	3	6	NW	0	3	1	2	0	1
21/02/2022	SK	6	1345	1545	1	6	NW	0	5	1	2	0	1
21/02/2022	SK	6	1345	1545	2	6	NW	0	1	1	2	0	1
22/02/2022	JRM	1	1050	1350	1	5	W	0	6	2	2	0	2
22/02/2022	JRM	1	1050	1350	2	6	W	0	5	2	2	0	2

Date	Observer	VP	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
22/02/2022	JRM	1	1050	1350	3	6	W	0	4	2	2	0	2
22/02/2022	JRM	1	1420	1620	1	5	W	0	4	2	2	0	2
22/02/2022	JRM	1	1420	1620	2	6	W	0	3	2	2	0	2
22/02/2022	SK	5	1100	1400	1	5	W	0	6	1	2	0	2
22/02/2022	SK	5	1100	1400	2	6	W	0	7	1	2	0	2
22/02/2022	SK	5	1100	1400	3	7	NW	0	6	1	2	0	2
22/02/2022	SK	5	1430	1630	1	6	NW	0	5	1	2	0	2
22/02/2022	SK	5	1430	1630	2	6	NW	0	3	0	2	0	2
22/02/2022	EB	6	1100	1400	1	5	W	0	8	1	2	0	0
22/02/2022	EB	6	1100	1400	2	5	W	1	8	1	2	0	0
22/02/2022	EB	6	1100	1400	3	6	W	0	8	1	2	0	0
22/02/2022	EB	6	1430	1630	1	6	W	0	8	1	2	0	0
22/02/2022	EB	6	1430	1630	2	7	W	0	8	1	2	0	0
01/03/2022	JR	3	1230	1530	1	1	SSW	0	3	2	2	0	0
01/03/2022	JR	3	1230	1530	2	1	SSW	0	3	2	2	0	0
01/03/2022	JR	3	1230	1530	3	1	SSW	0	4	2	2	0	0
01/03/2022	JR	3	1600	1700	1	1	SSW	0	3	2	2	0	0
02/03/2022	JR	3	0920	1220	1	2	ESE	1	8	1	1	1	0
02/03/2022	JR	3	0920	1220	2	3	ESE	1	8	1	1	1	0
02/03/2022	JR	3	0920	1220	3	3	ESE	1	8	1	1	0	0
02/03/2022	JR	3	1249	1350	1	3	ESE	1	8	1	0	0	0
02/03/2022	JR	3	1249	1350	2	3	ESE	1	8	1	0	0	0
03/03/2022	JR	1	0835	1135	1	2	SSE	0	8	0	1	0	0
03/03/2022	JR	1	0835	1135	2	2	SSE	2	8	0	1	0	0
03/03/2022	JR	1	0835	1135	3	2	SSE	2	8	1	0	0	0
03/03/2022	JR	1	1205	1505	1	2	SSE	2	8	1	1	0	0
03/03/2022	JR	1	1205	1505	2	2	SSE	2	8	1	1	0	0
03/03/2022	JR	1	1205	1505	3	2	SSE	1	8	1	1	0	0
04/03/2022	JR	5	0750	1050	1	2	N	2	8	1	0	0	0
04/03/2022	JR	5	0750	1050	2	3	N	2	8	1	0	0	0
04/03/2022	JR	5	0750	1050	3	3	N	1	8	1	0	0	0
04/03/2022	JR	5	1120	1320	1	3	N	1	8	1	0	0	0
04/03/2022	JR	5	1120	1320	2	3	N	1	8	1	0	0	0

Date	Observer	VP	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
14/03/2022	JRM	5	1015	1345	1	5	SW	0	4	2	2	0	0
14/03/2022	JRM	5	1015	1345	2	6	SSW	0	5	2	2	0	0
14/03/2022	JRM	5	1015	1345	3	5	SSW	0	7	2	2	0	0
14/03/2022	JRM	5	1345	1645	1	5	SSW	0	7	2	2	0	0
14/03/2022	JRM	5	1345	1645	2	5	SSW	2	8	2	2	0	0
14/03/2022	JRM	5	1345	1645	3	5	SSW	3	8	1	1	0	0
14/03/2022	JR	6	1015	1315	1	3	SW	0	3	2	2	0	0
14/03/2022	JR	6	1015	1315	2	3	SSW	2	4	2	2	0	0
14/03/2022	JR	6	1015	1315	3	4	SSW	2	6	2	2	0	0
14/03/2022	JR	6	1345	1645	1	5	S	2	7	2	2	0	0
14/03/2022	JR	6	1345	1645	2	5	S	2	8	2	2	0	0
14/03/2022	JR	6	1345	1645	3	4	S	4	8	1	1	0	0
15/03/2022	JRM	3	0950	1250	1	4	SSW	0	8	2	2	0	0
15/03/2022	JRM	3	0950	1250	2	4	SSW	0	8	2	2	0	0
15/03/2022	JRM	3	0950	1250	3	5	SSW	0	8	2	2	0	0
15/03/2022	JRM	3	1320	1620	1	4	SSW	0	7	2	2	0	0
15/03/2022	JRM	3	1320	1620	2	4	SSW	0	6	2	2	0	0
15/03/2022	JRM	3	1320	1620	3	3	SSW	0	7	2	2	0	0
15/03/2022	JR	4	0920	1220	1	2	SSW	1	8	1	1	0	0
15/03/2022	JR	4	0920	1220	2	3	SSW	0	7	2	2	0	0
15/03/2022	JR	4	0920	1220	3	3	SSW	0	7	2	2	0	0
15/03/2022	JR	4	1250	1550	1	3	SSW	0	8	2	2	0	0
15/03/2022	JR	4	1250	1550	2	2	SSW	0	8	2	2	0	0
15/03/2022	JR	4	1250	1550	3	3	SSW	0	8	2	2	0	0
24/03/2022	SK	7	1130	1430	1	3	S	0	2	2	2	0	0
24/03/2022	SK	7	1130	1430	2	3	S	0	3	2	2	0	0
24/03/2022	SK	7	1130	1430	3	3	S	0	4	2	2	0	0
24/03/2022	MW	9	0730	1030	1	2	SSW	0	1	2	2	0	0
24/03/2022	MW	9	0730	1030	2	3	SSW	0	2	2	2	0	0
24/03/2022	MW	9	0730	1030	3	3	SSW	0	3	2	2	0	0
24/03/2022	MW	9	1100	1400	1	3	SSW	0	4	2	2	0	0
24/03/2022	MW	9	1100	1400	2	4	SSW	0	4	2	2	0	0
24/03/2022	MW	9	1100	1400	3	4	SSW	0	4	2	2	0	0

Date	Observer	VP	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
24/03/2022	SK	11	1515	1815	1	2	SW	0	7	2	2	0	0
24/03/2022	SK	11	1515	1815	2	2	SW	0	6	2	2	0	0
24/03/2022	SK	11	1515	1815	3	2	SW	0	6	2	2	0	0
25/03/2022	SK	8	1015	1315	1	2	SW	0	4	1	2	0	0
25/03/2022	SK	8	1015	1315	2	3	WSW	0	6	1	2	0	0
25/03/2022	SK	8	1015	1315	3	3	W	0	6	1	2	0	0
25/03/2022	SK	8	1345	1645	1	2	WSW	0	4	1	2	0	0
25/03/2022	SK	8	1345	1645	2	3	WSW	0	4	1	2	0	0
25/03/2022	SK	8	1345	1645	3	3	WSW	0	6	1	2	0	0
25/03/2022	MW	11	0700	1000	1	1	W	0	3	2	2	0	0
25/03/2022	MW	11	0700	1000	2	2	W	0	4	2	2	0	0
25/03/2022	MW	11	0700	1000	3	3	WSW	0	3	2	2	0	0
25/03/2022	MW	11	1030	1330	1	2	SW	0	4	2	2	0	0
25/03/2022	MW	11	1030	1330	2	3	SW	0	4	2	2	0	0
25/03/2022	MW	11	1030	1330	3	4	SW	0	4	2	2	0	0
13/04/2022	SK	9	0945	1245	1	3	W	1	8	0	1	0	0
13/04/2022	SK	9	0945	1245	2	3	WSW	1	8	0	1	0	0
13/04/2022	SK	9	0945	1245	3	4	W	0	8	0	2	0	0
13/04/2022	SK	9	1315	1615	1	4	W	0	8	0	2	0	0
13/04/2022	SK	9	1315	1615	2	3	WSW	0	8	0	2	0	0
13/04/2022	SK	9	1315	1615	3	5	WSW	0	8	0	2	0	0
13/04/2022	EB	11	0945	1245	1	3	W	1	8	0	1	0	0
13/04/2022	EB	11	0945	1245	2	3	W	0	8	1	1	0	0
13/04/2022	EB	11	0945	1245	3	3	W	0	8	1	2	0	0
13/04/2022	EB	11	1315	1615	1	4	W	0	8	1	2	0	0
13/04/2022	EB	11	1315	1615	2	3	W	0	8	2	2	0	0
13/04/2022	EB	11	1315	1615	3	3	W	0	8	2	2	0	0
14/04/2022	EB	7	0920	1220	1	3	W	0	8	1	2	0	0
14/04/2022	EB	7	0920	1220	2	3	W	0	8	1	1	0	0
14/04/2022	EB	7	0920	1220	3	3	W	0	8	1	2	0	0
14/04/2022	EB	7	1250	1550	1	3	W	0	8	1	2	0	0
14/04/2022	EB	7	1250	1550	2	2	W	0	8	1	2	0	0
14/04/2022	EB	7	1250	1550	3	2	W	0	8	2	2	0	0

Date	Observer	VP	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
14/04/2022	TH	9	0930	1230	1	2	SE	0	8	1	0	0	0
14/04/2022	TH	9	0930	1230	2	1	SE	0	8	2	2	0	0
14/04/2022	TH	9	0930	1230	3	1	SE	0	6	2	2	0	0
14/04/2022	TH	9	1300	1600	1	1	SE	0	6	2	2	0	0
14/04/2022	TH	9	1300	1600	2	1	SE	0	7	2	2	0	0
14/04/2022	TH	9	1300	1600	3	1	SSE	0	6	2	2	0	0
02/05/2022	TH	7	0930	1230	1	2	SE	0	8	2	2	0	0
02/05/2022	TH	7	0930	1230	2	2	SE	0	8	2	2	0	0
02/05/2022	TH	7	0930	1230	3	2	SE	0	8	2	2	0	0
02/05/2022	TH	7	1300	1615	1	2	SE	0	8	2	2	0	0
02/05/2022	TH	7	1300	1615	2	2	SE	0	8	2	2	0	0
02/05/2022	TH	7	1300	1615	3	2	SE	0	8	2	2	0	0
03/05/2022	TH	9	0950	1250	1	2	SE	0	8	1	1	0	0
03/05/2022	TH	9	0950	1250	2	2	SE	0	8	1	2	0	0
03/05/2022	TH	9	0950	1250	3	2	SE	0	8	2	2	0	0
03/05/2022	TH	9	1320	1620	1	2	SE	0	8	2	2	0	0
03/05/2022	TH	9	1320	1620	2	2	SE	1	8	2	2	0	0
03/05/2022	TH	9	1320	1620	3	2	SE	0	8	2	2	0	0
04/05/2022	TH	8	0930	1230	1	3	W	1	7	2	2	0	0
04/05/2022	TH	8	0930	1230	2	3	W	2	8	2	2	0	0
04/05/2022	TH	8	0930	1230	3	3	W	1	7	2	2	0	0
04/05/2022	TH	8	1300	1600	1	3	W	3	5	2	1	0	0
04/05/2022	TH	8	1300	1600	2	4	W	0	5	2	2	0	0
04/05/2022	TH	8	1300	1600	3	4	W	0	5	2	2	0	0
05/05/2022	JRM	11	0845	1145	1	4	SW	2	8	2	2	0	0
05/05/2022	JRM	11	0845	1145	2	3	SW	2	8	2	2	0	0
05/05/2022	JRM	11	0845	1145	3	4	W	0	8	2	2	0	0
05/05/2022	JRM	11	1215	1515	1	4	WSW	0	8	2	2	0	0
05/05/2022	JRM	11	1215	1515	2	4	WSW	0	8	2	2	0	0
05/05/2022	JRM	11	1215	1515	3	4	WSW	0	7	2	2	0	0
18/05/2022	SK	8	0650	0950	1	4	SW	0	6	1	2	0	0
18/05/2022	SK	8	0650	0950	2	5	SW	0	4	1	2	0	0
18/05/2022	SK	8	0650	0950	3	5	SW	0	5	1	2	0	0

Date	Observer	VP	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
13/06/2022	JRM	8	1100	1400	1	4	W	2	8	2	2	0	0
13/06/2022	JRM	8	1100	1400	2	3	W	2	8	2	2	0	0
13/06/2022	JRM	8	1100	1400	3	5	W	0	7	2	2	0	0
13/06/2022	JRM	8	1430	1630	1	5	W	0	7	2	2	0	0
13/06/2022	JRM	8	1430	1630	2	4	W	0	8	2	2	0	0
14/06/2022	SK	7	1000	1300	1	3	SW	0	8	2	2	0	0
14/06/2022	SK	7	1000	1300	2	3	SW	0	8	2	2	0	0
14/06/2022	SK	7	1000	1300	3	3	SW	0	8	2	2	0	0
14/06/2022	SK	7	1330	1630	1	3	SW	0	8	2	2	0	0
14/06/2022	SK	7	1330	1630	2	3	SW	0	7	2	2	0	0
14/06/2022	SK	7	1330	1630	3	3	SW	0	8	2	2	0	0
14/06/2022	JRM	9	1000	1300	1	4	WSW	0	7	2	2	0	0
14/06/2022	JRM	9	1000	1300	2	4	WSW	0	8	2	2	0	0
14/06/2022	JRM	9	1000	1300	3	3	SW	0	8	2	2	0	0
14/06/2022	JRM	9	1330	1630	1	3	SW	0	8	2	2	0	0
14/06/2022	JRM	9	1330	1630	2	2	SW	0	8	2	2	0	0
14/06/2022	JRM	9	1330	1630	3	3	SW	0	6	2	2	0	0
15/06/2022	SK	11	0945	1245	1	2	SW	0	6	1	2	0	0
15/06/2022	SK	11	0945	1245	2	2	SW	0	6	1	2	0	0
15/06/2022	SK	11	0945	1245	3	3	SW	0	7	1	2	0	0
15/06/2022	SK	11	1315	1615	1	2	W	0	7	1	2	0	0
15/06/2022	SK	11	1315	1615	2	2	W	0	8	2	2	0	0
15/06/2022	SK	11	1315	1615	3	3	SW	0	7	1	2	0	0
20/07/2022	TH	11	1000	1300	1	3	N	0	6	2	2	0	0
20/07/2022	TH	11	1000	1300	2	2	N	0	7	2	2	0	0
20/07/2022	TH	11	1000	1300	3	2	N	0	8	2	2	0	0
20/07/2022	TH	11	1330	1630	1	3	NW	0	7	2	2	0	0
20/07/2022	TH	11	1330	1630	2	3	NW	0	8	2	2	0	0
20/07/2022	TH	11	1330	1630	3	2	NW	0	8	2	2	0	0
21/07/2022	TH	8	0845	1145	1	1	NE	0	8	2	2	0	0
21/07/2022	TH	8	0845	1145	2	1	NE	0	8	2	2	0	0
21/07/2022	TH	8	0845	1145	3	2	NE	0	7	2	2	0	0
21/07/2022	TH	8	1215	1515	1	3	N	0	8	2	2	0	0

Date	Observer	VP	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
21/07/2022	TH	8	1215	1515	2	3	N	0	8	2	2	0	0
21/07/2022	TH	8	1215	1515	3	2	N	0	6	2	2	0	0
22/07/2022	TH	7	0830	1130	1	3	E	0	8	2	2	0	0
22/07/2022	TH	7	0830	1130	2	2	E	0	8	2	2	0	0
22/07/2022	TH	7	0830	1130	3	2	E	0	8	2	2	0	0
22/07/2022	TH	7	1200	1500	1	3	E	1	8	2	2	0	0
22/07/2022	TH	7	1200	1500	2	2	E	0	8	2	2	0	0
22/07/2022	TH	7	1200	1500	3	2	E	0	8	2	2	0	0
22/07/2022	SK	9	0800	1100	1	3	SE	0	8	1	2	0	0
22/07/2022	SK	9	0800	1100	2	3	SE	0	8	1	2	0	0
22/07/2022	SK	9	0800	1100	3	3	SE	0	8	1	2	0	0
22/07/2022	SK	9	1130	1430	1	3	SE	0	8	1	2	0	0
22/07/2022	SK	9	1130	1430	2	3	SE	0	8	1	2	0	0
22/07/2022	SK	9	1130	1430	3	3	SE	0	8	1	2	0	0
02/08/2022	JRM	7	0845	1145	1	5	SW	2	8	1	1	0	0
02/08/2022	JRM	7	0845	1145	2	5	SW	2	8	2	2	0	0
02/08/2022	JRM	7	0845	1145	3	5	SW	2	7	2	2	0	0
02/08/2022	JRM	7	1215	1515	1	5	WSW	0	6	2	2	0	0
02/08/2022	JRM	7	1215	1515	2	5	WSW	0	7	2	2	0	0
02/08/2022	JRM	7	1215	1515	3	5	WSW	0	6	2	2	0	0
02/08/2022	JRM	7	1545	1645	1	4	WSW	0	7	2	2	0	0
03/08/2022	JR	8	0805	1105	1	3	SW	0	6	2	2	0	0
03/08/2022	JR	8	0805	1105	2	3	SW	2	7	1	1	0	0
03/08/2022	JR	8	0805	1105	3	3	SW	2	8	1	1	0	0
03/08/2022	JR	8	1135	1235	1	3	SW	2	7	1	2	0	0
03/08/2022	JRM	11	0730	1030	1	6	SW	0	6	2	2	0	0
03/08/2022	JRM	11	0730	1030	2	5	SW	0	8	1	2	0	0
03/08/2022	JRM	11	0730	1030	3	4	SW	2	8	1	1	0	0
03/08/2022	JRM	11	1140	1155	1	4	SW	0	7	2	2	0	0
22/08/2022	MW	8	0830	1130	1	1	SSE	0	8	2	2	0	0
22/08/2022	MW	8	0830	1130	2	2	SSE	0	8	2	2	0	0
22/08/2022	MW	8	0830	1130	3	3	SSE	2	8	2	2	0	0
22/08/2022	MW	8	1200	1500	1	3	SSE	2	8	2	2	0	0

Date	Observer	VP	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
22/08/2022	MW	8	1200	1500	2	3	SSE	0	8	2	2	0	0
22/08/2022	MW	8	1200	1500	3	4	SSE	0	8	2	2	0	0
23/08/2022	MW	7	0700	0900	1	3	SSW	0	8	2	2	0	0
23/08/2022	MW	7	0700	0900	2	4	SSW	0	8	2	2	0	0
23/08/2022	MW	9	0930	1030	1	4	SSW	0	6	2	2	0	0
13/09/2022	MW	11	0730	1030	1	3	WNW	0	8	2	2	0	0
13/09/2022	MW	11	0730	1030	2	3	WNW	0	7	2	2	0	0
13/09/2022	MW	11	0730	1030	3	4	WNW	0	6	2	2	0	0
13/09/2022	MW	11	1100	1400	1	4	WNW	0	5	2	2	0	0
13/09/2022	MW	11	1100	1400	2	5	WNW	0	5	2	2	0	0
13/09/2022	MW	11	1100	1400	3	5	WNW	0	5	2	2	0	0
15/09/2022	MW	8	0745	1045	1	3	NW	0	8	2	2	0	0
15/09/2022	MW	8	0745	1045	2	4	NW	0	8	2	2	0	0
15/09/2022	MW	8	0745	1045	3	4	NW	0	7	2	2	0	0
15/09/2022	MW	8	1115	1415	1	5	NW	0	7	2	2	0	0
15/09/2022	MW	8	1115	1415	2	5	NW	0	7	2	2	0	0
15/09/2022	MW	8	1115	1415	3	5	NW	0	7	2	2	0	0
16/09/2022	MW	9	0645	0945	1	5	NW	0	8	2	2	0	0
16/09/2022	MW	9	0645	0945	2	5	NW	0	7	2	2	0	0
16/09/2022	MW	9	0645	0945	3	6	NW	0	7	2	2	0	0
16/09/2022	MW	9	1015	1315	1	6	NW	0	6	2	2	0	0
16/09/2022	MW	9	1015	1315	2	6	NW	0	6	2	2	0	0
16/09/2022	MW	9	1015	1315	3	6	NW	0	6	2	2	0	0
19/09/2022	MW	7	0730	1030	1	1	W	0	8	2	2	0	0
19/09/2022	MW	7	0730	1030	2	2	W	0	8	2	2	0	0
19/09/2022	MW	7	0730	1030	3	3	W	0	8	2	2	0	0
19/09/2022	MW	7	1100	1400	1	3	W	0	8	2	2	0	0
19/09/2022	MW	7	1100	1400	2	4	W	0	8	2	2	0	0
19/09/2022	MW	7	1100	1400	3	4	W	0	8	2	2	0	0
24/10/2022	JR	7	1000	1300	1	2	SW	0	2	2	2	0	0
24/10/2022	JR	7	1000	1300	2	2	SW	0	4	2	2	0	0
24/10/2022	JR	7	1000	1300	3	3	SW	0	5	2	2	0	0
24/10/2022	JR	7	1330	1530	1	3	SW	0	4	2	2	0	0

Date	Observer	VP	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
24/10/2022	JR	7	1330	1530	2	2	SW	0	4	2	2	0	0
24/10/2022	TH	9	1000	1300	1	3	SW	0	3	2	2	0	0
24/10/2022	TH	9	1000	1300	2	3	SW	0	5	2	2	0	0
24/10/2022	TH	9	1000	1300	3	3	SW	1	5	2	2	0	0
24/10/2022	TH	9	1330	1530	1	3	SW	0	6	2	2	0	0
24/10/2022	TH	9	1330	1530	2	3	SW	0	7	2	2	0	0
25/10/2022	JR	8	0845	1145	1	2	SW	0	2	2	2	0	0
25/10/2022	JR	8	0845	1145	2	3	SW	0	1	2	2	0	0
25/10/2022	JR	8	0845	1145	3	3	SW	0	4	2	2	0	0
25/10/2022	JR	8	1215	1415	1	3	SW	0	4	2	2	0	0
25/10/2022	JR	8	1215	1415	2	2	SW	0	3	2	2	0	0
26/10/2022	TH	11	0900	1200	1	4	S	2	6	2	2	0	0
26/10/2022	TH	11	0900	1200	2	5	S	1	7	2	2	0	0
26/10/2022	TH	11	0900	1200	3	5	S	2	7	2	2	0	0
26/10/2022	TH	11	1230	1430	1	5	S	2	8	2	2	0	0
26/10/2022	TH	11	1230	1430	2	5	S	1	8	2	2	0	0
16/11/2022	JRM	8	1030	1330	1	4	SE	0	3	2	2	0	0
16/11/2022	JRM	8	1030	1330	2	3	SE	0	3	2	2	0	0
16/11/2022	JRM	8	1030	1330	3	3	SE	0	8	2	2	0	0
16/11/2022	JRM	8	1400	1600	1	2	SE	0	8	2	2	0	0
16/11/2022	JRM	8	1400	1600	2	2	SE	0	8	2	2	0	0
16/11/2022	TH	9	1030	1330	1	2	SE	0	3	2	2	0	0
16/11/2022	TH	9	1030	1330	2	3	SE	0	4	2	2	0	0
16/11/2022	TH	9	1030	1330	3	2	SE	0	7	2	2	0	0
16/11/2022	TH	9	1400	1600	1	1	SE	0	7	2	2	0	0
16/11/2022	TH	9	1400	1600	2	2	SE	0	8	2	2	0	0
17/11/2022	JRM	11	1000	1300	1	3	E	4	8	1	1	0	0
17/11/2022	JRM	11	1000	1300	2	4	E	4	8	1	1	0	0
17/11/2022	JRM	11	1000	1300	3	4	E	4	8	1	1	0	0
17/11/2022	JRM	11	1330	1530	1	4	E	4	8	1	1	0	0
17/11/2022	JRM	11	1330	1530	2	4	E	4	8	1	1	0	0
18/11/2022	TH	7	0800	1100	1	4	E	4	8	0	0	0	0
18/11/2022	TH	7	0800	1100	2	5	E	4	8	0	0	0	0

Date	Observer	VP	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
18/11/2022	TH	7	0800	1100	3	5	E	4	8	0	0	0	0

C.2 Moorland Breeding Bird Surveys

Moorland breeding bird surveys were undertaken during the 2022 breeding season. **Table C-4** details survey dates and weather data recorded. Refer to **Annex B** for survey methodology and **Annex D** for survey results.

Table C-4 Meteorological conditions during breeding bird surveys at Dunside (sorted chronologically)

Date	Survey visit	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
12/04/2022	1	EB	1000	1500	1	3	E	0	8	0	0	0	0
12/04/2022	1	EB	1000	1500	2	3	E	0	8	1	1	0	0
12/04/2022	1	EB	1000	1500	3	3	E	2	8	0	0	0	0
12/04/2022	1	EB	1000	1500	4	3	E	2	8	1	0	0	0
12/04/2022	1	EB	1000	1500	5	3	E	2	8	0	0	0	0
12/04/2022	1	SK	0945	1500	1	2	SE	1	8	0	0	0	0
12/04/2022	1	SK	0945	1500	2	2	SE	2	8	0	1	0	0
12/04/2022	1	SK	0945	1500	3	2	SE	1	8	0	1	0	0
12/04/2022	1	SK	0945	1500	4	2	SE	2	8	0	1	0	0
12/04/2022	1	SK	0945	1500	5	2	SE	2	8	0	0	0	0
12/04/2022	1	TH	1000	1500	1	3	SW	0	8	1	0	0	0
12/04/2022	1	TH	1000	1500	2	3	SW	1	8	1	0	0	0
12/04/2022	1	TH	1000	1500	3	1	SW	1	8	1	2	0	0
12/04/2022	1	TH	1000	1500	4	2	E	1	8	1	0	0	0
12/04/2022	1	TH	1000	1500	5	2	E	1	8	1	1	0	0
15/04/2022	1	EB	0825	1325	1	2	W	0	8	2	2	0	0
15/04/2022	1	EB	0825	1325	2	2	SW	0	8	2	2	0	0
15/04/2022	1	EB	0825	1325	3	2	SW	0	8	2	2	0	0
15/04/2022	1	EB	0825	1325	4	2	SW	0	8	2	2	0	0
15/04/2022	1	EB	0825	1325	5	2	SW	0	8	2	2	0	0
15/04/2022	1	SK	0825	1310	1	1	SW	0	8	1	2	0	0
15/04/2022	1	SK	0825	1310	2	2	SE	0	8	2	2	0	0

Date	Survey visit	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
15/04/2022	1	SK	0825	1310	3	2	SE	0	8	2	2	0	0
15/04/2022	1	SK	0825	1310	4	2	SE	0	8	2	2	0	0
15/04/2022	1	SK	0825	1310	5	2	SE	0	8	2	2	0	0
15/04/2022	1	TH	0830	1300	1	1	SSW	0	8	2	2	0	0
15/04/2022	1	TH	0830	1300	2	1	SE	0	8	2	2	0	0
15/04/2022	1	TH	0830	1300	3	2	SE	0	8	2	2	0	0
15/04/2022	1	TH	0830	1300	4	2	SE	0	8	2	2	0	0
15/04/2022	1	TH	0830	1300	5	2	SE	0	8	2	2	0	0
18/04/2022	1	JM	0930	1530	1	4	W	0	6	2	2	0	0
18/04/2022	1	JM	0930	1530	2	4	WSW	0	7	2	2	0	0
18/04/2022	1	JM	0930	1530	3	4	WSW	0	5	2	2	0	0
18/04/2022	1	JM	0930	1530	4	4	WSW	0	5	2	2	0	0
18/04/2022	1	JM	0930	1530	5	4	WSW	0	6	2	2	0	0
18/04/2022	1	JM	0930	1530	6	4	W	0	5	2	2	0	0
19/04/2022	1	JM	0800	1400	1	1	W	0	1	2	2	1	0
19/04/2022	1	JM	0800	1400	2	1	W	0	1	2	2	0	0
19/04/2022	1	JM	0800	1400	3	1	W	0	2	2	2	0	0
19/04/2022	1	JM	0800	1400	4	2	WNW	0	4	2	2	0	0
19/04/2022	1	JM	0800	1400	5	1	WNW	0	6	2	2	0	0
19/04/2022	1	JM	0800	1400	6	1	NNE	0	6	2	2	0	0
16/05/2022	2	SK	0930	1430	1	3	SE	3	8	1	1	0	0
16/05/2022	2	SK	0930	1430	2	3	E	2	8	1	1	0	0
16/05/2022	2	SK	0930	1430	3	3	ESE	1	8	0	0	0	0
16/05/2022	2	SK	0930	1430	4	3	ESE	1	8	0	0	0	0
16/05/2022	2	SK	0930	1430	5	3	ESE	1	8	0	0	0	0
16/05/2022	2	TH	0930	1430	1	3	E	3	8	1	1	0	0
16/05/2022	2	TH	0930	1430	2	3	SE	2	8	1	1	0	0
16/05/2022	2	TH	0930	1430	3	3	SE	1	8	0	0	0	0
16/05/2022	2	TH	0930	1430	4	3	SE	1	8	0	0	0	0
16/05/2022	2	TH	0930	1430	5	3	SE	1	8	0	0	0	0
17/05/2022	2	SK	0830	1500	1	2	SW	0	4	2	2	0	0
17/05/2022	2	SK	0830	1500	2	3	SW	0	5	2	2	0	0
17/05/2022	2	SK	0830	1500	3	3	S	0	6	2	2	0	0

Date	Survey visit	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
17/05/2022	2	SK	0830	1500	4	2	S	0	5	2	2	0	0
17/05/2022	2	SK	0830	1500	5	3	SSE	0	6	2	2	0	0
17/05/2022	2	SK	0830	1500	6	3	SSE	0	6	2	2	0	0
17/05/2022	2	SK	0830	1500	7	3	SSE	0	6	2	2	0	0
17/05/2022	2	TH	0800	1400	1	1	S	0	6	2	2	0	0
17/05/2022	2	TH	0800	1400	2	1	S	0	4	2	2	0	0
17/05/2022	2	TH	0800	1400	3	1	S	0	3	2	2	0	0
17/05/2022	2	TH	0800	1400	4	2	S	0	3	2	2	0	0
17/05/2022	2	TH	0800	1400	5	2	S	0	4	2	2	0	0
17/05/2022	2	TH	0800	1400	6	3	S	0	5	2	2	0	0
19/05/2022	2	SK	0845	1445	1	3	SW	0	6	2	2	0	0
19/05/2022	2	SK	0845	1445	2	4	SW	0	5	2	2	0	0
19/05/2022	2	SK	0845	1445	3	4	SW	0	4	2	2	0	0
19/05/2022	2	SK	0845	1445	4	3	SW	0	5	2	2	0	0
19/05/2022	2	SK	0845	1445	5	4	SW	0	6	2	2	0	0
19/05/2022	2	SK	0845	1445	6	4	SW	0	5	2	2	0	0
19/05/2022	2	TH	0845	1445	1	3	SW	0	4	2	2	0	0
19/05/2022	2	TH	0845	1445	2	3	SW	0	3	2	2	0	0
19/05/2022	2	TH	0845	1445	3	4	SW	0	3	2	2	0	0
19/05/2022	2	TH	0845	1445	4	3	SW	0	3	2	2	0	0
19/05/2022	2	TH	0845	1445	5	2	SW	0	2	2	2	0	0
19/05/2022	2	TH	0845	1445	6	2	SW	0	2	2	2	0	0
20/05/2022	2	SK	0830	1130	1	4	SW	0	7	1	2	0	0
20/05/2022	2	SK	0830	1130	2	4	SW	0	7	1	2	0	0
20/05/2022	2	SK	0830	1130	3	4	SW	0	7	1	2	0	0
20/05/2022	2	TH	0830	1100	1	4	SW	2	8	1	1	0	0
20/05/2022	2	TH	0830	1100	2	4	SW	0	6	2	2	0	0
20/05/2022	2	TH	0830	1100	3	4	SW	0	6	2	2	0	0
16/06/2022	3	EB	0945	1545	1	3	SW	0	8	2	2	0	0
16/06/2022	3	EB	0945	1545	2	3	SW	0	8	2	2	0	0
16/06/2022	3	EB	0945	1545	3	3	SW	0	8	2	2	0	0
16/06/2022	3	EB	0945	1545	4	3	SW	0	8	2	2	0	0
16/06/2022	3	EB	0945	1545	5	3	SW	0	7	2	2	0	0

Date	Survey visit	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
16/06/2022	3	EB	0945	1545	6	3	SW	0	8	2	2	0	0
16/06/2022	3	JRM	0740	1440	1	1	SW	0	2	2	2	0	0
16/06/2022	3	JRM	0740	1440	2	2	SW	0	4	2	2	0	0
16/06/2022	3	JRM	0740	1440	3	2	SW	0	5	2	2	0	0
16/06/2022	3	JRM	0740	1440	4	2	SW	0	6	2	2	0	0
16/06/2022	3	JRM	0740	1440	5	3	SW	0	7	2	2	0	0
16/06/2022	3	JRM	0740	1440	6	3	SW	0	8	2	2	0	0
16/06/2022	3	JRM	0740	1440	7	3	SW	0	8	2	2	0	0
16/06/2022	3	SK	0740	1440	1	3	SW	0	2	2	2	0	0
16/06/2022	3	SK	0740	1440	2	3	SW	0	4	2	2	0	0
16/06/2022	3	SK	0740	1440	3	3	SW	0	6	2	2	0	0
16/06/2022	3	SK	0740	1440	4	3	SW	0	7	2	2	0	0
16/06/2022	3	SK	0740	1440	5	3	SW	0	8	2	2	0	0
16/06/2022	3	SK	0740	1440	6	3	SW	0	8	2	2	0	0
16/06/2022	3	SK	0740	1440	7	2	SW	1	8	2	2	0	0
16/06/2022	3	TH	1000	1530	1	2	SW	0	3	2	2	0	0
16/06/2022	3	TH	1000	1530	2	3	SW	0	6	2	2	0	0
16/06/2022	3	TH	1000	1530	3	3	SW	0	7	2	2	0	0
16/06/2022	3	TH	1000	1530	4	3	SW	0	7	2	2	0	0
16/06/2022	3	TH	1000	1530	5	3	SW	1	7	2	2	0	0
16/06/2022	3	TH	1000	1530	6	3	SW	1	7	2	2	0	0
17/06/2022	3	EB	0900	1115	1	5	S	0	7	2	2	0	0
17/06/2022	3	EB	0900	1115	2	5	S	0	6	2	2	0	0
17/06/2022	3	EB	0900	1115	3	4	S	1	8	2	2	0	0
17/06/2022	3	TH	0900	1100	1	5	SW	0	6	2	2	0	0
17/06/2022	3	TH	0900	1100	2	5	SW	1	6	2	2	0	0
11/07/2022	4	JRM	0930	1430	1	2	SW	0	3	2	2	0	0
11/07/2022	4	JRM	0930	1430	2	3	SW	0	5	2	2	0	0
11/07/2022	4	JRM	0930	1430	3	3	SW	0	6	2	2	0	0
11/07/2022	4	JRM	0930	1430	4	3	SSW	0	6	2	2	0	0
11/07/2022	4	JRM	0930	1430	5	3	SSW	0	6	2	2	0	0
11/07/2022	4	SK	0930	1500	1	3	SW	0	6	2	2	0	0
11/07/2022	4	SK	0930	1500	2	3	SW	0	6	2	2	0	0

Date	Survey visit	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
11/07/2022	4	SK	0930	1500	3	3	SW	0	7	2	2	0	0
11/07/2022	4	SK	0930	1500	4	3	SW	0	5	2	2	0	0
11/07/2022	4	SK	0930	1500	5	3	SW	0	7	2	2	0	0
11/07/2022	4	SK	0930	1500	6	3	SW	0	7	2	2	0	0
12/07/2022	4	JRM	0900	1400	1	5	WSW	0	6	2	2	0	0
12/07/2022	4	JRM	0900	1400	2	5	WSW	0	7	2	2	0	0
12/07/2022	4	JRM	0900	1400	3	5	WSW	0	8	2	2	0	0
12/07/2022	4	JRM	0900	1400	4	5	WSW	0	8	2	2	0	0
12/07/2022	4	JRM	0900	1400	5	4	WSW	0	8	2	2	0	0
12/07/2022	4	SK	0900	1400	1	4	SW	0	7	2	2	0	0
12/07/2022	4	SK	0900	1400	2	4	SW	0	8	2	2	0	0
12/07/2022	4	SK	0900	1400	3	5	WSW	0	8	2	2	0	0
12/07/2022	4	SK	0900	1400	4	4	WSW	0	8	2	2	0	0
12/07/2022	4	SK	0900	1400	5	4	WSW	0	8	1	2	0	0
13/07/2022	4	JRM	0900	1400	1	6	WNW	0	4	2	2	0	0
13/07/2022	4	JRM	0900	1400	2	5	W	0	5	2	2	0	0
13/07/2022	4	JRM	0900	1400	3	5	W	0	5	2	2	0	0
13/07/2022	4	JRM	0900	1400	4	5	W	0	5	2	2	0	0
13/07/2022	4	JRM	0900	1400	5	6	W	0	4	2	2	0	0
13/07/2022	4	SK	0930	1400	1	5	W	0	6	1	2	0	0
13/07/2022	4	SK	0930	1400	2	4	W	0	6	1	2	0	0
13/07/2022	4	SK	0930	1400	3	3	W	0	6	1	2	0	0
13/07/2022	4	SK	0930	1400	4	3	W	0	6	1	2	0	0
13/07/2022	4	SK	0930	1400	5	3	W	0	6	1	2	0	0
14/07/2022	4	JRM	0845	1145	1	3	W	0	6	2	2	0	0
14/07/2022	4	JRM	0845	1145	2	3	W	0	5	2	2	0	0
14/07/2022	4	JRM	0845	1145	3	3	W	0	5	2	2	0	0
14/07/2022	4	SK	0845	1145	1	3	W	0	7	1	2	0	0
14/07/2022	4	SK	0845	1145	2	3	W	0	7	1	2	0	0
14/07/2022	4	SK	0845	1145	3	3	W	0	8	1	2	0	0

C.3 Winter Walkover Surveys

Winter walkover surveys were undertaken during the 2021/2022 non-breeding season. **Table C-5** details survey dates and weather data recorded. Refer to **Annex B** for survey methodology and **Annex D** for survey results.

Table C-5 Meteorological conditions during winter walkover surveys at Dunside (sorted chronologically)

Date	Survey visit	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
13/12/2021	1	JM	1010	1110	1	2	SW	0	8	2	2	0	0
13/12/2021	1	JM	1410	1510	2	3	SW	0	7	2	2	0	0
15/12/2021	1	JM	0840	1440	1	4	WSW	0	8	2	2	0	0
15/12/2021	1	JM	0840	1440	2	4	WSW	1	8	2	2	0	0
15/12/2021	1	JM	0840	1440	3	4	WSW	0	8	2	2	0	0
15/12/2021	1	JM	0840	1440	4	3	WSW	1	8	2	2	0	0
15/12/2021	1	JM	0840	1440	5	3	WSW	4	8	1	1	0	0
15/12/2021	1	JM	0840	1440	6	3	WSW	4	8	1	1	0	0
16/12/2021	1	JM	1210	1410	1	3	SW	0	4	2	2	0	0
16/12/2021	1	JM	1210	1410	2	3	SW	0	2	2	2	0	0
10/01/2022	1	JM	1335	1535	1	4	S	0	8	1	2	1	0
10/01/2022	1	JM	1335	1535	2	4	S	0	8	1	2	1	0
11/01/2022	1	JP/JM	1235	1435	1	2	SW	0	3	2	2	1	0
11/01/2022	1	JP/JM	1235	1435	2	2	SW	0	3	2	2	1	0
25/01/2022	2	JP	1240	1440	1	5	SW	0	8	2	2	0	0
25/01/2022	2	JP	1240	1440	2	4	SW	0	6	2	2	0	0
27/01/2022	2	JP	1125	1425	1	7	SW	0	2	2	2	0	0
27/01/2022	2	JP	1125	1425	2	6	SW	0	4	2	2	0	0
27/01/2022	2	JP	1125	1425	3	5	SW	0	3	2	2	0	0
27/01/2022	2	MW	0800	1300	1	5	WNW	0	3	2	2	0	0
27/01/2022	2	MW	0800	1300	2	5	WNW	0	4	2	2	0	0
27/01/2022	2	MW	0800	1300	3	6	WNW	0	4	2	2	0	0
27/01/2022	2	MW	0800	1300	4	6	W	0	4	2	2	0	0
27/01/2022	2	MW	0800	1300	5	6	W	0	4	2	2	0	0

Date	Survey visit	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
28/01/2022	2	MW	0745	1245	1	6	W	0	8	2	2	0	0
28/01/2022	2	MW	0745	1245	2	6	W	0	8	2	2	0	0
28/01/2022	2	MW	0745	1245	3	6	W	0	7	2	2	0	0
28/01/2022	2	MW	0745	1245	4	6	WNW	0	8	2	2	0	0
28/01/2022	2	MW	0745	1245	5	6	WNW	0	8	2	2	0	0
23/02/2022	3	EB	0915	1415	1	7	W	0	8	1	2	0	0
23/02/2022	3	EB	0915	1415	2	7	SW	1	8	1	2	0	0
23/02/2022	3	EB	0915	1415	3	7	S	1	8	1	2	0	0
23/02/2022	3	EB	0915	1415	4	6	S	0	8	1	2	0	0
23/02/2022	3	EB	0915	1415	5	7	S	1	8	1	2	0	0
23/02/2022	3	SK	0915	1415	1	6	SW	1	8	1	2	0	0
23/02/2022	3	SK	0915	1415	2	7	SW	1	8	1	2	0	0
23/02/2022	3	SK	0915	1415	3	7	SW	1	8	1	2	0	0
23/02/2022	3	SK	0915	1415	4	7	SW	1	8	1	2	0	0
23/02/2022	3	SK	0915	1415	5	7	SW	1	8	1	2	0	0
23/02/2022	3	JRM	0900	1400	1	6	SW	2	8	2	2	0	1
23/02/2022	3	JRM	0900	1400	2	6	SW	3	8	2	2	0	1
23/02/2022	3	JRM	0900	1400	3	6	SW	2	8	2	2	0	1
23/02/2022	3	JRM	0900	1400	4	7	SW	0	7	2	2	0	1
23/02/2022	3	JRM	0900	1400	5	7	SW	3	8	2	2	0	1

C.4 Scarce Breeding Bird Surveys

Scarce breeding bird surveys were undertaken during the 2022 breeding season. **Table C-6** details survey dates and weather data recorded. Refer to **Annex B** for survey methodology and **Annex D** for survey results.

Table C-6 Meteorological conditions during scarce breeding bird surveys at Dunside (sorted chronologically)

Date	Survey visit	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
15/03/2022	1	JRM	0800	0950	1	2	SSW	0	8	0	0	0	0
15/03/2022	1	JRM	0800	0950	2	3	SSW	0	8	0	0	0	0
16/03/2022	1	JR	0950	1450	1	2	WSW	4	8	1	1	0	0

Date	Survey visit	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
16/03/2022	1	JR	0950	1450	2	2	WSW	4	8	1	1	0	0
16/03/2022	1	JR	0950	1450	3	2	WSW	4	8	1	1	0	0
16/03/2022	1	JR	0950	1450	4	2	WSW	4	8	1	1	0	0
16/03/2022	1	JR	0950	1450	5	2	WSW	2	8	2	2	0	0
16/03/2022	1	JRM	0950	1450	1	3	WNW	2	8	1	2	0	0
16/03/2022	1	JRM	0950	1450	2	2	WNW	3	8	1	2	0	0
16/03/2022	1	JRM	0950	1450	3	3	WNW	3	8	1	2	0	0
16/03/2022	1	JRM	0950	1450	4	3	WNW	2	8	1	2	0	0
17/03/2022	1	JR	0700	1400	1	2	SSW	0	0	2	2	0	0
17/03/2022	1	JR	0700	1400	2	2	SSW	0	0	2	2	0	0
17/03/2022	1	JR	0700	1400	3	4	SSW	0	4	2	2	0	0
17/03/2022	1	JR	0700	1400	4	4	SSW	2	5	2	2	0	0
17/03/2022	1	JR	0700	1400	5	4	SW	0	4	2	2	0	0
17/03/2022	1	JR	0700	1400	6	4	SW	0	6	2	2	0	0
18/04/2022	2	JR	0930	1630	1	3	W	2	6	2	2	0	0
18/04/2022	2	JR	0930	1630	2	3	WSW	2	7	2	2	0	0
18/04/2022	2	JR	0930	1630	3	3	WSW	0	4	2	2	0	0
18/04/2022	2	JR	0930	1630	4	4	WSW	0	3	2	2	0	0
18/04/2022	2	JR	0930	1630	5	4	SW	0	4	2	2	0	0
18/04/2022	2	JR	0930	1630	6	3	SW	0	4	2	2	0	0
18/04/2022	2	JR	0930	1630	7	2	SW	0	4	2	2	0	0
19/04/2022	2	JR	0730	1530	1	0	-	0	0	-	2	1	0
19/04/2022	2	JR	0730	1530	2	1	SSE	0	1	2	2	0	0
19/04/2022	2	JR	0730	1530	3	2	SE	0	1	2	2	0	0
19/04/2022	2	JR	0730	1530	4	2	SE	0	3	2	2	0	0
19/04/2022	2	JR	0730	1530	5	1	var	0	4	2	2	0	0
19/04/2022	2	JR	0730	1530	6	2	NE	0	6	2	2	0	0
19/04/2022	2	JR	0730	1530	7	2	E	0	7	2	2	0	0
19/04/2022	2	JR	0730	1530	8	1	NE	2	7	2	2	0	0
20/04/2022	2	JR	0730	1530	1	1	SE	0	0	-	2	0	0
20/04/2022	2	JR	0730	1530	2	2	SE	0	0	-	2	0	0
20/04/2022	2	JR	0730	1530	3	2	SSE	0	0	-	2	0	0
20/04/2022	2	JR	0730	1530	4	2	SSE	0	0	2	2	0	0

Date	Survey visit	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
20/04/2022	2	JR	0730	1530	5	2	SSE	0	0	2	2	0	0
20/04/2022	2	JR	0730	1530	6	2	SE	0	1	2	2	0	0
20/04/2022	2	JR	0730	1530	7	2	E	0	1	2	2	0	0
20/04/2022	2	JR	0730	1530	8	2	E	0	1	2	2	0	0
21/04/2022	2	JR	0745	1045	1	2	NE	0	2	2	2	0	0
21/04/2022	2	JR	0745	1045	2	2	NE	0	1	2	2	0	0
21/04/2022	2	JR	0745	1045	3	2	NNE	0	5	1	2	0	0
21/04/2022	2	JRM	0820	1620	1	3	NE	0	2	2	2	0	0
21/04/2022	2	JRM	0820	1620	2	3	NE	1	7	0	0	0	0
21/04/2022	2	JRM	0820	1620	3	4	NE	0	2	2	2	0	0
21/04/2022	2	JRM	0820	1620	4	4	NE	0	3	2	2	0	0
21/04/2022	2	JRM	0820	1620	5	2	NE	0	2	2	2	0	0
21/04/2022	2	JRM	0820	1620	6	2	NE	0	3	2	2	0	0
21/04/2022	2	JRM	0820	1620	7	4	NE	0	3	2	2	0	0
21/04/2022	2	JRM	0820	1620	8	4	NE	0	4	2	2	0	0
22/04/2022	2	JRM	0930	1230	1	4	NE	1	8	0	0	0	0
22/04/2022	2	JRM	0930	1230	2	5	NE	0	8	1	1	0	0
22/04/2022	2	JRM	0930	1230	3	5	NE	0	8	1	1	0	0
02/05/2022	3	JRM	0915	1615	1	3	NE	0	8	2	2	0	0
02/05/2022	3	JRM	0915	1615	2	3	NE	0	8	2	2	0	0
02/05/2022	3	JRM	0915	1615	3	3	NE	0	8	2	2	0	0
02/05/2022	3	JRM	0915	1615	4	3	NE	0	8	2	2	0	0
02/05/2022	3	JRM	0915	1615	5	3	NE	0	8	2	2	0	0
02/05/2022	3	JRM	0915	1615	6	3	NE	0	8	2	2	0	0
02/05/2022	3	JRM	0915	1615	7	3	NE	0	8	2	2	0	0
03/05/2022	3	JRM	0940	1540	1	2	SE	0	8	1	1	0	0
03/05/2022	3	JRM	0940	1540	2	2	SE	0	8	2	2	0	0
03/05/2022	3	JRM	0940	1540	3	2	SE	0	8	2	2	0	0
03/05/2022	3	JRM	0940	1540	4	2	SSE	0	8	2	2	0	0
03/05/2022	3	JRM	0940	1540	5	2	S	0	8	2	2	0	0
03/05/2022	3	JRM	0940	1540	6	2	S	0	8	2	2	0	0
04/05/2022	3	JRM	0900	1500	1	3	WSW	0	7	2	2	0	0
04/05/2022	3	JRM	0900	1500	2	3	WSW	0	8	2	2	0	0

Date	Survey visit	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
04/05/2022	3	JRM	0900	1500	3	3	W	2	7	2	2	0	0
04/05/2022	3	JRM	0900	1500	4	4	WNW	0	5	2	2	0	0
04/05/2022	3	JRM	0900	1500	5	4	WNW	0	5	2	2	0	0
04/05/2022	3	JRM	0900	1500	6	4	WNW	0	5	2	2	0	0
16/05/2022	3	JRM	0930	1430	1	3	E	3	8	1	1	0	0
16/05/2022	3	JRM	0930	1430	2	3	ESE	2	8	1	1	0	0
16/05/2022	3	JRM	0930	1430	3	3	ESE	1	8	0	0	0	0
16/05/2022	3	JRM	0930	1430	4	3	ESE	1	8	0	0	0	0
16/05/2022	3	JRM	0930	1430	5	3	ESE	1	8	0	0	0	0
17/05/2022	3	JRM	0830	1430	1	2	S	0	6	2	2	0	0
17/05/2022	3	JRM	0830	1430	2	2	SSW	0	4	2	2	0	0
17/05/2022	3	JRM	0830	1430	3	2	SSW	0	4	2	2	0	0
17/05/2022	3	JRM	0830	1430	4	3	S	0	4	2	2	0	0
17/05/2022	3	JRM	0830	1430	5	3	SSE	0	4	2	2	0	0
17/05/2022	3	JRM	0830	1430	6	3	SSE	0	6	2	2	0	0
18/05/2022	3	JRM	0645	1015	1	5	SSW	0	5	2	2	0	0
18/05/2022	3	JRM	0645	1015	2	5	SSW	0	5	2	2	0	0
18/05/2022	3	JRM	0645	1015	3	5	SSW	0	4	2	2	0	0
18/05/2022	3	JRM	0645	1015	4	5	SSW	0	4	2	2	0	0
19/05/2022	3	JRM	0830	1430	1	2	WSW	0	4	2	2	0	0
19/05/2022	3	JRM	0830	1430	2	3	WSW	0	3	2	2	0	0
19/05/2022	3	JRM	0830	1430	3	4	WSW	0	3	2	2	0	0
19/05/2022	3	JRM	0830	1430	4	4	SW	0	4	2	2	0	0
19/05/2022	3	JRM	0830	1430	5	3	SW	0	3	2	2	0	0
19/05/2022	3	JRM	0830	1430	6	2	SW	0	3	2	2	0	0
20/05/2022	3	JRM	0830	1100	1	4	SW	0	7	2	2	0	0
20/05/2022	3	JRM	0830	1100	2	4	SW	0	7	2	2	0	0
20/05/2022	3	JRM	0830	1100	3	4	SW	0	7	2	2	0	0
06/06/2022	4	MW	0740	1340	1	3	NNE	0	8	2	2	0	0
06/06/2022	4	MW	0740	1340	2	3	NNE	0	8	2	2	0	0
06/06/2022	4	MW	0740	1340	3	4	NNE	0	8	2	2	0	0
06/06/2022	4	MW	0740	1340	4	4	NNE	0	8	2	2	0	0
06/06/2022	4	MW	0740	1340	5	4	NNE	0	8	2	2	0	0

Date	Survey visit	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
06/06/2022	4	MW	0740	1340	6	4	NNE	0	8	2	2	0	0
07/06/2022	4	MW	0630	1230	1	4	NNE	0	8	2	2	0	0
07/06/2022	4	MW	0630	1230	2	4	NNE	0	8	2	2	0	0
07/06/2022	4	MW	0630	1230	3	4	NNE	0	8	2	2	0	0
07/06/2022	4	MW	0630	1230	4	3	NNE	0	8	2	2	0	0
07/06/2022	4	MW	0630	1230	5	3	NNE	0	8	2	2	0	0
07/06/2022	4	MW	0630	1230	6	2	NNE	0	8	2	2	0	0
08/06/2022	4	MW	0700	1300	1	3	NE	1	8	0	0	0	0
08/06/2022	4	MW	0700	1300	2	3	NE	1	8	0	0	0	0
08/06/2022	4	MW	0700	1300	3	3	NE	1	8	0	0	0	0
08/06/2022	4	MW	0700	1300	4	3	NE	1	8	0	0	0	0
08/06/2022	4	MW	0700	1300	5	3	NE	1	8	0	0	0	0
08/06/2022	4	MW	0700	1300	6	3	NE	1	8	0	0	0	0
09/06/2022	4	MW	0800	1400	1	3	SW	0	8	2	2	0	0
09/06/2022	4	MW	0800	1400	2	3	SW	0	8	2	2	0	0
09/06/2022	4	MW	0800	1400	3	4	SW	0	8	2	2	0	0
09/06/2022	4	MW	0800	1400	4	4	SW	0	8	2	2	0	0
09/06/2022	4	MW	0800	1400	5	4	SW	0	8	2	2	0	0
09/06/2022	4	MW	0800	1400	6	4	SW	0	8	2	2	0	0
16/06/2022	4	MW	0615	1215	1	3	SSW	0	3	2	2	0	0
16/06/2022	4	MW	0615	1215	2	3	SSW	0	3	2	2	0	0
16/06/2022	4	MW	0615	1215	3	4	SSW	0	4	2	2	0	0
16/06/2022	4	MW	0615	1215	4	3	SSW	0	3	2	2	0	0
16/06/2022	4	MW	0615	1215	5	3	SSW	0	3	2	2	0	0
16/06/2022	4	MW	0615	1215	6	3	SSW	0	3	2	2	0	0
10/06/2022	4	MW	0700	1300	1	5	SW	0	5	2	2	0	0
10/06/2022	4	MW	0700	1300	2	6	SW	0	6	2	2	0	0
10/06/2022	4	MW	0700	1300	3	6	SW	0	5	2	2	0	0
10/06/2022	4	MW	0700	1300	4	6	SW	0	6	2	2	0	0
10/06/2022	4	MW	0700	1300	5	5	SW	0	5	2	2	0	0
10/06/2022	4	MW	0700	1300	6	5	SW	0	6	2	2	0	0
12/07/2022	5	MW	0600	1200	1	5	SSW	0	3	2	2	0	0
12/07/2022	5	MW	0600	1200	2	6	SSW	0	3	2	2	0	0

Date	Survey visit	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
12/07/2022	5	MW	0600	1200	3	7	SSW	0	3	2	2	0	0
12/07/2022	5	MW	0600	1200	4	7	SSW	0	7	2	2	0	0
12/07/2022	5	MW	0600	1200	5	7	SW	0	7	2	2	0	0
12/07/2022	5	MW	0600	1200	6	7	SW	0	7	2	2	0	0
13/07/2022	5	MW	0600	1200	1	5	W	0	3	2	2	0	0
13/07/2022	5	MW	0600	1200	2	5	W	0	3	2	2	0	0
13/07/2022	5	MW	0600	1200	3	6	W	0	4	2	2	0	0
13/07/2022	5	MW	0600	1200	4	6	W	0	4	2	2	0	0
13/07/2022	5	MW	0600	1200	5	5	W	0	4	2	2	0	0
13/07/2022	5	MW	0600	1200	6	5	W	0	4	2	2	0	0
14/07/2022	5	MW	0700	1300	1	5	WSW	0	8	2	2	0	0
14/07/2022	5	MW	0700	1300	2	5	WSW	0	8	2	2	0	0
14/07/2022	5	MW	0700	1300	3	5	WSW	0	8	2	2	0	0
14/07/2022	5	MW	0700	1300	4	5	WSW	0	7	2	2	0	0
14/07/2022	5	MW	0700	1300	5	4	WSW	0	7	2	2	0	0
14/07/2022	5	MW	0700	1300	6	4	WSW	0	7	2	2	0	0
01/08/2022	6	MW	0730	1330	1	3	SW	0	3	2	2	0	0
01/08/2022	6	MW	0730	1330	2	4	SW	0	4	2	2	0	0
01/08/2022	6	MW	0730	1330	3	4	SW	0	4	2	2	0	0
01/08/2022	6	MW	0730	1330	4	5	SW	0	4	2	2	0	0
01/08/2022	6	MW	0730	1330	5	4	SW	0	3	2	2	0	0
01/08/2022	6	MW	0730	1330	6	4	SW	0	3	2	2	0	0
02/08/2022	6	MW	0830	1430	1	3	SW	0	8	2	2	0	0
02/08/2022	6	MW	0830	1430	2	3	SW	0	8	2	2	0	0
02/08/2022	6	MW	0830	1430	3	4	SW	2	8	1	1	0	0
02/08/2022	6	MW	0830	1430	4	4	SW	2	8	2	2	0	0
02/08/2022	6	MW	0830	1430	5	5	SW	0	7	2	2	0	0
02/08/2022	6	MW	0830	1430	6	5	SW	0	7	2	2	0	0
03/08/2022	6	MW	0540	1140	1	3	SW	0	8	2	2	0	0
03/08/2022	6	MW	0540	1140	2	3	SW	0	8	2	2	0	0
03/08/2022	6	MW	0540	1140	3	4	SW	0	8	2	2	0	0
03/08/2022	6	MW	0540	1140	4	4	SW	0	8	2	2	0	0
03/08/2022	6	MW	0540	1140	5	5	SW	2	8	1	1	0	0

Date	Survey visit	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
03/08/2022	6	MW	0540	1140	6	5	SW	0	8	2	2	0	0
04/08/2022	6	MW	0630	1230	1	4	W	3	8	2	2	0	0
04/08/2022	6	MW	0630	1230	2	4	W	3	8	2	2	0	0
04/08/2022	6	MW	0630	1230	3	5	W	0	7	2	2	0	0
04/08/2022	6	MW	0630	1230	4	5	SW	0	6	2	2	0	0
04/08/2022	6	MW	0630	1230	5	5	WSW	0	6	2	2	0	0
04/08/2022	6	MW	0630	1230	6	6	WSW	0	6	2	2	0	0
05/08/2022	6	MW	0615	1215	1	4	W	0	8	2	2	0	0
05/08/2022	6	MW	0615	1215	2	4	W	0	7	2	2	0	0
05/08/2022	6	MW	0615	1215	3	5	WSW	0	6	2	2	0	0
05/08/2022	6	MW	0615	1215	4	5	WSW	0	6	2	2	0	0
05/08/2022	6	MW	0615	1215	5	6	WSW	0	5	2	2	0	0
05/08/2022	6	MW	0615	1215	6	6	WSW	0	6	2	2	0	0

C.5 Black Grouse Surveys

Black grouse surveys were undertaken during the 2022 breeding season. **Table C-7** details survey dates and weather data recorded. Refer to **Annex B** for survey methodology and **Annex D** for survey results.

Table C-7 Meteorological conditions during black grouse surveys at Dunside (sorted chronologically)

Date	Survey visit	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
20/04/2022	1	JM	0520	0820	1	0	-	0	0	2	2	1	0
20/04/2022	1	JM	0520	0820	2	0	-	0	1	2	2	1	0
20/04/2022	1	JM	0520	0820	3	0	-	0	1	2	2	0	0
21/04/2022	1	JM	0515	0815	1	1	N	0	4	2	2	1	0
21/04/2022	1	JM	0515	0815	2	2	N	0	4	2	2	1	0
21/04/2022	1	JM	0515	0815	3	2	NE	0	3	2	2	0	0
18/05/2022	2	JRM	0415	0645	1	4	SSW	0	5	2	2	0	0
18/05/2022	2	JRM	0415	0645	2	4	SSW	0	4	2	2	0	0
18/05/2022	2	JRM	0415	0645	3	5	SSW	0	4	2	2	0	0
18/05/2022	2	SK	0415	0645	1	4	SSW	0	5	1	2	0	0

Date	Survey visit	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
18/05/2022	2	SK	0415	0645	2	4	SSW	0	4	1	2	0	0
18/05/2022	2	SK	0415	0645	3	4	SSW	0	4	1	2	0	0
18/05/2022	2	TH	0415	0645	1	4	SW	0	5	2	2	0	0
18/05/2022	2	TH	0415	0645	2	4	SW	0	5	2	2	0	0
18/05/2022	2	TH	0415	0645	3	5	SW	0	4	2	2	0	0

ANNEX D. ORNITHOLOGICAL SURVEY RESULTS

Sections **D.1** to **D.6** contain the data gathered by MacArthur Green between November 2021 and November 2022. **Annex F** provides an interim report provided to the Applicant by Wood and the survey results are detailed in Section 3. Confidential information provided by Wood to MacArthur Green for barn owl, merlin and short-eared owl is provided in **Confidential Technical Appendix 7.2**.

D.1 Flight Activity Records: Target Species

In accordance with NatureScot (SNH 2017), target species are those which may be considered to be at risk from the potential effects of wind farms. All flights of target species within the turbine area and the surrounding area were mapped and are detailed in **Table D-1**. **Table D-2** provides the flight activity recorded by Wood (and processed for collision modelling by MacArthur Green).

Table D-1 Details of target species recorded during flight activity surveys by MacArthur Green (sorted by species)

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
21/02/2022	SP	4	1051	Curlew	3	104	0.00	0.00	0.00	0.00	0.00	0.00	74.00	30.00	0.00	0.00
17/03/2022	JRM	10	0808	Curlew	2	40	9.64	0.00	0.00	0.00	0.00	30.36	0.00	0.00	0.00	0.00
17/03/2022	JRM	10	0818	Curlew	2	50	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00
17/03/2022	JRM	10	0834	Curlew	2	60	0.00	0.00	0.00	0.00	0.00	45.00	15.00	0.00	0.00	0.00
17/03/2022	JRM	10	0840	Curlew	1	120	0.00	0.00	0.00	0.00	0.00	90.00	30.00	0.00	0.00	0.00
17/03/2022	JRM	10	0853	Curlew	1	62	13.19	4.21	0.00	0.00	0.00	33.81	10.79	0.00	0.00	0.00
17/03/2022	JRM	10	0930	Curlew	4	41	0.00	0.00	0.00	0.00	0.00	26.00	15.00	0.00	0.00	0.00
17/03/2022	JRM	10	1250	Curlew	2	50	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00
24/03/2022	MW	9	0740	Curlew	2	45	43.48	0.00	0.00	0.00	0.00	1.52	0.00	0.00	0.00	0.00
24/03/2022	SK	11	1518	Curlew	1	65	1.14	2.28	1.52	0.00	0.00	13.86	27.72	18.48	0.00	0.00
24/03/2022	SK	11	1538	Curlew	1	51	0.00	0.00	0.00	0.00	0.00	0.00	30.00	21.00	0.00	0.00
24/03/2022	SK	11	1620	Curlew	1	97	8.20	16.40	16.40	12.03	0.00	6.80	13.60	13.60	9.97	0.00
25/03/2022	SK	8	1050	Curlew	2	35	35.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25/03/2022	SK	8	1403	Curlew	1	79	8.27	18.75	16.54	0.00	0.00	6.73	15.25	13.46	0.00	0.00
25/03/2022	MW	11	0705	Curlew	2	30	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00	0.00	0.00
25/03/2022	MW	11	0755	Curlew	4	60	48.76	0.00	0.00	0.00	0.00	11.24	0.00	0.00	0.00	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
25/03/2022	MW	11	1053	Curlew	2	35	35.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25/03/2022	MW	11	1140	Curlew	2	30	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13/04/2022	SK	9	1035	Curlew	1	47	0.00	47.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13/04/2022	SK	9	1057	Curlew	1	24	15.00	9.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13/04/2022	SK	9	1141	Curlew	1	54	7.17	11.95	23.90	0.00	0.00	1.83	3.05	6.10	0.00	0.00
13/04/2022	SK	9	1141	Curlew	1	32	1.70	12.78	12.78	0.00	0.00	0.30	2.22	2.22	0.00	0.00
13/04/2022	SK	9	1338	Curlew	2	126	32.07	37.73	9.43	0.00	0.00	18.93	22.27	5.57	0.00	0.00
13/04/2022	TH	10	1230	Curlew	3	60	0.00	0.00	0.00	0.00	0.00	15.00	45.00	0.00	0.00	0.00
13/04/2022	TH	10	1322	Curlew	2	120	0.00	0.00	0.00	0.00	0.00	15.00	30.00	45.00	30.00	0.00
13/04/2022	TH	10	1354	Curlew	1	30	0.00	0.00	0.00	0.00	0.00	0.00	15.00	15.00	0.00	0.00
13/04/2022	EB	11	1019	Curlew	2	12	0.00	0.00	0.00	0.00	0.00	12.00	0.00	0.00	0.00	0.00
13/04/2022	EB	11	1152	Curlew	3	42	0.00	0.00	0.00	0.00	0.00	27.00	15.00	0.00	0.00	0.00
13/04/2022	EB	11	1353	Curlew	1	15	0.00	1.28	0.00	0.00	0.00	0.00	13.72	0.00	0.00	0.00
13/04/2022	EB	11	1451	Curlew	3	25	0.00	0.00	0.00	0.00	0.00	0.00	15.00	10.00	0.00	0.00
13/04/2022	EB	11	1544	Curlew	2	14	0.00	0.00	0.00	0.00	0.00	14.00	0.00	0.00	0.00	0.00
14/04/2022	EB	7	0948	Curlew	1	18	3.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14/04/2022	EB	7	1008	Curlew	2	35	0.00	35.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14/04/2022	EB	7	1349	Curlew	1	10	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14/04/2022	TH	9	1110	Curlew	2	135	0.00	14.38	100.67	14.38	0.00	0.00	0.62	4.33	0.62	0.00
14/04/2022	SK	10	0928	Curlew	2	85	0.04	0.06	0.02	0.00	0.00	24.96	44.94	14.98	0.00	0.00
14/04/2022	SK	10	1055	Curlew	2	92	0.00	0.00	0.00	0.00	0.00	30.00	62.00	0.00	0.00	0.00
14/04/2022	SK	10	1241	Curlew	2	80	0.00	0.00	0.00	0.00	0.00	0.00	50.00	30.00	0.00	0.00
14/04/2022	SK	10	1252	Curlew	2	63	0.00	0.00	0.00	0.00	0.00	3.00	60.00	0.00	0.00	0.00
14/04/2022	SK	10	1307	Curlew	2	99	0.00	0.00	0.00	0.00	0.00	15.00	84.00	0.00	0.00	0.00
03/05/2022	TH	9	0953	Curlew	1	30	0.00	0.00	24.94	0.00	0.00	0.00	0.00	5.06	0.00	0.00
03/05/2022	TH	9	1153	Curlew	2	150	125.27	0.00	0.00	0.00	0.00	24.73	0.00	0.00	0.00	0.00
03/05/2022	TH	9	1242	Curlew	1	40	0.00	0.00	0.00	10.76	0.00	0.00	0.00	0.00	29.24	0.00
03/05/2022	TH	9	1354	Curlew	1	30	21.07	0.00	0.00	0.00	0.00	8.93	0.00	0.00	0.00	0.00
03/05/2022	TH	9	1524	Curlew	1	60	0.00	0.00	4.05	1.35	0.00	0.00	0.00	40.95	13.65	0.00
04/05/2022	TH	8	1011	Curlew	6	120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.00	90.00
05/05/2022	TH	10	1121	Curlew	1	40	0.00	0.00	0.00	0.00	0.00	25.00	15.00	0.00	0.00	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
05/05/2022	TH	10	1121	Curlew	1	90	0.00	0.00	0.00	0.00	0.00	0.00	45.00	45.00	0.00	0.00
05/05/2022	TH	10	1144	Curlew	1	60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.00	0.00
05/05/2022	TH	10	1221	Curlew	1	30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.00
05/05/2022	TH	10	1227	Curlew	1	60	6.73	0.00	0.00	0.00	0.00	53.27	0.00	0.00	0.00	0.00
05/05/2022	JRM	11	1002	Curlew	1	45	0.00	0.00	0.00	0.00	0.00	30.00	15.00	0.00	0.00	0.00
05/05/2022	JRM	11	1022	Curlew	1	70	1.60	9.58	0.00	0.00	0.00	8.40	50.42	0.00	0.00	0.00
05/05/2022	JRM	11	1118	Curlew	4	43	0.00	0.00	0.00	0.00	0.00	15.00	28.00	0.00	0.00	0.00
05/05/2022	JRM	11	1140	Curlew	2	30	7.99	7.99	0.00	0.00	0.00	7.01	7.01	0.00	0.00	0.00
05/05/2022	JRM	11	1223	Curlew	2	87	0.00	0.00	0.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
05/05/2022	JRM	11	1257	Curlew	1	68	0.00	0.00	0.00	0.00	0.00	38.00	30.00	0.00	0.00	0.00
05/05/2022	JRM	11	1438	Curlew	1	23	0.00	0.00	0.00	0.00	0.00	23.00	0.00	0.00	0.00	0.00
18/05/2022	SK	8	0703	Curlew	1	33	15.00	18.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13/06/2022	JRM	8	1130	Curlew	1	33	0.00	7.26	0.00	0.00	0.00	0.00	25.74	0.00	0.00	0.00
14/06/2022	JRM	9	1110	Curlew	1	15	14.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
14/06/2022	JRM	9	1110	Curlew	1	7	7.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14/06/2022	JRM	9	1112	Curlew	2	15	14.83	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00
14/06/2022	JRM	9	1119	Curlew	1	5	4.94	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00
14/06/2022	JRM	9	1122	Curlew	1	17	17.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14/06/2022	JRM	9	1153	Curlew	1	17	17.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14/06/2022	JRM	9	1205	Curlew	1	20	5.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14/06/2022	JRM	9	1215	Curlew	1	22	0.00	8.06	0.00	0.00	0.00	0.00	13.94	0.00	0.00	0.00
14/06/2022	JRM	9	1220	Curlew	1	40	25.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14/06/2022	JRM	9	1245	Curlew	1	80	1.55	23.23	0.00	0.00	0.00	3.45	51.77	0.00	0.00	0.00
14/06/2022	JRM	9	1504	Curlew	1	14	14.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15/06/2022	SK	11	1235	Curlew	1	72	0.00	0.00	0.00	0.00	0.00	27.00	45.00	0.00	0.00	0.00
15/06/2022	SK	11	1415	Curlew	2	49	0.00	0.00	0.00	0.00	0.00	4.00	45.00	0.00	0.00	0.00
15/06/2022	SK	11	1439	Curlew	1	92	0.39	14.66	2.93	0.00	0.00	1.61	60.34	12.07	0.00	0.00
20/07/2022	TH	11	1014	Curlew	3	150	0.00	0.00	40.06	26.70	0.00	0.00	0.00	49.94	33.30	0.00
20/07/2022	TH	11	1551	Curlew	2	180	0.00	0.00	3.84	3.84	38.42	0.00	0.00	11.16	11.16	111.58
21/07/2022	SK	10	1111	Curlew	1	66	0.00	0.00	0.00	0.00	0.00	36.00	30.00	0.00	0.00	0.00
15/06/2022	SK	11	1544	Golden eagle	1	763	5.65	11.29	16.94	45.18	64.56	24.35	48.71	73.06	194.82	278.44

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
22/07/2022	TH	7	0918	Golden eagle	1	150	0.00	0.00	0.00	30.70	46.05	0.00	0.00	0.00	29.30	43.95
13/09/2021	MW	11	0802	Golden plover	5	40	0.00	0.00	0.00	0.00	0.00	40.00	0.00	0.00	0.00	0.00
16/09/2021	MW	9	0711	Golden plover	17	75	30.04	0.00	20.03	0.00	0.00	14.96	0.00	9.97	0.00	0.00
25/10/2021	JR	8	1127	Golden plover	7	44	4.75	5.09	5.09	0.00	0.00	9.25	9.91	9.91	0.00	0.00
25/10/2021	TH	10	0934	Golden plover	2	15	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00	0.00	0.00
25/10/2021	TH	10	1030	Golden plover	1	20	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00
03/11/2021	JR	5	1110	Golden plover	3	12	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16/11/2021	JRM	8	1305	Golden plover	5	120	0.00	11.46	34.38	0.00	0.00	0.00	18.54	55.62	0.00	0.00
13/12/2021	JM	4	1121	Golden plover	6	26	8.65	0.00	0.00	0.00	0.00	17.35	0.00	0.00	0.00	0.00
14/12/2021	JM	6	1015	Golden plover	14	25	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/01/2022	JP/JM	3	1028	Golden plover	6	5	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/01/2022	JP/JM	3	1053	Golden plover	14	3	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/01/2022	JP/JM	3	1120	Golden plover	22	18	18.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/01/2022	JP/JM	3	1125	Golden plover	22	12	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/01/2022	JP/JM	3	1228	Golden plover	14	10	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/01/2022	JM	5	0938	Golden plover	5	28	28.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13/01/2022	JP	4	0924	Golden plover	6	20	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00
13/01/2022	JP	4	1020	Golden plover	6	40	0.00	0.00	0.00	0.00	0.00	10.00	15.00	15.00	0.00	0.00
24/01/2022	JP	2	1256	Golden plover	4	17	0.00	0.00	0.00	0.00	0.00	17.00	0.00	0.00	0.00	0.00
24/01/2022	MW	3	0900	Golden plover	5	30	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24/01/2022	MW	3	0930	Golden plover	16	35	25.04	0.00	0.00	0.00	0.00	9.96	0.00	0.00	0.00	0.00
24/01/2022	MW	3	1155	Golden plover	12	35	32.20	0.00	0.00	0.00	0.00	2.80	0.00	0.00	0.00	0.00
24/01/2022	MW	3	1335	Golden plover	27	27	23.10	0.00	0.00	0.00	0.00	3.90	0.00	0.00	0.00	0.00
25/01/2022	MW	1	1150	Golden plover	3	28	0.00	0.00	0.00	0.00	0.00	28.00	0.00	0.00	0.00	0.00
25/01/2022	JP	4	1016	Golden plover	2	6	0.00	0.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00	0.00
25/01/2022	JP	4	1128	Golden plover	1	24	11.01	6.61	0.00	0.00	0.00	3.99	2.39	0.00	0.00	0.00
27/01/2022	JP	4	0930	Golden plover	7	36	15.50	0.00	0.00	0.00	0.00	20.50	0.00	0.00	0.00	0.00
28/01/2022	JP	2	0830	Golden plover	42	28	0.00	0.00	0.00	0.00	0.00	0.00	28.00	0.00	0.00	0.00
21/02/2022	SP	4	1108	Golden plover	40	167	0.00	0.00	0.00	0.00	0.00	60.00	60.00	47.00	0.00	0.00
21/02/2022	SP	4	1205	Golden plover	53	225	0.00	8.48	16.96	0.00	0.00	0.00	66.52	133.04	0.00	0.00
21/02/2022	SP	4	1228	Golden plover	8	25	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
21/02/2022	SP	4	1305	Golden plover	95	215	0.00	0.00	0.00	0.00	0.00	0.00	50.00	165.00	0.00	0.00
21/02/2022	SP	4	1329	Golden plover	35	98	0.00	0.00	0.00	0.00	0.00	68.00	30.00	0.00	0.00	0.00
22/02/2022	SK	5	1114	Golden plover	3	66	0.00	15.00	51.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22/02/2022	SK	5	1137	Golden plover	3	49	0.00	30.00	19.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22/02/2022	SK	5	1208	Golden plover	3	33	0.00	15.00	18.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
02/03/2022	JR	3	0921	Golden plover	3	16	0.90	13.45	0.00	0.00	0.00	0.10	1.55	0.00	0.00	0.00
02/03/2022	JR	3	0944	Golden plover	1	25	20.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
02/03/2022	JR	3	1001	Golden plover	2	10	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
02/03/2022	JR	3	1122	Golden plover	3	10	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14/03/2022	JRM	5	1112	Golden plover	2	30	0.00	0.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15/03/2022	JRM	3	0951	Golden plover	36	60	0.00	60.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15/03/2022	JRM	3	1013	Golden plover	40	180	0.00	0.00	31.11	93.32	0.00	0.00	0.00	13.89	41.68	0.00
15/03/2022	JRM	3	1017	Golden plover	5	37	7.00	15.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15/03/2022	JRM	3	1022	Golden plover	4	18	18.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15/03/2022	JRM	3	1032	Golden plover	5	6	6.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15/03/2022	JRM	3	1035	Golden plover	4	10	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15/03/2022	JRM	3	1041	Golden plover	1	24	9.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15/03/2022	JRM	3	1052	Golden plover	10	25	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15/03/2022	JRM	3	1102	Golden plover	20	360	84.37	204.91	0.00	0.00	0.00	20.63	50.09	0.00	0.00	0.00
15/03/2022	JRM	3	1120	Golden plover	30	600	0.00	235.73	235.73	0.00	0.00	0.00	64.27	64.27	0.00	0.00
15/03/2022	JRM	3	1230	Golden plover	90	50	0.00	0.00	37.76	0.00	0.00	0.00	0.00	12.24	0.00	0.00
15/03/2022	JRM	3	1355	Golden plover	26	106	0.00	0.00	106.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15/03/2022	JRM	3	1600	Golden plover	40	300	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15/03/2022	JR	4	1049	Golden plover	3	14	0.00	0.00	0.00	0.00	0.00	14.00	0.00	0.00	0.00	0.00
15/03/2022	JR	4	1129	Golden plover	3	18	0.00	0.00	0.00	0.00	0.00	18.00	0.00	0.00	0.00	0.00
15/03/2022	JR	4	1155	Golden plover	28	21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.00	0.00	0.00
15/03/2022	JR	4	1238	Golden plover	20	59	0.00	6.23	6.02	0.00	0.00	0.00	23.77	22.98	0.00	0.00
15/03/2022	JR	4	1350	Golden plover	7	12	0.00	0.00	0.00	0.00	0.00	0.00	12.00	0.00	0.00	0.00
17/03/2022	JRM	10	0824	Golden plover	50	137	0.76	4.04	1.35	0.00	0.00	16.24	85.96	28.65	0.00	0.00
24/03/2022	SK	7	1248	Golden plover	2	73	11.53	34.58	9.99	0.00	0.00	3.47	10.42	3.01	0.00	0.00
24/03/2022	MW	9	0755	Golden plover	1	50	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
24/03/2022	MW	9	0842	Golden plover	14	40	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24/03/2022	MW	9	1000	Golden plover	1	55	55.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24/03/2022	SK	11	1715	Golden plover	2	26	0.00	0.00	0.00	0.00	0.00	15.00	11.00	0.00	0.00	0.00
25/03/2022	SK	8	1017	Golden plover	3	28	13.56	0.00	0.00	0.00	0.00	14.44	0.00	0.00	0.00	0.00
25/03/2022	SK	8	1421	Golden plover	2	20	16.23	0.00	0.00	0.00	0.00	3.77	0.00	0.00	0.00	0.00
25/03/2022	MW	11	0711	Golden plover	48	80	0.00	0.00	0.00	0.00	0.00	50.00	30.00	0.00	0.00	0.00
25/03/2022	MW	11	1304	Golden plover	90	60	0.00	4.39	13.17	0.00	0.00	0.00	10.61	31.83	0.00	0.00
13/04/2022	SK	9	1317	Golden plover	180	68	38.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13/04/2022	SK	9	1518	Golden plover	400	1620	208.95	253.73	1149.24	0.00	0.00	1.05	1.27	5.76	0.00	0.00
13/04/2022	EB	11	0947	Golden plover	9	10	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
13/04/2022	EB	11	1117	Golden plover	2	8	0.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00
13/04/2022	EB	11	1222	Golden plover	18	55	0.00	2.09	3.48	2.09	0.00	0.00	12.91	21.52	12.91	0.00
14/04/2022	TH	9	1029	Golden plover	1	45	17.44	0.00	0.00	0.00	0.00	27.56	0.00	0.00	0.00	0.00
14/04/2022	SK	10	1133	Golden plover	2	67	0.98	4.21	4.21	0.00	0.00	6.02	25.79	25.79	0.00	0.00
14/04/2022	SK	10	1408	Golden plover	14	103	0.00	0.00	0.00	0.00	0.00	0.00	73.00	30.00	0.00	0.00
02/05/2022	TH	7	1128	Golden plover	1	20	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03/05/2022	TH	9	1028	Golden plover	1	10	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
05/05/2022	JRM	11	0855	Golden plover	1	23	0.00	0.00	0.00	0.00	0.00	8.00	15.00	0.00	0.00	0.00
05/05/2022	JRM	11	1037	Golden plover	6	109	0.00	37.07	26.06	0.00	0.00	0.00	26.93	18.94	0.00	0.00
18/05/2022	SK	8	0658	Golden plover	1	49	19.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/05/2022	SK	8	0734	Golden plover	1	30	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21/07/2022	TH	8	1058	Golden plover	7	90	1.91	3.82	5.73	0.00	0.00	13.09	26.18	39.27	0.00	0.00
21/07/2022	SK	10	1047	Golden plover	3	78	0.00	3.61	2.26	0.00	0.00	0.00	44.39	27.74	0.00	0.00
01/08/2022	JRM	10	1304	Golden plover	1	17	17.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14/09/2021	MW	10	0833	Goshawk	1	80	0.00	0.00	0.00	0.00	0.00	50.00	30.00	0.00	0.00	0.00
04/11/2021	MW	2	0814	Goshawk	1	75	0.00	0.00	0.00	0.00	0.00	15.00	60.00	0.00	0.00	0.00
04/11/2021	JR	3	1226	Goshawk	2	445	0.00	0.00	0.00	0.00	0.00	0.00	280.00	165.00	0.00	0.00
28/01/2022	JP	2	1030	Goshawk	1	50	0.00	0.00	0.00	0.00	0.00	20.00	30.00	0.00	0.00	0.00
17/03/2022	JRM	10	1037	Goshawk	1	42	0.00	0.00	0.00	0.00	0.00	42.00	0.00	0.00	0.00	0.00
17/03/2022	JRM	10	1118	Goshawk	1	80	0.00	0.00	0.00	0.00	0.00	35.00	45.00	0.00	0.00	0.00
26/10/2021	TH	11	0927	Greylag goose	2	60	0.00	0.00	25.66	0.00	0.00	0.00	0.00	34.34	0.00	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
26/10/2021	TH	11	1005	Greylag goose	6	90	0.00	0.00	0.00	2.80	14.02	0.00	0.00	0.00	12.20	60.98
16/12/2021	JM	2	0915	Greylag goose	1	33	0.00	0.00	0.00	0.00	0.00	33.00	0.00	0.00	0.00	0.00
25/01/2022	JP	4	1206	Greylag goose	2	34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	34.00	0.00	0.00
28/01/2022	JP	2	0838	Greylag goose	14	90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	90.00	0.00
14/02/2022	SP	1	1156	Greylag goose	2	237	1.01	2.19	0.00	0.00	0.00	73.99	159.81	0.00	0.00	0.00
22/02/2022	JRM	1	1108	Greylag goose	2	41	0.00	0.00	0.00	0.00	0.00	41.00	0.00	0.00	0.00	0.00
22/02/2022	JRM	1	1113	Greylag goose	2	50	0.00	0.00	0.00	0.00	0.00	45.00	5.00	0.00	0.00	0.00
02/03/2022	JR	3	1040	Greylag goose	4	21	21.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03/03/2022	JR	1	0904	Greylag goose	1	12	0.00	0.00	0.00	0.00	0.00	12.00	0.00	0.00	0.00	0.00
14/03/2022	JRM	5	1352	Greylag goose	2	60	0.00	17.36	0.00	0.00	0.00	0.00	42.64	0.00	0.00	0.00
15/03/2022	JRM	3	0953	Greylag goose	2	45	30.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15/03/2022	JRM	3	1023	Greylag goose	2	20	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15/03/2022	JR	4	0941	Greylag goose	2	90	0.00	0.00	0.00	0.00	0.00	45.00	45.00	0.00	0.00	0.00
15/03/2022	JR	4	1003	Greylag goose	2	51	0.00	0.71	0.30	0.00	0.00	0.00	35.29	14.70	0.00	0.00
15/03/2022	JR	4	1015	Greylag goose	2	57	0.00	0.00	0.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
15/03/2022	JR	4	1419	Greylag goose	2	108	0.00	0.00	0.00	0.00	0.00	0.00	108.00	0.00	0.00	0.00
15/03/2022	JR	4	1548	Greylag goose	2	25	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00
24/03/2022	SK	11	1515	Greylag goose	6	47	0.00	0.00	0.00	0.00	0.00	17.00	0.00	30.00	0.00	0.00
24/03/2022	SK	11	1528	Greylag goose	4	28	0.00	0.00	0.00	0.00	0.00	28.00	0.00	0.00	0.00	0.00
24/03/2022	SK	11	1646	Greylag goose	1	14	0.00	0.00	0.00	0.00	0.00	14.00	0.00	0.00	0.00	0.00
24/03/2022	SK	11	1650	Greylag goose	2	79	17.60	41.67	13.89	0.00	0.00	1.40	3.33	1.11	0.00	0.00
25/03/2022	SK	8	1015	Greylag goose	2	76	0.00	25.57	16.68	0.00	0.00	0.00	20.43	13.32	0.00	0.00
25/03/2022	SK	8	1358	Greylag goose	1	42	0.00	0.00	0.00	0.00	0.00	0.00	12.00	30.00	0.00	0.00
13/04/2022	TH	10	1529	Greylag goose	3	30	0.00	0.00	0.00	0.00	0.00	15.00	15.00	0.00	0.00	0.00
13/04/2022	EB	11	1514	Greylag goose	1	18	0.00	0.00	0.00	0.00	0.00	15.00	3.00	0.00	0.00	0.00
14/04/2022	TH	9	1053	Greylag goose	1	30	0.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00	0.00
14/04/2022	TH	9	1104	Greylag goose	2	30	0.00	8.55	8.55	0.00	0.00	0.00	6.45	6.45	0.00	0.00
14/04/2022	TH	9	1127	Greylag goose	2	160	0.00	6.10	52.85	6.10	0.00	0.00	8.90	77.15	8.90	0.00
14/04/2022	TH	9	1259	Greylag goose	1	40	17.97	5.99	0.00	0.00	0.00	12.03	4.01	0.00	0.00	0.00
14/04/2022	TH	9	1317	Greylag goose	2	30	0.00	0.00	0.00	0.00	0.00	15.00	15.00	0.00	0.00	0.00
02/05/2022	TH	7	1523	Greylag goose	2	90	2.61	5.22	7.83	0.00	0.00	12.39	24.78	37.17	0.00	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
03/05/2022	TH	9	1031	Greylag goose	1	40	17.73	10.64	0.00	0.00	0.00	7.27	4.36	0.00	0.00	0.00
04/05/2022	TH	8	1132	Greylag goose	2	90	43.27	8.65	0.00	0.00	0.00	31.73	6.35	0.00	0.00	0.00
05/05/2022	TH	10	0857	Greylag goose	1	60	0.00	0.00	0.00	0.00	0.00	0.00	45.00	15.00	0.00	0.00
05/05/2022	TH	10	1000	Greylag goose	2	90	0.00	0.00	0.00	0.00	0.00	0.00	15.00	30.00	30.00	15.00
15/06/2022	SK	11	1103	Greylag goose	2	99	0.00	0.00	0.00	0.00	0.00	9.00	90.00	0.00	0.00	0.00
01/08/2022	JRM	10	1307	Greylag goose	7	20	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00
04/11/2021	MW	2	1217	Hen harrier	1	50	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00
05/11/2021	MW	4	0718	Hen harrier	1	50	5.03	0.00	0.00	0.00	0.00	44.97	0.00	0.00	0.00	0.00
13/12/2021	JM	4	1129	Hen harrier	1	47	0.00	0.00	0.00	0.00	0.00	47.00	0.00	0.00	0.00	0.00
13/12/2021	JM	4	1200	Hen harrier	1	59	14.09	0.00	0.00	0.00	0.00	44.91	0.00	0.00	0.00	0.00
13/01/2022	JP	4	0936	Hen harrier	1	40	0.00	0.00	0.00	0.00	0.00	10.00	30.00	0.00	0.00	0.00
24/01/2022	JP	2	1245	Hen harrier	1	46	0.00	0.00	0.00	0.00	0.00	0.00	46.00	0.00	0.00	0.00
25/01/2022	JP	4	1048	Hen harrier	1	9	5.18	0.00	0.00	0.00	0.00	3.82	0.00	0.00	0.00	0.00
15/03/2022	JRM	3	1333	Hen harrier	1	26	26.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15/03/2022	JRM	3	1338	Hen harrier	1	40	0.00	0.00	0.00	0.00	0.00	40.00	0.00	0.00	0.00	0.00
15/03/2022	JR	4	1255	Hen harrier	1	23	0.00	0.00	0.00	0.00	0.00	15.00	8.00	0.00	0.00	0.00
13/04/2022	EB	11	1244	Hen harrier	1	65	0.00	0.00	0.00	0.00	0.00	30.00	35.00	0.00	0.00	0.00
13/04/2022	EB	11	1317	Hen harrier	1	35	2.00	2.67	0.00	0.00	0.00	13.00	17.33	0.00	0.00	0.00
25/10/2021	JR	8	1217	Herring gull	1	105	1.73	10.40	0.00	0.00	0.00	13.27	79.60	0.00	0.00	0.00
25/01/2022	MW	1	0913	Herring gull	4	45	0.00	0.00	0.00	0.00	0.00	45.00	0.00	0.00	0.00	0.00
28/01/2022	JP	2	0855	Herring gull	21	42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.00	0.00
28/01/2022	JP	2	0910	Herring gull	1	28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28.00	0.00
28/01/2022	JP	2	1050	Herring gull	18	46	0.00	0.00	0.00	0.00	0.00	31.00	15.00	0.00	0.00	0.00
28/01/2022	JP	2	1152	Herring gull	3	76	0.00	0.00	0.00	0.00	0.00	61.00	15.00	0.00	0.00	0.00
28/01/2022	JP	2	1212	Herring gull	12	70	0.00	0.00	0.00	0.00	0.00	0.00	70.00	0.00	0.00	0.00
21/02/2022	SP	4	1227	Herring gull	2	157	0.00	1.18	0.88	0.00	0.00	0.00	88.82	66.12	0.00	0.00
22/02/2022	SK	5	1450	Herring gull	1	47	0.00	45.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15/03/2022	JR	4	1019	Herring gull	1	159	0.00	0.00	0.00	0.00	0.00	54.00	75.00	30.00	0.00	0.00
25/03/2022	MW	11	1218	Herring gull	4	45	0.00	0.00	0.00	0.00	0.00	0.00	45.00	0.00	0.00	0.00
14/04/2022	EB	7	1025	Herring gull	2	25	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15/06/2022	SK	11	1028	Herring gull	1	78	0.00	0.00	0.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
21/07/2022	SK	10	0920	Herring gull	1	146	1.07	1.23	3.70	0.00	0.00	24.93	28.77	86.30	0.00	0.00
03/08/2022	JR	8	0809	Herring gull	1	27	10.42	8.34	0.00	0.00	0.00	4.58	3.66	0.00	0.00	0.00
03/08/2022	JR	8	0855	Herring gull	1	31	0.00	1.17	1.24	0.00	0.00	0.00	13.83	14.76	0.00	0.00
03/08/2022	JR	8	1144	Herring gull	2	68	0.00	0.00	0.00	0.00	0.00	38.00	30.00	0.00	0.00	0.00
03/08/2022	JR	8	1147	Herring gull	2	90	0.00	24.09	24.09	0.00	0.00	0.00	20.91	20.91	0.00	0.00
25/10/2021	TH	10	1029	Lapwing	23	150	0.00	0.00	0.00	0.00	0.00	120.00	30.00	0.00	0.00	0.00
04/11/2021	MW	2	1000	Lapwing	8	60	0.00	0.00	0.00	0.00	0.00	45.00	15.00	0.00	0.00	0.00
04/11/2021	MW	2	1028	Lapwing	21	65	0.00	0.00	0.00	0.00	0.00	35.00	30.00	0.00	0.00	0.00
04/11/2021	MW	2	1103	Lapwing	13	55	0.00	0.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00	0.00
25/10/2021	TH	10	1029	Lapwing	23	150	0.00	0.00	0.00	0.00	0.00	120.00	30.00	0.00	0.00	0.00
04/11/2021	MW	2	1000	Lapwing	8	60	0.00	0.00	0.00	0.00	0.00	45.00	15.00	0.00	0.00	0.00
04/11/2021	MW	2	1028	Lapwing	21	65	0.00	0.00	0.00	0.00	0.00	35.00	30.00	0.00	0.00	0.00
04/11/2021	MW	2	1103	Lapwing	13	55	0.00	0.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00	0.00
21/02/2022	SP	4	1015	Lapwing	9	41	0.00	0.00	0.00	0.00	0.00	11.00	30.00	0.00	0.00	0.00
15/03/2022	JRM	3	1414	Lapwing	3	38	0.00	17.17	11.20	0.00	0.00	0.00	5.83	3.80	0.00	0.00
17/03/2022	JRM	10	0809	Lapwing	9	60	0.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00	0.00
17/03/2022	JRM	10	0820	Lapwing	3	19	0.00	0.00	0.00	0.00	0.00	19.00	0.00	0.00	0.00	0.00
17/03/2022	JRM	10	0904	Lapwing	20	10	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00
17/03/2022	JRM	10	0918	Lapwing	2	17	0.00	0.00	0.00	0.00	0.00	17.00	0.00	0.00	0.00	0.00
17/03/2022	JRM	10	1316	Lapwing	100	20	0.00	0.00	0.00	0.00	0.00	5.00	15.00	0.00	0.00	0.00
24/03/2022	SK	11	1633	Lapwing	2	33	0.00	0.00	0.00	0.00	0.00	0.00	18.00	15.00	0.00	0.00
25/03/2022	MW	11	0730	Lapwing	4	50	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00
25/03/2022	MW	11	0914	Lapwing	6	45	0.00	0.00	0.00	0.00	0.00	45.00	0.00	0.00	0.00	0.00
13/04/2022	TH	10	1214	Lapwing	2	30	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00	0.00	0.00
13/04/2022	TH	10	1311	Lapwing	1	10	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00
13/04/2022	TH	10	1318	Lapwing	2	40	0.00	0.00	0.00	0.00	0.00	10.00	15.00	15.00	0.00	0.00
13/04/2022	TH	10	1343	Lapwing	1	20	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00
13/04/2022	EB	11	1241	Lapwing	1	32	0.00	0.00	0.00	0.00	0.00	0.00	17.00	15.00	0.00	0.00
14/04/2022	SK	10	0905	Lapwing	1	38	0.00	0.00	0.00	0.00	0.00	15.00	23.00	0.00	0.00	0.00
14/04/2022	SK	10	0917	Lapwing	2	26	0.00	0.00	0.00	0.00	0.00	26.00	0.00	0.00	0.00	0.00
14/04/2022	SK	10	1029	Lapwing	5	47	0.00	0.00	0.00	0.00	0.00	32.00	15.00	0.00	0.00	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
14/04/2022	SK	10	1112	Lapwing	1	28	0.00	0.00	0.00	0.00	0.00	13.00	15.00	0.00	0.00	0.00
14/04/2022	SK	10	1130	Lapwing	2	43	0.00	0.00	0.00	0.00	0.00	0.00	43.00	0.00	0.00	0.00
05/05/2022	TH	10	0849	Lapwing	2	40	0.00	0.00	0.00	0.00	0.00	10.00	30.00	0.00	0.00	0.00
05/05/2022	TH	10	1102	Lapwing	1	30	0.00	0.00	0.00	0.00	0.00	15.00	15.00	0.00	0.00	0.00
05/05/2022	TH	10	1227	Lapwing	6	60	6.94	0.00	0.00	0.00	0.00	53.06	0.00	0.00	0.00	0.00
05/05/2022	JRM	11	0929	Lapwing	1	14	0.00	0.00	0.00	0.00	0.00	14.00	0.00	0.00	0.00	0.00
05/05/2022	JRM	11	0940	Lapwing	1	360	29.48	0.00	0.00	0.00	0.00	330.52	0.00	0.00	0.00	0.00
05/05/2022	JRM	11	1140	Lapwing	1	22	0.00	0.00	0.00	0.00	0.00	0.00	22.00	0.00	0.00	0.00
15/06/2022	SK	11	1451	Lapwing	1	75	22.77	15.18	0.00	0.00	0.00	22.23	14.82	0.00	0.00	0.00
13/06/2022	JRM	8	1120	Marsh harrier	1	180	33.32	0.00	0.00	0.00	0.00	146.68	0.00	0.00	0.00	0.00
04/11/2021	MW	2	1114	Merlin	1	32	0.00	0.00	0.00	0.00	0.00	32.00	0.00	0.00	0.00	0.00
25/10/2021	JR	8	0945	Peregrine falcon	1	49	0.00	0.03	0.34	0.00	0.00	0.00	3.97	44.66	0.00	0.00
25/10/2021	JR	8	1010	Peregrine falcon	1	41	0.00	5.98	10.37	0.00	0.00	0.00	9.02	15.63	0.00	0.00
25/10/2021	JR	8	1137	Peregrine falcon	1	121	0.00	6.37	12.96	6.37	0.00	0.00	23.63	48.04	23.63	0.00
25/10/2021	JR	8	1241	Peregrine falcon	2	132	0.00	30.45	25.38	0.00	0.00	0.00	41.55	34.62	0.00	0.00
25/10/2021	JR	8	1313	Peregrine falcon	1	145	0.00	0.00	44.38	31.33	0.00	0.00	0.00	40.62	28.67	0.00
04/11/2021	JR	3	1051	Peregrine falcon	1	101	0.00	15.58	22.80	0.00	0.00	0.00	25.42	37.20	0.00	0.00
04/11/2021	JR	3	1434	Peregrine falcon	1	37	0.00	23.51	0.00	0.00	0.00	0.00	13.49	0.00	0.00	0.00
05/11/2021	JR	1	1206	Peregrine falcon	1	32	0.00	0.00	0.00	0.00	0.00	15.00	17.00	0.00	0.00	0.00
05/11/2021	JR	1	1208	Peregrine falcon	1	17	0.00	0.00	0.00	0.00	0.00	2.00	15.00	0.00	0.00	0.00
05/11/2021	JR	1	1240	Peregrine falcon	1	33	0.00	0.00	0.00	0.00	0.00	15.00	18.00	0.00	0.00	0.00
05/11/2021	JR	1	1244	Peregrine falcon	1	24	11.77	0.00	0.00	0.00	0.00	12.23	0.00	0.00	0.00	0.00
05/11/2021	JR	1	1247	Peregrine falcon	1	119	0.00	29.45	4.25	0.00	0.00	0.00	74.55	10.75	0.00	0.00
05/11/2021	JR	1	1254	Peregrine falcon	1	20	0.00	0.00	0.00	0.00	0.00	5.00	15.00	0.00	0.00	0.00
24/01/2022	MW	3	1238	Peregrine falcon	1	36	27.63	0.00	0.00	0.00	0.00	8.37	0.00	0.00	0.00	0.00
15/03/2022	JRM	3	1227	Peregrine falcon	1	5	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15/03/2022	JRM	3	1235	Peregrine falcon	1	17	17.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25/03/2022	SK	8	1438	Peregrine falcon	1	351	26.77	23.62	47.23	47.23	39.36	24.23	21.38	42.77	42.77	35.64
15/06/2022	SK	11	1523	Peregrine falcon	1	150	0.00	0.00	0.00	0.00	0.00	15.00	15.00	30.00	90.00	0.00
21/07/2022	TH	8	1228	Peregrine falcon	1	120	11.72	82.07	0.00	0.00	0.00	3.28	22.93	0.00	0.00	0.00
01/08/2022	JRM	10	1257	Peregrine falcon	1	320	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	105.00	195.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
23/08/2022	MW	7	0717	Peregrine falcon	1	90	34.62	34.62	0.00	0.00	0.00	10.38	10.38	0.00	0.00	0.00
13/09/2021	MW	11	0911	Pink-footed goose	28	75	0.00	0.00	0.00	0.00	0.00	30.00	45.00	0.00	0.00	0.00
13/09/2021	MW	11	0915	Pink-footed goose	34	65	0.00	0.00	0.00	0.00	0.00	35.00	30.00	0.00	0.00	0.00
14/09/2021	MW	10	0800	Pink-footed goose	78	70	0.00	0.00	0.00	0.00	0.00	0.00	40.00	30.00	0.00	0.00
16/09/2021	MW	9	0814	Pink-footed goose	44	60	0.00	0.00	46.75	0.00	0.00	0.00	0.00	13.25	0.00	0.00
16/09/2021	MW	9	0900	Pink-footed goose	180	70	0.00	53.28	0.00	0.00	0.00	0.00	16.72	0.00	0.00	0.00
19/09/2021	MW	7	0800	Pink-footed goose	164	108	0.00	0.75	26.22	0.00	0.00	0.00	2.25	78.78	0.00	0.00
24/10/2021	JR	7	1145	Pink-footed goose	47	41	0.00	0.00	0.00	8.42	3.09	0.00	0.00	0.00	21.58	7.91
24/10/2021	JR	7	1145	Pink-footed goose	27	19	0.00	0.00	0.00	3.40	0.91	0.00	0.00	0.00	11.60	3.09
24/10/2021	JR	7	1210	Pink-footed goose	1	14	0.00	11.14	0.00	0.00	0.00	0.00	2.86	0.00	0.00	0.00
24/10/2021	JR	7	1223	Pink-footed goose	12	32	0.00	5.35	4.72	0.00	0.00	0.00	11.65	10.28	0.00	0.00
24/10/2021	TH	9	1057	Pink-footed goose	120	105	0.00	0.00	0.00	0.00	53.14	0.00	0.00	0.00	0.00	51.86
24/10/2021	TH	9	1151	Pink-footed goose	13	90	0.00	0.00	0.00	0.00	34.89	0.00	0.00	0.00	0.00	55.11
25/10/2021	JR	8	0945	Pink-footed goose	430	55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	30.00	0.00
03/11/2021	JR	5	1121	Pink-footed goose	150	32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.00	0.00	0.00
03/11/2021	JR	5	1212	Pink-footed goose	80	89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	89.00	0.00	0.00
03/11/2021	JR	5	1311	Pink-footed goose	15	300	0.00	0.00	0.00	0.00	0.00	0.00	0.00	270.00	30.00	0.00
03/11/2021	JR	5	1402	Pink-footed goose	80	120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	90.00	30.00	0.00
03/11/2021	JR	5	1443	Pink-footed goose	170	139	0.00	0.00	0.00	0.00	0.00	0.00	0.00	139.00	0.00	0.00
03/11/2021	JR	5	1454	Pink-footed goose	80	91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	91.00	0.00	0.00
12/01/2022	JM	5	0929	Pink-footed goose	1	22	0.00	21.85	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00
13/01/2022	JP	4	1225	Pink-footed goose	2	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00
13/09/2021	MW	11	1120	Red kite	1	90	0.00	0.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00	0.00
19/09/2021	MW	7	1120	Red kite	1	90	61.54	0.00	0.00	0.00	0.00	28.46	0.00	0.00	0.00	0.00
24/03/2022	MW	9	1320	Red kite	1	70	28.47	0.00	0.00	0.00	0.00	41.53	0.00	0.00	0.00	0.00
25/03/2022	MW	11	0820	Red kite	2	50	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00
13/04/2022	SK	9	1150	Red kite	1	97	0.00	8.83	48.26	0.00	0.00	0.00	6.17	33.74	0.00	0.00
13/04/2022	SK	9	1217	Red kite	1	30	0.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00	0.00
14/04/2022	EB	7	1500	Red kite	1	95	0.00	42.74	38.47	0.00	0.00	0.00	7.26	6.53	0.00	0.00
14/06/2022	JRM	9	1415	Red kite	1	233	38.00	60.00	135.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table D-2 Details of target species recorded during flight activity surveys by Wood (sorted by species)

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)			
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m
09/10/2020	2	NRO	1115	Golden plover	2	5.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
30/10/2020	3	NRO	1123	Golden plover	56	15.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00
30/10/2020	4	PCL	1000	Golden plover	180	1760.00	0.00	182.57	0.00	0.00	0.00	1577.43	0.00	0.00
30/10/2020	4	PCL	1032	Golden plover	70	20.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00
30/10/2020	4	PCL	1037	Golden plover	80	15.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00	0.00
30/10/2020	4	PCL	1038	Golden plover	80	720.00	0.00	0.00	0.00	0.00	0.00	720.00	0.00	0.00
30/10/2020	4	PCL	1058	Golden plover	100	200.00	0.00	0.00	0.00	0.00	0.00	200.00	0.00	0.00
30/10/2020	4	PCL	1126	Golden plover	60	80.00	0.00	0.00	0.00	0.00	0.00	80.00	0.00	0.00
30/10/2020	4	PCL	1135	Golden plover	60	60.00	0.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00
30/10/2020	4	PCL	1212	Golden plover	60	45.00	0.00	0.00	0.00	0.00	0.00	45.00	0.00	0.00
11/11/2020	4	PRO	1111	Golden plover	1	95.00	0.00	0.00	0.00	0.00	5.00	90.00	0.00	0.00
12/11/2020	5	NRO	1223	Golden plover	34	30.00	0.00	24.36	0.00	0.00	0.00	5.64	0.00	0.00
12/11/2020	6	PRO	1223	Golden plover	34	48.00	0.75	1.25	0.00	0.00	17.25	28.75	0.00	0.00
12/11/2020	6	NRO	1305	Golden plover	5	80.00	0.00	26.99	26.99	0.00	0.00	13.01	13.01	0.00
13/11/2020	2	PRO	921	Golden plover	36	160.00	0.00	0.00	0.00	0.00	0.00	160.00	0.00	0.00
13/11/2020	2	PRO	1037	Golden plover	28	55.00	0.00	0.00	0.00	0.00	0.00	55.00	0.00	0.00
13/11/2020	2	PRO	1050	Golden plover	22	70.00	0.00	0.00	0.00	0.00	10.00	60.00	0.00	0.00
15/12/2020	3	DJP	941	Golden plover	12	25.00	0.00	22.81	0.00	0.00	0.00	2.19	0.00	0.00
15/12/2020	3	DJP	1108	Golden plover	3	5.00	3.51	0.00	0.00	0.00	1.49	0.00	0.00	0.00
15/12/2020	3	DJP	1113	Golden plover	6	15.00	11.63	0.00	0.00	0.00	3.37	0.00	0.00	0.00
15/12/2020	4	PRO	1140	Golden plover	11	75.00	0.00	10.16	0.00	0.00	0.00	64.84	0.00	0.00
15/12/2020	4	PRO	1215	Golden plover	30	15.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00
15/12/2020	4	DJP	1400	Golden plover	20	25.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00
17/12/2020	5	PRO	930	Golden plover	170	70.00	0.00	0.00	0.00	0.00	0.00	70.00	0.00	0.00
17/12/2020	5	PRO	941	Golden plover	150	80.00	0.00	0.00	0.00	0.00	0.00	80.00	0.00	0.00
17/12/2020	6	PRO	1405	Golden plover	90	145.00	43.89	83.40	0.00	0.00	6.11	11.60	0.00	0.00
18/12/2020	1	PRO	930	Golden plover	30	11.00	0.89	2.37	0.00	0.00	2.11	5.63	0.00	0.00
18/12/2020	1	PRO	941	Golden plover	35	15.00	0.00	11.55	0.00	0.00	0.00	3.45	0.00	0.00
18/12/2020	1	PRO	1011	Golden plover	60	30.00	0.00	15.76	0.00	0.00	0.00	14.24	0.00	0.00
18/12/2020	1	PRO	1046	Golden plover	70	25.00	0.00	21.37	0.00	0.00	0.00	3.63	0.00	0.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)			
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m
18/12/2020	2	DJP	927	Golden plover	95	30.00	0.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00
08/01/2021	2	PRO	1441	Golden plover	20	25.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00
03/03/2021	1	PCL	1553	Golden plover	1	10.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
03/03/2021	2	JSN	1447	Golden plover	10	3.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00
03/03/2021	2	JSN	1551	Golden plover	3	6.00	0.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00
04/03/2021	3	PCL	1256	Golden plover	35	72.00	0.00	34.96	0.00	0.00	0.00	37.04	0.00	0.00
04/03/2021	3	JSN	15222	Golden plover	5	10.00	7.31	0.00	0.00	0.00	2.69	0.00	0.00	0.00
04/03/2021	4	PCL	1551	Golden plover	4	20.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00
04/03/2021	4	PCL	1552	Golden plover	1	80.00	0.00	1.22	3.66	0.00	0.00	18.78	56.34	0.00
04/03/2021	4	PCL	1634	Golden plover	27	75.00	0.00	0.00	0.00	0.00	0.00	75.00	0.00	0.00
05/03/2021	2	PCL	805	Golden plover	4	8.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00
05/03/2021	2	PCL	822	Golden plover	6	103.00	0.00	0.00	0.00	0.00	0.00	103.00	0.00	0.00
05/03/2021	2	PCL	829	Golden plover	9	60.00	0.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00
05/03/2021	2	PCL	842	Golden plover	2	16.00	0.00	0.00	0.00	0.00	0.00	16.00	0.00	0.00
05/03/2021	2	PCL	844	Golden plover	6	33.00	0.00	0.00	0.00	0.00	0.00	33.00	0.00	0.00
05/03/2021	2	PCL	848	Golden plover	6	30.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00
05/03/2021	2	PCL	901	Golden plover	9	49.00	0.00	0.00	0.00	0.00	0.00	49.00	0.00	0.00
05/03/2021	2	PCL	926	Golden plover	2	35.00	0.00	0.00	0.00	0.00	0.00	35.00	0.00	0.00
05/03/2021	2	PCL	949	Golden plover	6	10.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00
05/03/2021	2	PCL	1229	Golden plover	9	126.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	126.00
05/03/2021	2	PCL	1233	Golden plover	9	51.00	0.00	0.00	0.00	0.00	0.00	51.00	0.00	0.00
08/03/2021	5	PCL	1155	Golden plover	3	5.00	4.76	0.00	0.00	0.00	0.24	0.00	0.00	0.00
08/03/2021	5	PCL	1222	Golden plover	1	6.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08/03/2021	5	PCL	1321	Golden plover	2	25.00	4.99	15.80	0.00	0.00	1.01	3.20	0.00	0.00
08/03/2021	6	PCL	1527	Golden plover	1	30.00	0.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00
09/03/2021	3	PCL	1226	Golden plover	8	12.00	11.78	0.00	0.00	0.00	0.22	0.00	0.00	0.00
09/03/2021	3	PCL	1228	Golden plover	8	10.00	9.61	0.00	0.00	0.00	0.39	0.00	0.00	0.00
09/03/2021	3	PCL	1230	Golden plover	4	60.00	0.00	60.00	0.00	0.00	0.00	0.00	0.00	0.00
09/03/2021	3	PCL	1238	Golden plover	40	120.00	0.00	115.90	0.00	0.00	0.00	4.10	0.00	0.00
09/03/2021	3	PCL	1255	Golden plover	1	30.00	0.00	17.20	0.00	0.00	0.00	12.80	0.00	0.00
09/03/2021	3	PCL	1300	Golden plover	1	24.00	0.00	16.14	0.00	0.00	0.00	7.86	0.00	0.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)			
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m
09/03/2021	3	PCL	1307	Golden plover	25	16.00	16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09/03/2021	3	PCL	1316	Golden plover	35	6.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09/03/2021	3	PCL	1327	Golden plover	1	10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09/03/2021	3	PCL	1329	Golden plover	1	40.00	0.00	38.60	0.00	0.00	0.00	1.40	0.00	0.00
09/03/2021	3	PCL	1330	Golden plover	1	12.00	0.00	9.70	0.00	0.00	0.00	2.30	0.00	0.00
09/03/2021	3	PCL	1331	Golden plover	1	68.00	0.00	66.70	0.00	0.00	0.00	1.30	0.00	0.00
09/03/2021	3	PCL	1348	Golden plover	1	20.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00
09/03/2021	3	PCL	1355	Golden plover	1	6.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09/03/2021	3	PCL	1357	Golden plover	2	20.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00
09/03/2021	3	PCL	1405	Golden plover	9	20.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09/03/2021	3	PCL	1412	Golden plover	60	300.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
09/03/2021	3	PCL	1433	Golden plover	18	80.00	14.68	44.04	0.00	0.00	5.32	15.96	0.00	0.00
09/03/2021	3	PCL	1438	Golden plover	15	30.00	0.00	28.33	0.00	0.00	0.00	1.67	0.00	0.00
09/03/2021	4	JSN	1230	Golden plover	1	10.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
09/03/2021	4	JSN	1300	Golden plover	3	15.00	0.73	1.45	0.00	0.00	4.27	8.55	0.00	0.00
09/03/2021	4	JSN	1324	Golden plover	2	15.00	1.15	2.29	0.00	0.00	3.85	7.71	0.00	0.00
09/03/2021	4	PCL	1606	Golden plover	2	6.00	0.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00
09/03/2021	4	PCL	1609	Golden plover	2	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00
09/03/2021	4	PCL	1627	Golden plover	1	5.00	4.95	0.00	0.00	0.00	0.05	0.00	0.00	0.00
09/03/2021	4	PCL	1705	Golden plover	4	10.00	0.00	7.53	0.00	0.00	0.00	2.47	0.00	0.00
09/03/2021	4	PCL	1713	Golden plover	2	5.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
10/03/2021	3	PCL	1123	Golden plover	1	340.00	0.00	340.00	0.00	0.00	0.00	0.00	0.00	0.00
10/03/2021	3	PCL	1128	Golden plover	40	30.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/03/2021	3	PCL	1139	Golden plover	1	30.00	0.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00
10/03/2021	3	PCL	1149	Golden plover	40	30.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/03/2021	3	PCL	1210	Golden plover	1	15.00	0.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00
10/03/2021	3	PCL	1214	Golden plover	50	120.00	60.00	60.00	0.00	0.00	0.00	0.00	0.00	0.00
10/03/2021	3	PCL	1219	Golden plover	4	20.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/03/2021	3	PCL	1249	Golden plover	50	120.00	120.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/03/2021	3	PCL	1301	Golden plover	4	60.00	60.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/03/2021	3	PCL	1306	Golden plover	4	35.00	35.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)			
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m
10/03/2021	3	PCL	1310	Golden plover	50	75.00	75.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/03/2021	3	PCL	1313	Golden plover	50	120.00	120.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/03/2021	3	PCL	1332	Golden plover	1	80.00	15.00	65.00	0.00	0.00	0.00	0.00	0.00	0.00
10/03/2021	3	PCL	1353	Golden plover	15	56.00	16.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00
10/03/2021	4	PCL	810	Golden plover	4	480.00	0.00	37.60	0.00	0.00	0.00	442.40	0.00	0.00
10/03/2021	4	PCL	822	Golden plover	40	240.00	0.00	0.00	0.00	0.00	0.00	240.00	0.00	0.00
10/03/2021	4	PCL	834	Golden plover	6	260.00	0.00	0.00	0.00	0.00	0.00	260.00	0.00	0.00
10/03/2021	4	PCL	838	Golden plover	2	180.00	0.00	0.00	0.00	0.00	0.00	180.00	0.00	0.00
10/03/2021	4	PCL	902	Golden plover	1	240.00	0.00	0.00	0.00	0.00	0.00	240.00	0.00	0.00
10/03/2021	4	PCL	909	Golden plover	1	10.00	0.00	1.71	0.00	0.00	0.00	8.29	0.00	0.00
10/03/2021	4	PCL	910	Golden plover	8	30.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00
10/03/2021	4	PCL	911	Golden plover	8	600.00	0.00	90.13	0.00	0.00	0.00	509.87	0.00	0.00
10/03/2021	4	PCL	922	Golden plover	2	10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/03/2021	4	PCL	933	Golden plover	1	80.00	0.00	45.64	0.00	0.00	0.00	34.36	0.00	0.00
10/03/2021	4	PCL	934	Golden plover	2	75.00	0.00	0.00	0.00	0.00	0.00	75.00	0.00	0.00
10/03/2021	4	PCL	940	Golden plover	4	24.00	0.00	0.00	0.00	0.00	0.00	24.00	0.00	0.00
10/03/2021	4	PCL	944	Golden plover	2	280.00	0.00	56.81	0.00	0.00	0.00	223.19	0.00	0.00
10/03/2021	4	PCL	1010	Golden plover	1	60.00	0.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00
10/03/2021	4	PCL	1011	Golden plover	1	60.00	0.00	5.67	0.00	0.00	0.00	54.33	0.00	0.00
10/03/2021	4	PCL	1029	Golden plover	4	30.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00
10/03/2021	6	JSN	818	Golden plover	2	8.00	0.37	0.62	0.00	0.00	2.63	4.38	0.00	0.00
11/03/2021	2	JSN	839	Golden plover	1	8.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00
07/04/2021	3	JSN	914	Golden plover	5	5.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/04/2021	3	JSN	916	Golden plover	1	8.00	3.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
07/04/2021	3	JSN	936	Golden plover	1	5.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
07/04/2021	4	PCL	857	Golden plover	2	70.00	0.00	0.00	0.00	0.00	11.00	59.00	0.00	0.00
07/04/2021	4	PCL	926	Golden plover	2	55.00	0.00	0.00	0.00	0.00	5.00	30.00	20.00	0.00
07/04/2021	4	PCL	935	Golden plover	2	12.00	0.00	0.00	0.00	0.00	12.00	0.00	0.00	0.00
07/04/2021	4	PCL	940	Golden plover	2	30.00	0.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00
08/04/2021	2	JSN	1007	Golden plover	2	60.00	0.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00
12/04/2021	1	JSN	1432	Golden plover	1	6.00	0.00	0.00	0.00	0.00	3.00	3.00	0.00	0.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)			
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m
16/04/2021	3	JSN	900	Golden plover	2	3.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16/04/2021	3	DBU	1226	Golden plover	1	18.00	0.00	18.00	0.00	0.00	0.00	0.00	0.00	0.00
16/04/2021	4	DBU	800	Golden plover	1	15.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00
16/04/2021	4	DBU	943	Golden plover	19	36.00	0.00	0.00	0.00	0.00	0.00	36.00	0.00	0.00
16/04/2021	4	DBU	1011	Golden plover	14	30.00	0.00	0.00	0.00	0.00	0.00	12.00	8.00	10.00
17/05/2021	2	JSN	1434	Golden plover	2	5.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
19/05/2021	2	DBU	1547	Golden plover	2	23.00	0.00	0.00	0.00	0.00	23.00	0.00	0.00	0.00
19/05/2021	2	DBU	1643	Golden plover	2	10.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
19/05/2021	2	DBU	1718	Golden plover	1	3.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00
01/06/2021	3	PRO	1741	Golden plover	1	65.00	0.00	50.51	0.00	0.00	0.00	14.49	0.00	0.00
01/06/2021	3	PRO	1757	Golden plover	1	85.00	27.28	50.01	0.00	0.00	2.72	4.99	0.00	0.00
01/06/2021	3	PRO	1801	Golden plover	2	175.00	9.50	156.77	0.00	0.00	0.50	8.23	0.00	0.00
01/06/2021	3	PRO	1855	Golden plover	1	180.00	5.00	175.00	0.00	0.00	0.00	0.00	0.00	0.00
01/06/2021	3	PRO	1940	Golden plover	1	130.00	15.00	115.00	0.00	0.00	0.00	0.00	0.00	0.00
01/06/2021	4	PRO	1431	Golden plover	1	10.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
01/06/2021	4	NRO	1840	Golden plover	1	32.00	0.00	0.00	0.00	0.00	7.00	25.00	0.00	0.00
01/06/2021	4	NRO	1944	Golden plover	1	20.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00
02/06/2021	6	NRO	1245	Golden plover	1	10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
02/06/2021	6	PRO	1821	Golden plover	2	30.00	9.86	19.72	0.00	0.00	0.14	0.28	0.00	0.00
02/06/2021	6	PRO	1823	Golden plover	1	25.00	7.97	11.95	0.00	0.00	2.03	3.05	0.00	0.00
03/06/2021	1	PRO	1821	Golden plover	1	25.00	0.00	2.90	0.00	0.00	0.00	22.10	0.00	0.00
03/06/2021	2	NRO	1754	Golden plover	1	15.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00
14/06/2021	4	DBU	1611	Golden plover	1	62.00	0.00	19.60	0.00	0.00	0.00	42.40	0.00	0.00
14/06/2021	4	DBU	1642	Golden plover	3	45.00	0.74	3.43	0.00	0.00	7.26	33.57	0.00	0.00
14/06/2021	4	DBU	1727	Golden plover	1	95.00	0.00	0.00	0.00	0.00	12.00	83.00	0.00	0.00
14/06/2021	4	JSN	2051	Golden plover	1	53.00	0.24	3.98	0.00	0.00	2.76	46.02	0.00	0.00
14/06/2021	4	JSN	2133	Golden plover	2	5.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
30/06/2021	4	DJP	720	Golden plover	1	45.00	17.87	0.00	0.00	0.00	27.13	0.00	0.00	0.00
30/06/2021	4	DJP	758	Golden plover	1	20.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00
30/06/2021	4	DJP	941	Golden plover	1	30.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00	0.00
30/06/2021	4	JSN	1132	Golden plover	3	5.00	3.14	0.00	0.00	0.00	1.86	0.00	0.00	0.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)			
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m
30/06/2021	4	JSN	1139	Golden plover	1	10.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
30/06/2021	4	JSN	1157	Golden plover	1	10.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
30/06/2021	4	JSN	1206	Golden plover	11	10.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
30/06/2021	4	JSN	1401	Golden plover	2	20.00	0.00	4.89	0.00	0.00	0.00	15.11	0.00	0.00
19/07/2021	3	DBU	1604	Golden plover	1	43.00	5.00	38.00	0.00	0.00	0.00	0.00	0.00	0.00
23/07/2021	1	DBU	752	Golden plover	1	5.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
23/07/2021	1	DBU	823	Golden plover	1	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00
23/07/2021	1	DBU	956	Golden plover	1	3.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00
08/01/2021	2	NRO	906	Goshawk	1	50.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00
04/03/2021	4	PCL	1415	Goshawk	1	180.00	0.00	0.00	0.00	0.00	10.00	110.00	30.00	30.00
04/03/2021	4	PCL	1626	Goshawk	1	61.00	0.00	0.00	0.00	0.00	7.00	54.00	0.00	0.00
04/03/2021	4	PCL	1651	Goshawk	1	18.00	0.00	0.00	0.00	0.00	18.00	0.00	0.00	0.00
04/03/2021	4	PCL	1659	Goshawk	1	68.00	0.00	0.00	0.00	0.00	64.00	4.00	0.00	0.00
05/03/2021	2	PCL	811	Goshawk	1	16.00	0.00	0.00	0.00	0.00	16.00	0.00	0.00	0.00
09/03/2021	3	PCL	1252	Goshawk	1	112.00	0.00	19.02	0.00	0.00	0.00	92.98	0.00	0.00
09/03/2021	4	PCL	1618	Goshawk	1	99.00	0.00	0.00	0.00	0.00	0.00	99.00	0.00	0.00
09/03/2021	4	PCL	1625	Goshawk	1	180.00	0.00	0.00	0.00	0.00	30.00	150.00	0.00	0.00
11/03/2021	2	JSN	827	Goshawk	1	5.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00
07/04/2021	4	PCL	1016	Goshawk	1	214.00	0.00	0.00	0.00	0.00	0.00	214.00	0.00	0.00
01/10/2020	1	DJP	1217	Greylag goose	3	50.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00
01/10/2020	2	NRO	941	Greylag goose	7	60.00	0.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00
01/10/2020	3	NRO	1446	Greylag goose	15	70.00	0.00	27.93	20.94	0.00	0.00	12.07	9.06	0.00
01/10/2020	4	DJP	1445	Greylag goose	15	70.00	0.00	0.00	0.00	0.00	0.00	0.00	70.00	0.00
07/10/2020	5	NRO	920	Greylag goose	8	150.00	0.00	92.01	0.00	0.00	0.00	57.99	0.00	0.00
07/10/2020	6	DJP	924	Greylag goose	8	85.00	0.00	42.39	0.00	0.00	0.00	42.61	0.00	0.00
07/10/2020	6	DJP	1008	Greylag goose	13	383.00	0.00	344.06	0.00	0.00	0.00	38.94	0.00	0.00
09/10/2020	1	DJP	903	Greylag goose	4	40.00	0.00	0.00	0.00	0.00	0.00	40.00	0.00	0.00
09/10/2020	1	DJP	903	Greylag goose	13	60.00	0.00	0.00	0.00	0.00	20.00	40.00	0.00	0.00
09/10/2020	1	DJP	910	Greylag goose	2	121.00	0.00	0.00	0.00	0.00	61.00	60.00	0.00	0.00
09/10/2020	1	DJP	930	Greylag goose	4	27.00	0.00	0.00	0.00	0.00	27.00	0.00	0.00	0.00
09/10/2020	1	DJP	1001	Greylag goose	4	100.00	0.00	0.00	0.00	0.00	80.00	20.00	0.00	0.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)			
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m
09/10/2020	1	DJP	1028	Greylag goose	13	55.00	0.00	0.00	0.00	0.00	35.00	20.00	0.00	0.00
09/10/2020	1	DJP	1124	Greylag goose	5	45.00	0.00	0.00	0.00	0.00	10.00	35.00	0.00	0.00
09/10/2020	2	NRO	908	Greylag goose	3	80.00	0.00	0.00	0.00	0.00	0.00	80.00	0.00	0.00
09/10/2020	2	NRO	1012	Greylag goose	30	30.00	0.00	0.00	0.00	0.00	10.00	20.00	0.00	0.00
09/10/2020	2	NRO	1016	Greylag goose	28	60.00	0.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00
09/10/2020	2	NRO	1040	Greylag goose	3	30.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00
09/10/2020	2	NRO	1052	Greylag goose	1	120.00	0.00	0.00	0.00	0.00	0.00	40.00	80.00	0.00
09/10/2020	2	NRO	1106	Greylag goose	8	102.00	0.00	0.00	0.00	0.00	12.00	90.00	0.00	0.00
09/10/2020	2	NRO	1119	Greylag goose	5	50.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00
28/10/2020	5	NRO	1118	Greylag goose	5	70.00	14.62	36.55	0.00	0.00	5.38	13.45	0.00	0.00
28/10/2020	6	PCL	915	Greylag goose	4	180.00	0.00	87.49	0.00	0.00	0.00	92.51	0.00	0.00
10/11/2020	1	PRO	1316	Greylag goose	6	80.00	0.00	0.00	0.00	0.00	0.00	80.00	0.00	0.00
10/11/2020	1	PRO	1457	Greylag goose	4	110.00	0.00	0.00	0.00	0.00	0.00	110.00	0.00	0.00
10/11/2020	2	NRO	1452	Greylag goose	2	90.00	0.00	0.00	0.00	0.00	0.00	90.00	0.00	0.00
10/11/2020	2	NRO	1507	Greylag goose	2	120.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	120.00
11/11/2020	4	PRO	1021	Greylag goose	2	40.00	0.00	0.00	0.00	0.00	0.00	40.00	0.00	0.00
11/11/2020	4	PRO	1151	Greylag goose	1	35.00	0.00	0.00	0.00	0.00	0.00	35.00	0.00	0.00
13/11/2020	2	PRO	1001	Greylag goose	8	70.00	0.00	0.00	0.00	0.00	0.00	70.00	0.00	0.00
13/11/2020	2	PRO	1032	Greylag goose	2	110.00	0.00	0.00	0.00	0.00	0.00	110.00	0.00	0.00
15/12/2020	3	DJP	928	Greylag goose	3	25.00	4.48	0.00	0.00	0.00	20.52	0.00	0.00	0.00
15/12/2020	3	DJP	929	Greylag goose	1	20.00	11.51	0.00	0.00	0.00	8.49	0.00	0.00	0.00
15/12/2020	4	PRO	925	Greylag goose	3	8.00	0.00	2.27	0.00	0.00	0.00	5.73	0.00	0.00
17/12/2020	5	PRO	830	Greylag goose	4	20.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00
18/12/2020	1	PRO	1145	Greylag goose	3	15.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00
18/12/2020	2	DJP	920	Greylag goose	2	35.00	0.00	0.00	0.00	0.00	0.00	35.00	0.00	0.00
18/12/2020	2	DJP	956	Greylag goose	2	150.00	0.00	0.00	0.00	0.00	20.00	130.00	0.00	0.00
06/01/2021	5	PRO	1422	Greylag goose	2	120.00	0.00	82.80	0.00	0.00	0.00	37.20	0.00	0.00
06/01/2021	6	NRO	1424	Greylag goose	2	90.00	0.00	49.47	0.00	0.00	0.00	40.53	0.00	0.00
08/01/2021	2	NRO	954	Greylag goose	1	30.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00
08/01/2021	2	NRO	1016	Greylag goose	6	30.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00
08/01/2021	2	PRO	1334	Greylag goose	4	26.00	0.00	0.00	0.00	0.00	8.00	18.00	0.00	0.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)			
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m
08/01/2021	2	PRO	1406	Greylag goose	6	45.00	0.00	0.00	0.00	0.00	10.00	35.00	0.00	0.00
08/01/2021	2	PRO	1433	Greylag goose	18	50.00	0.00	0.00	0.00	0.00	10.00	40.00	0.00	0.00
08/01/2021	2	PRO	1434	Greylag goose	8	28.00	0.00	0.00	0.00	0.00	10.00	18.00	0.00	0.00
08/01/2021	2	PRO	1501	Greylag goose	26	38.00	0.00	0.00	0.00	0.00	8.00	30.00	0.00	0.00
08/01/2021	2	PRO	1511	Greylag goose	78	50.00	0.00	0.00	0.00	0.00	10.00	40.00	0.00	0.00
08/01/2021	2	PRO	1536	Greylag goose	72	45.00	0.00	0.00	0.00	0.00	45.00	0.00	0.00	0.00
08/01/2021	2	PRO	1548	Greylag goose	66	57.00	0.00	0.00	0.00	0.00	10.00	47.00	0.00	0.00
08/01/2021	2	PRO	1604	Greylag goose	41	49.00	0.00	0.00	0.00	0.00	8.00	41.00	0.00	0.00
12/01/2021	4	PRO	1514	Greylag goose	7	35.00	0.00	0.00	0.00	0.00	0.00	35.00	0.00	0.00
01/03/2021	1	PCL	1650	Greylag goose	1	31.00	0.00	0.00	0.00	0.00	5.00	26.00	0.00	0.00
01/03/2021	1	PCL	1700	Greylag goose	1	20.00	0.00	0.00	0.00	0.00	2.00	18.00	0.00	0.00
01/03/2021	1	PCL	1705	Greylag goose	1	90.00	0.00	18.12	0.00	0.00	0.00	71.88	0.00	0.00
02/03/2021	5	JSN	1639	Greylag goose	3	20.00	0.00	15.55	0.00	0.00	0.00	4.45	0.00	0.00
02/03/2021	6	PCL	1637	Greylag goose	3	90.00	0.00	0.00	0.00	0.00	0.00	90.00	0.00	0.00
03/03/2021	1	PCL	1458	Greylag goose	2	8.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00
03/03/2021	1	PCL	1508	Greylag goose	2	6.00	0.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00
03/03/2021	1	PCL	1611	Greylag goose	2	360.00	0.00	0.00	0.00	0.00	0.00	360.00	0.00	0.00
03/03/2021	1	PCL	1637	Greylag goose	2	120.00	0.00	0.00	0.00	0.00	0.00	120.00	0.00	0.00
03/03/2021	1	PCL	1639	Greylag goose	2	60.00	0.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00
04/03/2021	3	PCL	1102	Greylag goose	3	60.00	0.00	0.00	0.00	41.62	0.00	0.00	0.00	18.38
04/03/2021	3	PCL	1140	Greylag goose	2	26.00	0.00	21.16	0.00	0.00	0.00	4.84	0.00	0.00
04/03/2021	3	PCL	1221	Greylag goose	2	12.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04/03/2021	4	JSN	1243	Greylag goose	2	20.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00
05/03/2021	1	JSN	900	Greylag goose	3	20.00	0.00	11.21	0.00	0.00	0.00	8.79	0.00	0.00
05/03/2021	2	PCL	912	Greylag goose	1	24.00	0.00	0.00	0.00	0.00	0.00	24.00	0.00	0.00
05/03/2021	2	PCL	1034	Greylag goose	2	26.00	0.00	0.00	0.00	0.00	0.00	26.00	0.00	0.00
05/03/2021	2	PCL	1258	Greylag goose	1	15.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00
09/03/2021	3	PCL	1236	Greylag goose	2	60.00	60.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09/03/2021	3	PCL	1303	Greylag goose	1	70.00	0.00	30.67	0.00	0.00	0.00	39.33	0.00	0.00
09/03/2021	3	PCL	1317	Greylag goose	1	70.00	0.00	56.63	0.00	0.00	0.00	13.37	0.00	0.00
09/03/2021	3	PCL	1332	Greylag goose	1	31.00	0.00	31.00	0.00	0.00	0.00	0.00	0.00	0.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)				
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m	
09/03/2021	3	PCL	1418	Greylag goose	4	20.00	0.00	17.90	0.00	0.00	0.00	0.00	2.10	0.00	0.00
09/03/2021	3	PCL	1425	Greylag goose	2	25.00	24.41	0.00	0.00	0.00	0.59	0.00	0.00	0.00	0.00
09/03/2021	3	PCL	12588	Greylag goose	4	90.00	0.00	53.95	0.00	0.00	0.00	36.05	0.00	0.00	0.00
09/03/2021	4	JSN	1427	Greylag goose	2	10.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
10/03/2021	4	PCL	828	Greylag goose	2	85.00	0.00	0.00	0.00	0.00	20.00	65.00	0.00	0.00	0.00
10/03/2021	4	PCL	1022	Greylag goose	2	30.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00	0.00
07/04/2021	3	JSN	943	Greylag goose	2	5.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/04/2021	3	JSN	950	Greylag goose	3	10.00	0.00	5.20	0.00	0.00	0.00	4.80	0.00	0.00	0.00
07/04/2021	3	JSN	1049	Greylag goose	2	5.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/04/2021	4	PCL	911	Greylag goose	2	58.00	0.00	0.00	0.00	0.00	20.00	38.00	0.00	0.00	0.00
07/04/2021	4	PCL	943	Greylag goose	2	60.00	0.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
07/04/2021	4	PCL	946	Greylag goose	2	16.00	0.00	1.89	0.00	0.00	0.00	14.11	0.00	0.00	0.00
07/04/2021	4	PCL	957	Greylag goose	2	10.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00
07/04/2021	4	PCL	1030	Greylag goose	2	30.00	0.00	0.00	0.00	0.00	10.00	20.00	0.00	0.00	0.00
08/04/2021	1	PCL	856	Greylag goose	1	90.00	0.00	0.00	0.00	0.00	30.00	60.00	0.00	0.00	0.00
08/04/2021	1	PCL	900	Greylag goose	1	8.00	0.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00
08/04/2021	1	PCL	913	Greylag goose	2	44.00	0.00	0.00	0.00	0.00	8.00	36.00	0.00	0.00	0.00
08/04/2021	1	PCL	928	Greylag goose	2	47.00	0.00	0.00	0.00	0.00	17.00	30.00	0.00	0.00	0.00
08/04/2021	1	PCL	1010	Greylag goose	2	40.00	0.00	0.00	0.00	0.00	0.00	40.00	0.00	0.00	0.00
08/04/2021	1	PCL	1025	Greylag goose	3	20.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00
08/04/2021	1	PCL	1153	Greylag goose	2	53.00	0.00	0.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
08/04/2021	1	PCL	1214	Greylag goose	1	75.00	0.00	0.00	0.00	0.00	0.00	75.00	0.00	0.00	0.00
08/04/2021	1	PCL	1232	Greylag goose	3	64.00	0.00	0.00	0.00	0.00	20.00	44.00	0.00	0.00	0.00
08/04/2021	1	PCL	1343	Greylag goose	2	65.00	0.00	0.00	0.00	0.00	5.00	60.00	0.00	0.00	0.00
08/04/2021	1	PCL	1357	Greylag goose	2	8.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00
08/04/2021	1	PCL	1359	Greylag goose	2	10.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08/04/2021	1	PCL	1409	Greylag goose	13	20.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00
08/04/2021	1	PCL	1411	Greylag goose	4	15.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00	0.00	0.00
08/04/2021	1	PCL	1415	Greylag goose	11	72.00	0.00	32.83	0.00	0.00	0.00	39.17	0.00	0.00	0.00
08/04/2021	1	PCL	1418	Greylag goose	11	20.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00
08/04/2021	2	JSN	830	Greylag goose	2	5.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)			
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m
08/04/2021	2	JSN	1030	Greylag goose	2	8.00	0.00	0.00	0.00	0.00	3.00	5.00	0.00	0.00
12/04/2021	1	JSN	1312	Greylag goose	3	15.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00	0.00
12/04/2021	1	JSN	1338	Greylag goose	3	10.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
12/04/2021	1	JSN	1406	Greylag goose	2	10.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
12/04/2021	1	JSN	1528	Greylag goose	5	5.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
12/04/2021	2	DBU	1312	Greylag goose	1	37.00	0.00	0.00	0.00	0.00	0.00	37.00	0.00	0.00
12/04/2021	2	DBU	1342	Greylag goose	1	7.00	0.00	0.00	0.00	0.00	7.00	0.00	0.00	0.00
12/04/2021	2	DBU	1507	Greylag goose	2	21.00	0.00	0.00	0.00	0.00	0.00	21.00	0.00	0.00
12/04/2021	6	JSN	1715	Greylag goose	2	5.00	4.82	0.00	0.00	0.00	0.18	0.00	0.00	0.00
16/04/2021	4	DBU	814	Greylag goose	4	9.00	0.00	0.17	0.00	0.00	0.00	8.83	0.00	0.00
16/04/2021	4	DBU	859	Greylag goose	1	10.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
16/04/2021	4	DBU	1002	Greylag goose	2	5.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
16/04/2021	4	DBU	1003	Greylag goose	1	8.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00
16/04/2021	4	DBU	1038	Greylag goose	2	17.00	0.00	5.18	0.00	0.00	0.00	11.82	0.00	0.00
01/06/2021	3	PRO	2013	Greylag goose	5	60.00	0.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00
01/06/2021	3	PRO	2013	Greylag goose	3	65.00	0.00	16.50	0.00	0.00	0.00	48.50	0.00	0.00
01/06/2021	3	PRO	2029	Greylag goose	5	40.00	0.00	0.00	0.00	0.00	0.00	40.00	0.00	0.00
01/06/2021	4	NRO	2012	Greylag goose	5	45.00	0.00	0.00	0.00	0.00	0.00	45.00	0.00	0.00
01/06/2021	4	NRO	2028	Greylag goose	5	50.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00
02/06/2021	5	PRO	1247	Greylag goose	4	85.00	0.00	0.00	0.00	0.00	0.00	85.00	0.00	0.00
02/06/2021	5	NRO	1734	Greylag goose	5	120.00	0.00	93.07	0.00	0.00	0.00	26.93	0.00	0.00
02/06/2021	6	NRO	1246	Greylag goose	2	90.00	0.00	16.08	0.00	0.00	0.00	73.92	0.00	0.00
02/06/2021	6	PRO	1736	Greylag goose	5	115.00	0.00	39.76	21.21	0.00	0.00	35.24	18.79	0.00
03/06/2021	1	NRO	1532	Greylag goose	2	160.00	0.00	6.61	0.00	0.00	0.00	153.39	0.00	0.00
03/06/2021	1	PRO	1631	Greylag goose	2	40.00	0.00	0.00	0.00	0.00	0.00	40.00	0.00	0.00
03/06/2021	1	PRO	1745	Greylag goose	9	555.00	0.00	0.00	0.00	0.00	0.00	555.00	0.00	0.00
03/06/2021	1	PRO	1823	Greylag goose	2	50.00	0.00	2.89	0.00	0.00	0.00	47.11	0.00	0.00
03/06/2021	2	PRO	1311	Greylag goose	2	25.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00
03/06/2021	2	NRO	1737	Greylag goose	9	40.00	0.00	0.00	0.00	0.00	0.00	40.00	0.00	0.00
28/06/2021	2	DJP	1745	Greylag goose	2	180.00	0.00	0.00	0.00	0.00	0.00	180.00	0.00	0.00
08/10/2020	6	NRO	1107	Hen harrier	1	45.00	0.00	38.15	0.00	0.00	0.00	6.85	0.00	0.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)			
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m
30/10/2020	4	PCL	1052	Hen harrier	1	8.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00
10/11/2020	1	PRO	1519	Hen harrier	1	185.00	16.72	17.64	0.00	0.00	73.28	77.36	0.00	0.00
10/11/2020	1	PRO	1541	Hen harrier	1	210.00	0.00	0.00	0.00	0.00	0.00	210.00	0.00	0.00
12/11/2020	5	NRO	931	Hen harrier	1	50.00	0.00	21.10	0.00	0.00	0.00	28.90	0.00	0.00
12/11/2020	6	PRO	932	Hen harrier	1	85.00	21.62	51.89	0.00	0.00	3.38	8.11	0.00	0.00
15/12/2020	4	PRO	1039	Hen harrier	1	60.00	0.00	0.00	0.00	0.00	35.00	25.00	0.00	0.00
15/12/2020	4	PRO	1110	Hen harrier	1	27.00	0.00	0.00	0.00	0.00	15.00	12.00	0.00	0.00
18/12/2020	1	PRO	1026	Hen harrier	1	795.00	31.91	4.07	0.00	0.00	673.09	85.93	0.00	0.00
12/01/2021	4	PRO	1341	Hen harrier	1	30.00	0.00	0.00	0.00	0.00	15.00	15.00	0.00	0.00
12/01/2021	4	PRO	1343	Hen harrier	1	35.00	0.00	0.00	0.00	0.00	35.00	0.00	0.00	0.00
02/03/2021	6	PCL	1654	Hen harrier	1	138.00	36.97	21.00	0.00	0.00	51.03	29.00	0.00	0.00
05/03/2021	1	JSN	1211	Hen harrier	1	15.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00
05/03/2021	1	JSN	1416	Hen harrier	1	8.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00
05/03/2021	1	JSN	1416	Hen harrier	1	4.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
04/08/2021	1	DJP	1048	Marsh harrier	1	60.00	0.00	0.00	0.00	0.00	40.00	20.00	0.00	0.00
04/08/2021	1	DJP	1053	Marsh harrier	1	100.00	0.00	0.00	0.00	0.00	75.00	25.00	0.00	0.00
04/08/2021	1	DJP	1104	Marsh harrier	1	180.00	0.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
04/08/2021	1	DJP	1322	Marsh harrier	1	225.00	0.00	0.00	0.00	0.00	225.00	0.00	0.00	0.00
05/08/2021	3	DJP	1002	Marsh harrier	1	180.00	122.41	7.20	0.00	0.00	47.59	2.80	0.00	0.00
08/03/2021	6	PCL	1658	Merlin	1	10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/06/2021	2	JSN	1219	Merlin	1	30.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00	0.00
30/06/2021	3	DJP	1239	Merlin	1	5.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21/07/2021	3	DBU	1140	Merlin	1	14.00	14.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23/07/2021	1	DBU	752	Merlin	1	26.00	0.00	0.00	0.00	0.00	9.00	17.00	0.00	0.00
03/08/2021	5	DJP	1239	Merlin	1	20.00	17.98	0.00	0.00	0.00	2.02	0.00	0.00	0.00
03/08/2021	5	DJP	1431	Merlin	1	20.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29/09/2020	1	NRO	1517	Peregrine falcon	1	110.00	0.00	0.00	0.00	0.00	10.00	100.00	0.00	0.00
29/09/2020	1	NRO	1550	Peregrine falcon	1	35.00	1.17	7.02	0.00	0.00	3.83	22.98	0.00	0.00
29/09/2020	1	NRO	1605	Peregrine falcon	1	38.00	0.00	0.00	0.00	0.00	28.00	10.00	0.00	0.00
29/09/2020	3	NRO	1231	Peregrine falcon	1	24.00	6.00	18.00	0.00	0.00	0.00	0.00	0.00	0.00
07/10/2020	5	NRO	910	Peregrine falcon	1	180.00	0.00	158.83	0.00	0.00	0.00	21.17	0.00	0.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)			
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m
07/10/2020	6	DJP	1003	Peregrine falcon	1	5.00	0.00	1.06	0.00	0.00	0.00	3.94	0.00	0.00
07/10/2020	6	NRO	1210	Peregrine falcon	1	30.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00
08/10/2020	5	NRO	1325	Peregrine falcon	1	55.00	2.86	7.62	0.00	0.00	12.14	32.38	0.00	0.00
08/10/2020	5	NRO	1338	Peregrine falcon	1	190.00	0.00	8.48	4.95	0.00	0.00	111.52	65.05	0.00
08/10/2020	6	NRO	1108	Peregrine falcon	1	50.00	0.00	46.79	0.00	0.00	0.00	3.21	0.00	0.00
09/10/2020	1	DJP	1008	Peregrine falcon	1	65.00	0.00	0.00	0.00	0.00	30.00	35.00	0.00	0.00
28/10/2020	5	NRO	914	Peregrine falcon	1	145.00	0.00	0.00	0.00	0.00	100.00	45.00	0.00	0.00
28/10/2020	6	PCL	855	Peregrine falcon	1	90.00	0.00	3.85	0.00	0.00	0.00	86.15	0.00	0.00
30/10/2020	3	NRO	1219	Peregrine falcon	1	370.00	2.98	17.91	89.53	0.00	7.02	42.09	210.47	0.00
10/11/2020	2	NRO	1540	Peregrine falcon	1	70.00	0.00	0.00	0.00	0.00	40.00	30.00	0.00	0.00
13/11/2020	1	NRO	900	Peregrine falcon	1	75.00	0.00	0.00	0.00	0.00	15.00	60.00	0.00	0.00
13/11/2020	1	NRO	9266	Peregrine falcon	1	186.00	0.00	0.00	0.00	0.00	6.00	180.00	0.00	0.00
13/11/2020	2	PRO	943	Peregrine falcon	1	11.00	0.00	0.00	0.00	0.00	4.00	7.00	0.00	0.00
16/12/2020	2	PRO	1257	Peregrine falcon	1	53.00	0.00	0.00	0.00	0.00	8.00	45.00	0.00	0.00
16/12/2020	2	PRO	1433	Peregrine falcon	1	181.00	0.00	0.00	0.00	0.00	6.00	175.00	0.00	0.00
18/12/2020	1	PRO	944	Peregrine falcon	1	35.00	0.00	0.00	0.00	0.00	0.00	35.00	0.00	0.00
18/12/2020	2	DJP	931	Peregrine falcon	1	65.00	0.00	0.00	0.00	0.00	10.00	55.00	0.00	0.00
18/12/2020	2	DJP	938	Peregrine falcon	1	155.00	0.00	0.00	0.00	0.00	40.00	115.00	0.00	0.00
02/03/2021	5	PCL	1315	Peregrine falcon	1	60.00	0.00	0.00	0.00	0.00	0.00	40.00	20.00	0.00
02/03/2021	5	PCL	1330	Peregrine falcon	1	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00
04/03/2021	3	PCL	1054	Peregrine falcon	1	5.00	0.00	0.43	0.00	0.00	0.00	4.57	0.00	0.00
04/03/2021	3	PCL	1054	Peregrine falcon	1	5.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
04/03/2021	3	PCL	1055	Peregrine falcon	1	45.00	40.40	0.00	0.00	0.00	4.60	0.00	0.00	0.00
04/03/2021	4	PCL	1421	Peregrine falcon	1	148.00	0.00	0.00	0.00	0.00	0.00	148.00	0.00	0.00
09/03/2021	3	PCL	1501	Peregrine falcon	1	60.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.00
09/03/2021	4	JSN	1300	Peregrine falcon	1	15.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00
10/03/2021	1	JSN	1343	Peregrine falcon	1	60.00	0.00	0.00	8.33	0.00	0.00	0.00	51.67	0.00
10/03/2021	3	PCL	1240	Peregrine falcon	1	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.00
10/03/2021	5	JSN	1247	Peregrine falcon	1	30.00	0.00	0.46	0.00	0.00	0.00	29.54	0.00	0.00
11/03/2021	1	PCL	580	Peregrine falcon	2	118.00	0.00	23.81	0.00	0.00	0.00	94.19	0.00	0.00
07/04/2021	3	JSN	1148	Peregrine falcon	1	30.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)			
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m
07/04/2021	5	PCL	1432	Peregrine falcon	1	200.00	0.00	0.00	7.00	20.99	0.00	0.00	43.00	129.01
07/04/2021	6	JSN	1436	Peregrine falcon	1	60.00	0.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00
08/04/2021	1	PCL	1010	Peregrine falcon	1	10.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
08/04/2021	1	PCL	1036	Peregrine falcon	1	157.00	0.00	103.53	0.00	0.00	0.00	53.47	0.00	0.00
08/04/2021	1	PCL	1449	Peregrine falcon	1	20.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00
12/04/2021	1	JSN	1447	Peregrine falcon	1	55.00	0.00	0.00	0.00	0.00	50.00	5.00	0.00	0.00
12/04/2021	5	DBU	1448	Peregrine falcon	1	22.00	15.46	0.00	0.00	0.00	6.54	0.00	0.00	0.00
16/04/2021	4	JSN	1418	Peregrine falcon	1	10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20/05/2021	6	DBU	1018	Peregrine falcon	1	56.00	0.00	0.00	0.00	0.00	0.00	56.00	0.00	0.00
16/06/2021	6	JSN	1634	Peregrine falcon	1	40.00	0.00	12.14	0.00	0.00	0.00	27.86	0.00	0.00
30/06/2021	3	JSN	940	Peregrine falcon	1	15.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30/06/2021	4	JSN	1254	Peregrine falcon	1	15.00	0.00	0.00	0.00	0.00	0.00	10.00	5.00	0.00
01/07/2021	5	DJP	1108	Peregrine falcon	1	25.00	15.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00
21/07/2021	3	JSN	1240	Peregrine falcon	1	180.00	177.05	0.00	0.00	0.00	2.95	0.00	0.00	0.00
04/08/2021	1	DJP	1027	Peregrine falcon	1	180.00	0.00	0.00	0.00	0.00	0.00	180.00	0.00	0.00
05/08/2021	3	DJP	849	Peregrine falcon	1	10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
05/08/2021	3	DJP	936	Peregrine falcon	1	60.00	0.00	60.00	0.00	0.00	0.00	0.00	0.00	0.00
05/08/2021	4	JSN	844	Peregrine falcon	1	30.00	3.03	0.00	0.00	0.00	26.97	0.00	0.00	0.00
08/10/2020	4	DJP	1011	Pink-footed goose	72	167.00	0.00	0.00	0.00	0.00	0.00	0.00	60.00	107.00
11/11/2020	3	NRO	1011	Pink-footed goose	46	100.00	0.00	24.83	2.76	0.00	0.00	65.17	7.24	0.00
02/03/2021	6	PCL	1716	Pink-footed goose	20	180.00	0.00	0.00	0.00	99.84	0.00	0.00	0.00	80.16
03/03/2021	1	PCL	1520	Pink-footed goose	48	90.00	0.00	0.00	27.40	0.00	0.00	0.00	62.60	0.00
03/03/2021	1	PCL	1531	Pink-footed goose	48	360.00	0.00	0.00	0.00	0.00	0.00	0.00	360.00	0.00
03/03/2021	1	PCL	1537	Pink-footed goose	48	120.00	0.00	0.00	47.99	0.00	0.00	0.00	72.01	0.00
03/03/2021	2	JSN	1518	Pink-footed goose	48	30.00	0.00	0.00	0.00	0.00	10.00	20.00	0.00	0.00
05/03/2021	1	JSN	1320	Pink-footed goose	90	240.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	240.00
05/03/2021	2	PCL	810	Pink-footed goose	35	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00
05/03/2021	2	PCL	851	Pink-footed goose	60	90.00	0.00	0.00	0.00	0.00	0.00	90.00	0.00	0.00
05/03/2021	2	PCL	1059	Pink-footed goose	7	60.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.00
05/03/2021	2	PCL	1105	Pink-footed goose	9	25.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00
05/03/2021	2	PCL	1145	Pink-footed goose	16	75.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	75.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)			
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m
05/03/2021	2	PCL	1316	Pink-footed goose	85	120.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	120.00
29/09/2020	3	NRO	1235	Red kite	1	210.00	0.00	0.00	0.00	0.00	0.00	60.00	30.00	120.00
29/09/2020	4	DJP	1141	Red kite	1	76.00	0.00	0.00	0.00	0.00	46.00	30.00	0.00	0.00
01/06/2021	3	NRO	1403	Red kite	1	410.00	47.17	339.63	0.00	0.00	2.83	20.37	0.00	0.00
01/06/2021	4	PRO	1410	Red kite	1	635.00	4.37	106.56	0.00	0.00	20.63	503.44	0.00	0.00
03/06/2021	2	PRO	1301	Red kite	1	185.00	0.00	0.00	0.00	0.00	50.00	135.00	0.00	0.00
18/06/2021	6	DBU	808	Red kite	1	89.00	0.00	89.00	0.00	0.00	0.00	0.00	0.00	0.00
18/06/2021	6	DBU	831	Red kite	1	106.00	0.00	104.57	0.00	0.00	0.00	1.43	0.00	0.00
18/06/2021	6	DBU	834	Red kite	1	14.00	14.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/06/2021	6	DBU	838	Red kite	1	5.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/06/2021	6	DBU	915	Red kite	1	175.00	55.00	120.00	0.00	0.00	0.00	0.00	0.00	0.00
18/06/2021	6	DBU	935	Red kite	1	255.00	0.00	226.26	0.00	0.00	0.00	28.74	0.00	0.00
28/06/2021	2	DJP	1431	Red kite	1	450.00	0.00	0.00	0.00	0.00	0.00	120.00	300.00	30.00
30/06/2021	3	DJP	1321	Red kite	1	20.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00
30/06/2021	3	DJP	1344	Red kite	1	240.00	0.00	0.00	0.00	0.00	0.00	240.00	0.00	0.00
17/05/2021	3	JSN	1822	Short-eared owl	1	500.00	459.48	0.00	0.00	0.00	40.52	0.00	0.00	0.00
17/05/2021	3	JSN	1951	Short-eared owl	1	180.00	171.60	0.00	0.00	0.00	8.40	0.00	0.00	0.00
17/05/2021	3	JSN	2002	Short-eared owl	1	125.00	120.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
17/05/2021	3	JSN	2010	Short-eared owl	1	60.00	59.08	0.00	0.00	0.00	0.92	0.00	0.00	0.00
17/05/2021	3	JSN	2018	Short-eared owl	1	60.00	59.49	0.00	0.00	0.00	0.51	0.00	0.00	0.00
17/05/2021	4	DBU	2002	Short-eared owl	1	25.00	7.19	0.00	0.00	0.00	17.81	0.00	0.00	0.00
19/05/2021	2	DBU	1603	Short-eared owl	1	521.00	0.00	0.00	0.00	0.00	521.00	0.00	0.00	0.00
19/05/2021	2	DBU	1621	Short-eared owl	1	18.00	0.00	0.00	0.00	0.00	18.00	0.00	0.00	0.00
19/05/2021	2	DBU	1711	Short-eared owl	1	4.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
03/06/2021	1	PRO	1801	Short-eared owl	1	10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03/06/2021	1	PRO	1802	Short-eared owl	1	135.00	0.00	0.00	0.00	0.00	125.00	10.00	0.00	0.00
03/06/2021	1	PRO	1807	Short-eared owl	1	150.00	0.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
03/06/2021	1	PRO	1917	Short-eared owl	1	35.00	0.00	0.00	0.00	0.00	0.00	35.00	0.00	0.00
14/06/2021	3	DBU	2023	Short-eared owl	1	8.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14/06/2021	3	DBU	2028	Short-eared owl	1	195.00	195.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14/06/2021	3	DBU	2032	Short-eared owl	1	28.00	28.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)			
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m
14/06/2021	3	DBU	2035	Short-eared owl	1	93.00	43.99	0.00	0.00	0.00	49.01	0.00	0.00	0.00
14/06/2021	3	DBU	2102	Short-eared owl	1	15.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14/06/2021	3	DBU	2131	Short-eared owl	1	165.00	103.12	0.00	0.00	0.00	61.88	0.00	0.00	0.00
14/06/2021	3	DBU	2145	Short-eared owl	1	11.00	11.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16/06/2021	1	JSN	1925	Short-eared owl	1	20.00	0.30	0.00	0.00	0.00	19.70	0.00	0.00	0.00
16/06/2021	1	JSN	2007	Short-eared owl	1	80.00	0.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
16/06/2021	1	JSN	2023	Short-eared owl	1	20.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00
16/06/2021	1	JSN	2044	Short-eared owl	2	80.00	2.52	0.00	0.00	0.00	77.48	0.00	0.00	0.00
16/06/2021	2	DBU	1917	Short-eared owl	1	9.00	0.00	0.00	0.00	0.00	9.00	0.00	0.00	0.00
16/06/2021	2	DBU	1919	Short-eared owl	1	4.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
16/06/2021	2	DBU	1922	Short-eared owl	1	3.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00
16/06/2021	2	DBU	1938	Short-eared owl	1	18.00	0.00	0.00	0.00	0.00	18.00	0.00	0.00	0.00
16/06/2021	2	DBU	1953	Short-eared owl	2	531.00	0.00	0.00	0.00	0.00	523.00	8.00	0.00	0.00
16/06/2021	2	DBU	2013	Short-eared owl	1	6.00	0.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00
16/06/2021	2	DBU	2034	Short-eared owl	1	447.00	0.00	0.00	0.00	0.00	447.00	0.00	0.00	0.00
16/06/2021	2	DBU	2107	Short-eared owl	1	437.00	0.00	0.00	0.00	0.00	437.00	0.00	0.00	0.00
16/06/2021	2	DBU	2130	Short-eared owl	1	89.00	0.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
16/06/2021	2	DBU	2139	Short-eared owl	1	159.00	0.00	0.00	0.00	0.00	159.00	0.00	0.00	0.00
28/06/2021	1	JSN	1826	Short-eared owl	1	190.00	0.00	0.00	0.00	0.00	10.00	180.00	0.00	0.00
28/06/2021	1	JSN	1915	Short-eared owl	1	30.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00	0.00
28/06/2021	2	DJP	1644	Short-eared owl	1	90.00	0.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
28/06/2021	2	DJP	1649	Short-eared owl	1	45.00	0.00	0.00	0.00	0.00	45.00	0.00	0.00	0.00
28/06/2021	2	DJP	1857	Short-eared owl	1	75.00	0.00	0.00	0.00	0.00	75.00	0.00	0.00	0.00
30/06/2021	3	JSN	837	Short-eared owl	1	30.00	0.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00
30/06/2021	3	JSN	950	Short-eared owl	1	5.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30/06/2021	3	JSN	1000	Short-eared owl	1	20.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30/06/2021	3	JSN	1015	Short-eared owl	1	10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30/06/2021	3	JSN	1031	Short-eared owl	1	5.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30/06/2021	3	JSN	1033	Short-eared owl	2	5.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30/06/2021	3	DJP	1138	Short-eared owl	1	15.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30/06/2021	3	DJP	1208	Short-eared owl	1	300.00	222.95	0.00	0.00	0.00	77.05	0.00	0.00	0.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)			
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m
30/06/2021	3	DJP	1225	Short-eared owl	1	60.00	60.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30/06/2021	3	DJP	1239	Short-eared owl	1	15.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08/03/2021	5	PCL	1206	White-tailed eagle	1	15.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00
08/03/2021	6	JSN	1206	White-tailed eagle	1	55.00	0.00	6.21	8.28	8.28	0.00	8.79	11.72	11.72
09/10/2020	2	NRO	1115	Golden plover	2	5.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
30/10/2020	3	NRO	1123	Golden plover	56	15.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00
30/10/2020	4	PCL	1000	Golden plover	180	1760.00	0.00	182.57	0.00	0.00	0.00	1577.43	0.00	0.00
30/10/2020	4	PCL	1032	Golden plover	70	20.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00
30/10/2020	4	PCL	1037	Golden plover	80	15.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00	0.00
30/10/2020	4	PCL	1038	Golden plover	80	720.00	0.00	0.00	0.00	0.00	0.00	720.00	0.00	0.00
30/10/2020	4	PCL	1058	Golden plover	100	200.00	0.00	0.00	0.00	0.00	0.00	200.00	0.00	0.00
30/10/2020	4	PCL	1126	Golden plover	60	80.00	0.00	0.00	0.00	0.00	0.00	80.00	0.00	0.00
30/10/2020	4	PCL	1135	Golden plover	60	60.00	0.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00
30/10/2020	4	PCL	1212	Golden plover	60	45.00	0.00	0.00	0.00	0.00	0.00	45.00	0.00	0.00
11/11/2020	4	PRO	1111	Golden plover	1	95.00	0.00	0.00	0.00	0.00	5.00	90.00	0.00	0.00
12/11/2020	5	NRO	1223	Golden plover	34	30.00	0.00	24.36	0.00	0.00	0.00	5.64	0.00	0.00
12/11/2020	6	PRO	1223	Golden plover	34	48.00	0.75	1.25	0.00	0.00	17.25	28.75	0.00	0.00
12/11/2020	6	NRO	1305	Golden plover	5	80.00	0.00	26.99	26.99	0.00	0.00	13.01	13.01	0.00
13/11/2020	2	PRO	921	Golden plover	36	160.00	0.00	0.00	0.00	0.00	0.00	160.00	0.00	0.00
13/11/2020	2	PRO	1037	Golden plover	28	55.00	0.00	0.00	0.00	0.00	0.00	55.00	0.00	0.00
13/11/2020	2	PRO	1050	Golden plover	22	70.00	0.00	0.00	0.00	0.00	10.00	60.00	0.00	0.00
15/12/2020	3	DJP	941	Golden plover	12	25.00	0.00	22.81	0.00	0.00	0.00	2.19	0.00	0.00
15/12/2020	3	DJP	1108	Golden plover	3	5.00	3.51	0.00	0.00	0.00	1.49	0.00	0.00	0.00
15/12/2020	3	DJP	1113	Golden plover	6	15.00	11.63	0.00	0.00	0.00	3.37	0.00	0.00	0.00
15/12/2020	4	PRO	1140	Golden plover	11	75.00	0.00	10.16	0.00	0.00	0.00	64.84	0.00	0.00
15/12/2020	4	PRO	1215	Golden plover	30	15.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00
15/12/2020	4	DJP	1400	Golden plover	20	25.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00
17/12/2020	5	PRO	930	Golden plover	170	70.00	0.00	0.00	0.00	0.00	0.00	70.00	0.00	0.00
17/12/2020	5	PRO	941	Golden plover	150	80.00	0.00	0.00	0.00	0.00	0.00	80.00	0.00	0.00
17/12/2020	6	PRO	1405	Golden plover	90	145.00	43.89	83.40	0.00	0.00	6.11	11.60	0.00	0.00
18/12/2020	1	PRO	930	Golden plover	30	11.00	0.89	2.37	0.00	0.00	2.11	5.63	0.00	0.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)				
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m	
18/12/2020	1	PRO	941	Golden plover	35	15.00	0.00	11.55	0.00	0.00	0.00	0.00	3.45	0.00	0.00
18/12/2020	1	PRO	1011	Golden plover	60	30.00	0.00	15.76	0.00	0.00	0.00	0.00	14.24	0.00	0.00
18/12/2020	1	PRO	1046	Golden plover	70	25.00	0.00	21.37	0.00	0.00	0.00	0.00	3.63	0.00	0.00
18/12/2020	2	DJP	927	Golden plover	95	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00
08/01/2021	2	PRO	1441	Golden plover	20	25.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00
03/03/2021	1	PCL	1553	Golden plover	1	10.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
03/03/2021	2	JSN	1447	Golden plover	10	3.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00
03/03/2021	2	JSN	1551	Golden plover	3	6.00	0.00	0.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00
04/03/2021	3	PCL	1256	Golden plover	35	72.00	0.00	34.96	0.00	0.00	0.00	0.00	37.04	0.00	0.00
04/03/2021	3	JSN	15222	Golden plover	5	10.00	7.31	0.00	0.00	0.00	0.00	2.69	0.00	0.00	0.00
04/03/2021	4	PCL	1551	Golden plover	4	20.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00
04/03/2021	4	PCL	1552	Golden plover	1	80.00	0.00	1.22	3.66	0.00	0.00	0.00	18.78	56.34	0.00
04/03/2021	4	PCL	1634	Golden plover	27	75.00	0.00	0.00	0.00	0.00	0.00	0.00	75.00	0.00	0.00
05/03/2021	2	PCL	805	Golden plover	4	8.00	0.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00
05/03/2021	2	PCL	822	Golden plover	6	103.00	0.00	0.00	0.00	0.00	0.00	0.00	103.00	0.00	0.00
05/03/2021	2	PCL	829	Golden plover	9	60.00	0.00	0.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00
05/03/2021	2	PCL	842	Golden plover	2	16.00	0.00	0.00	0.00	0.00	0.00	0.00	16.00	0.00	0.00
05/03/2021	2	PCL	844	Golden plover	6	33.00	0.00	0.00	0.00	0.00	0.00	0.00	33.00	0.00	0.00
05/03/2021	2	PCL	848	Golden plover	6	30.00	0.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00
05/03/2021	2	PCL	901	Golden plover	9	49.00	0.00	0.00	0.00	0.00	0.00	0.00	49.00	0.00	0.00
05/03/2021	2	PCL	926	Golden plover	2	35.00	0.00	0.00	0.00	0.00	0.00	0.00	35.00	0.00	0.00
05/03/2021	2	PCL	949	Golden plover	6	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00
05/03/2021	2	PCL	1229	Golden plover	9	126.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	126.00
05/03/2021	2	PCL	1233	Golden plover	9	51.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	0.00	0.00
08/03/2021	5	PCL	1155	Golden plover	3	5.00	4.76	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00
08/03/2021	5	PCL	1222	Golden plover	1	6.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08/03/2021	5	PCL	1321	Golden plover	2	25.00	4.99	15.80	0.00	0.00	0.00	1.01	3.20	0.00	0.00
08/03/2021	6	PCL	1527	Golden plover	1	30.00	0.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09/03/2021	3	PCL	1226	Golden plover	8	12.00	11.78	0.00	0.00	0.00	0.00	0.22	0.00	0.00	0.00
09/03/2021	3	PCL	1228	Golden plover	8	10.00	9.61	0.00	0.00	0.00	0.00	0.39	0.00	0.00	0.00
09/03/2021	3	PCL	1230	Golden plover	4	60.00	0.00	60.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)			
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m
09/03/2021	3	PCL	1238	Golden plover	40	120.00	0.00	115.90	0.00	0.00	0.00	4.10	0.00	0.00
09/03/2021	3	PCL	1255	Golden plover	1	30.00	0.00	17.20	0.00	0.00	0.00	12.80	0.00	0.00
09/03/2021	3	PCL	1300	Golden plover	1	24.00	0.00	16.14	0.00	0.00	0.00	7.86	0.00	0.00
09/03/2021	3	PCL	1307	Golden plover	25	16.00	16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09/03/2021	3	PCL	1316	Golden plover	35	6.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09/03/2021	3	PCL	1327	Golden plover	1	10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09/03/2021	3	PCL	1329	Golden plover	1	40.00	0.00	38.60	0.00	0.00	0.00	1.40	0.00	0.00
09/03/2021	3	PCL	1330	Golden plover	1	12.00	0.00	9.70	0.00	0.00	0.00	2.30	0.00	0.00
09/03/2021	3	PCL	1331	Golden plover	1	68.00	0.00	66.70	0.00	0.00	0.00	1.30	0.00	0.00
09/03/2021	3	PCL	1348	Golden plover	1	20.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00
09/03/2021	3	PCL	1355	Golden plover	1	6.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09/03/2021	3	PCL	1357	Golden plover	2	20.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00
09/03/2021	3	PCL	1405	Golden plover	9	20.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09/03/2021	3	PCL	1412	Golden plover	60	300.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
09/03/2021	3	PCL	1433	Golden plover	18	80.00	14.68	44.04	0.00	0.00	5.32	15.96	0.00	0.00
09/03/2021	3	PCL	1438	Golden plover	15	30.00	0.00	28.33	0.00	0.00	0.00	1.67	0.00	0.00
09/03/2021	4	JSN	1230	Golden plover	1	10.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
09/03/2021	4	JSN	1300	Golden plover	3	15.00	0.73	1.45	0.00	0.00	4.27	8.55	0.00	0.00
09/03/2021	4	JSN	1324	Golden plover	2	15.00	1.15	2.29	0.00	0.00	3.85	7.71	0.00	0.00
09/03/2021	4	PCL	1606	Golden plover	2	6.00	0.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00
09/03/2021	4	PCL	1609	Golden plover	2	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00
09/03/2021	4	PCL	1627	Golden plover	1	5.00	4.95	0.00	0.00	0.00	0.05	0.00	0.00	0.00
09/03/2021	4	PCL	1705	Golden plover	4	10.00	0.00	7.53	0.00	0.00	0.00	2.47	0.00	0.00
09/03/2021	4	PCL	1713	Golden plover	2	5.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
10/03/2021	3	PCL	1123	Golden plover	1	340.00	0.00	340.00	0.00	0.00	0.00	0.00	0.00	0.00
10/03/2021	3	PCL	1128	Golden plover	40	30.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/03/2021	3	PCL	1139	Golden plover	1	30.00	0.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00
10/03/2021	3	PCL	1149	Golden plover	40	30.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/03/2021	3	PCL	1210	Golden plover	1	15.00	0.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00
10/03/2021	3	PCL	1214	Golden plover	50	120.00	60.00	60.00	0.00	0.00	0.00	0.00	0.00	0.00
10/03/2021	3	PCL	1219	Golden plover	4	20.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)			
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m
10/03/2021	3	PCL	1249	Golden plover	50	120.00	120.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/03/2021	3	PCL	1301	Golden plover	4	60.00	60.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/03/2021	3	PCL	1306	Golden plover	4	35.00	35.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/03/2021	3	PCL	1310	Golden plover	50	75.00	75.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/03/2021	3	PCL	1313	Golden plover	50	120.00	120.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/03/2021	3	PCL	1332	Golden plover	1	80.00	15.00	65.00	0.00	0.00	0.00	0.00	0.00	0.00
10/03/2021	3	PCL	1353	Golden plover	15	56.00	16.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00
10/03/2021	4	PCL	810	Golden plover	4	480.00	0.00	37.60	0.00	0.00	0.00	442.40	0.00	0.00
10/03/2021	4	PCL	822	Golden plover	40	240.00	0.00	0.00	0.00	0.00	0.00	240.00	0.00	0.00
10/03/2021	4	PCL	834	Golden plover	6	260.00	0.00	0.00	0.00	0.00	0.00	260.00	0.00	0.00
10/03/2021	4	PCL	838	Golden plover	2	180.00	0.00	0.00	0.00	0.00	0.00	180.00	0.00	0.00
10/03/2021	4	PCL	902	Golden plover	1	240.00	0.00	0.00	0.00	0.00	0.00	240.00	0.00	0.00
10/03/2021	4	PCL	909	Golden plover	1	10.00	0.00	1.71	0.00	0.00	0.00	8.29	0.00	0.00
10/03/2021	4	PCL	910	Golden plover	8	30.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00
10/03/2021	4	PCL	911	Golden plover	8	600.00	0.00	90.13	0.00	0.00	0.00	509.87	0.00	0.00
10/03/2021	4	PCL	922	Golden plover	2	10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/03/2021	4	PCL	933	Golden plover	1	80.00	0.00	45.64	0.00	0.00	0.00	34.36	0.00	0.00
10/03/2021	4	PCL	934	Golden plover	2	75.00	0.00	0.00	0.00	0.00	0.00	75.00	0.00	0.00
10/03/2021	4	PCL	940	Golden plover	4	24.00	0.00	0.00	0.00	0.00	0.00	24.00	0.00	0.00
10/03/2021	4	PCL	944	Golden plover	2	280.00	0.00	56.81	0.00	0.00	0.00	223.19	0.00	0.00
10/03/2021	4	PCL	1010	Golden plover	1	60.00	0.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00
10/03/2021	4	PCL	1011	Golden plover	1	60.00	0.00	5.67	0.00	0.00	0.00	54.33	0.00	0.00
10/03/2021	4	PCL	1029	Golden plover	4	30.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00
10/03/2021	6	JSN	818	Golden plover	2	8.00	0.37	0.62	0.00	0.00	2.63	4.38	0.00	0.00
11/03/2021	2	JSN	839	Golden plover	1	8.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00
07/04/2021	3	JSN	914	Golden plover	5	5.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/04/2021	3	JSN	916	Golden plover	1	8.00	3.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
07/04/2021	3	JSN	936	Golden plover	1	5.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
07/04/2021	4	PCL	857	Golden plover	2	70.00	0.00	0.00	0.00	0.00	11.00	59.00	0.00	0.00
07/04/2021	4	PCL	926	Golden plover	2	55.00	0.00	0.00	0.00	0.00	5.00	30.00	20.00	0.00
07/04/2021	4	PCL	935	Golden plover	2	12.00	0.00	0.00	0.00	0.00	12.00	0.00	0.00	0.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)			
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m
07/04/2021	4	PCL	940	Golden plover	2	30.00	0.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00
08/04/2021	2	JSN	1007	Golden plover	2	60.00	0.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00
12/04/2021	1	JSN	1432	Golden plover	1	6.00	0.00	0.00	0.00	0.00	3.00	3.00	0.00	0.00
16/04/2021	3	JSN	900	Golden plover	2	3.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16/04/2021	3	DBU	1226	Golden plover	1	18.00	0.00	18.00	0.00	0.00	0.00	0.00	0.00	0.00
16/04/2021	4	DBU	800	Golden plover	1	15.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00
16/04/2021	4	DBU	943	Golden plover	19	36.00	0.00	0.00	0.00	0.00	0.00	36.00	0.00	0.00
16/04/2021	4	DBU	1011	Golden plover	14	30.00	0.00	0.00	0.00	0.00	0.00	12.00	8.00	10.00
17/05/2021	2	JSN	1434	Golden plover	2	5.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
19/05/2021	2	DBU	1547	Golden plover	2	23.00	0.00	0.00	0.00	0.00	23.00	0.00	0.00	0.00
19/05/2021	2	DBU	1643	Golden plover	2	10.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
19/05/2021	2	DBU	1718	Golden plover	1	3.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00
01/06/2021	3	PRO	1741	Golden plover	1	65.00	0.00	50.51	0.00	0.00	0.00	14.49	0.00	0.00
01/06/2021	3	PRO	1757	Golden plover	1	85.00	27.28	50.01	0.00	0.00	2.72	4.99	0.00	0.00
01/06/2021	3	PRO	1801	Golden plover	2	175.00	9.50	156.77	0.00	0.00	0.50	8.23	0.00	0.00
01/06/2021	3	PRO	1855	Golden plover	1	180.00	5.00	175.00	0.00	0.00	0.00	0.00	0.00	0.00
01/06/2021	3	PRO	1940	Golden plover	1	130.00	15.00	115.00	0.00	0.00	0.00	0.00	0.00	0.00
01/06/2021	4	PRO	1431	Golden plover	1	10.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
01/06/2021	4	NRO	1840	Golden plover	1	32.00	0.00	0.00	0.00	0.00	7.00	25.00	0.00	0.00
01/06/2021	4	NRO	1944	Golden plover	1	20.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00
02/06/2021	6	NRO	1245	Golden plover	1	10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
02/06/2021	6	PRO	1821	Golden plover	2	30.00	9.86	19.72	0.00	0.00	0.14	0.28	0.00	0.00
02/06/2021	6	PRO	1823	Golden plover	1	25.00	7.97	11.95	0.00	0.00	2.03	3.05	0.00	0.00
03/06/2021	1	PRO	1821	Golden plover	1	25.00	0.00	2.90	0.00	0.00	0.00	22.10	0.00	0.00
03/06/2021	2	NRO	1754	Golden plover	1	15.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00
14/06/2021	4	DBU	1611	Golden plover	1	62.00	0.00	19.60	0.00	0.00	0.00	42.40	0.00	0.00
14/06/2021	4	DBU	1642	Golden plover	3	45.00	0.74	3.43	0.00	0.00	7.26	33.57	0.00	0.00
14/06/2021	4	DBU	1727	Golden plover	1	95.00	0.00	0.00	0.00	0.00	12.00	83.00	0.00	0.00
14/06/2021	4	JSN	2051	Golden plover	1	53.00	0.24	3.98	0.00	0.00	2.76	46.02	0.00	0.00
14/06/2021	4	JSN	2133	Golden plover	2	5.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
30/06/2021	4	DJP	720	Golden plover	1	45.00	17.87	0.00	0.00	0.00	27.13	0.00	0.00	0.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)			
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m
30/06/2021	4	DJP	758	Golden plover	1	20.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00
30/06/2021	4	DJP	941	Golden plover	1	30.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00	0.00
30/06/2021	4	JSN	1132	Golden plover	3	5.00	3.14	0.00	0.00	0.00	1.86	0.00	0.00	0.00
30/06/2021	4	JSN	1139	Golden plover	1	10.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
30/06/2021	4	JSN	1157	Golden plover	1	10.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
30/06/2021	4	JSN	1206	Golden plover	11	10.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
30/06/2021	4	JSN	1401	Golden plover	2	20.00	0.00	4.89	0.00	0.00	0.00	15.11	0.00	0.00
19/07/2021	3	DBU	1604	Golden plover	1	43.00	5.00	38.00	0.00	0.00	0.00	0.00	0.00	0.00
23/07/2021	1	DBU	752	Golden plover	1	5.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
23/07/2021	1	DBU	823	Golden plover	1	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00
23/07/2021	1	DBU	956	Golden plover	1	3.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00
08/01/2021	2	NRO	906	Goshawk	1	50.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00
04/03/2021	4	PCL	1415	Goshawk	1	180.00	0.00	0.00	0.00	0.00	10.00	110.00	30.00	30.00
04/03/2021	4	PCL	1626	Goshawk	1	61.00	0.00	0.00	0.00	0.00	7.00	54.00	0.00	0.00
04/03/2021	4	PCL	1651	Goshawk	1	18.00	0.00	0.00	0.00	0.00	18.00	0.00	0.00	0.00
04/03/2021	4	PCL	1659	Goshawk	1	68.00	0.00	0.00	0.00	0.00	64.00	4.00	0.00	0.00
05/03/2021	2	PCL	811	Goshawk	1	16.00	0.00	0.00	0.00	0.00	16.00	0.00	0.00	0.00
09/03/2021	3	PCL	1252	Goshawk	1	112.00	0.00	19.02	0.00	0.00	0.00	92.98	0.00	0.00
09/03/2021	4	PCL	1618	Goshawk	1	99.00	0.00	0.00	0.00	0.00	0.00	99.00	0.00	0.00
09/03/2021	4	PCL	1625	Goshawk	1	180.00	0.00	0.00	0.00	0.00	30.00	150.00	0.00	0.00
11/03/2021	2	JSN	827	Goshawk	1	5.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00
07/04/2021	4	PCL	1016	Goshawk	1	214.00	0.00	0.00	0.00	0.00	0.00	214.00	0.00	0.00
01/10/2020	1	DJP	1217	Greylag goose	3	50.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00
01/10/2020	2	NRO	941	Greylag goose	7	60.00	0.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00
01/10/2020	3	NRO	1446	Greylag goose	15	70.00	0.00	27.93	20.94	0.00	0.00	12.07	9.06	0.00
01/10/2020	4	DJP	1445	Greylag goose	15	70.00	0.00	0.00	0.00	0.00	0.00	0.00	70.00	0.00
07/10/2020	5	NRO	920	Greylag goose	8	150.00	0.00	92.01	0.00	0.00	0.00	57.99	0.00	0.00
07/10/2020	6	DJP	924	Greylag goose	8	85.00	0.00	42.39	0.00	0.00	0.00	42.61	0.00	0.00
07/10/2020	6	DJP	1008	Greylag goose	13	383.00	0.00	344.06	0.00	0.00	0.00	38.94	0.00	0.00
09/10/2020	1	DJP	903	Greylag goose	4	40.00	0.00	0.00	0.00	0.00	0.00	40.00	0.00	0.00
09/10/2020	1	DJP	903	Greylag goose	13	60.00	0.00	0.00	0.00	0.00	20.00	40.00	0.00	0.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)			
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m
09/10/2020	1	DJP	910	Greylag goose	2	121.00	0.00	0.00	0.00	0.00	61.00	60.00	0.00	0.00
09/10/2020	1	DJP	930	Greylag goose	4	27.00	0.00	0.00	0.00	0.00	27.00	0.00	0.00	0.00
09/10/2020	1	DJP	1001	Greylag goose	4	100.00	0.00	0.00	0.00	0.00	80.00	20.00	0.00	0.00
09/10/2020	1	DJP	1028	Greylag goose	13	55.00	0.00	0.00	0.00	0.00	35.00	20.00	0.00	0.00
09/10/2020	1	DJP	1124	Greylag goose	5	45.00	0.00	0.00	0.00	0.00	10.00	35.00	0.00	0.00
09/10/2020	2	NRO	908	Greylag goose	3	80.00	0.00	0.00	0.00	0.00	0.00	80.00	0.00	0.00
09/10/2020	2	NRO	1012	Greylag goose	30	30.00	0.00	0.00	0.00	0.00	10.00	20.00	0.00	0.00
09/10/2020	2	NRO	1016	Greylag goose	28	60.00	0.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00
09/10/2020	2	NRO	1040	Greylag goose	3	30.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00
09/10/2020	2	NRO	1052	Greylag goose	1	120.00	0.00	0.00	0.00	0.00	0.00	40.00	80.00	0.00
09/10/2020	2	NRO	1106	Greylag goose	8	102.00	0.00	0.00	0.00	0.00	12.00	90.00	0.00	0.00
09/10/2020	2	NRO	1119	Greylag goose	5	50.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00
28/10/2020	5	NRO	1118	Greylag goose	5	70.00	14.62	36.55	0.00	0.00	5.38	13.45	0.00	0.00
28/10/2020	6	PCL	915	Greylag goose	4	180.00	0.00	87.49	0.00	0.00	0.00	92.51	0.00	0.00
10/11/2020	1	PRO	1316	Greylag goose	6	80.00	0.00	0.00	0.00	0.00	0.00	80.00	0.00	0.00
10/11/2020	1	PRO	1457	Greylag goose	4	110.00	0.00	0.00	0.00	0.00	0.00	110.00	0.00	0.00
10/11/2020	2	NRO	1452	Greylag goose	2	90.00	0.00	0.00	0.00	0.00	0.00	90.00	0.00	0.00
10/11/2020	2	NRO	1507	Greylag goose	2	120.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	120.00
11/11/2020	4	PRO	1021	Greylag goose	2	40.00	0.00	0.00	0.00	0.00	0.00	40.00	0.00	0.00
11/11/2020	4	PRO	1151	Greylag goose	1	35.00	0.00	0.00	0.00	0.00	0.00	35.00	0.00	0.00
13/11/2020	2	PRO	1001	Greylag goose	8	70.00	0.00	0.00	0.00	0.00	0.00	70.00	0.00	0.00
13/11/2020	2	PRO	1032	Greylag goose	2	110.00	0.00	0.00	0.00	0.00	0.00	110.00	0.00	0.00
15/12/2020	3	DJP	928	Greylag goose	3	25.00	4.48	0.00	0.00	0.00	20.52	0.00	0.00	0.00
15/12/2020	3	DJP	929	Greylag goose	1	20.00	11.51	0.00	0.00	0.00	8.49	0.00	0.00	0.00
15/12/2020	4	PRO	925	Greylag goose	3	8.00	0.00	2.27	0.00	0.00	0.00	5.73	0.00	0.00
17/12/2020	5	PRO	830	Greylag goose	4	20.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00
18/12/2020	1	PRO	1145	Greylag goose	3	15.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00
18/12/2020	2	DJP	920	Greylag goose	2	35.00	0.00	0.00	0.00	0.00	0.00	35.00	0.00	0.00
18/12/2020	2	DJP	956	Greylag goose	2	150.00	0.00	0.00	0.00	0.00	20.00	130.00	0.00	0.00
06/01/2021	5	PRO	1422	Greylag goose	2	120.00	0.00	82.80	0.00	0.00	0.00	37.20	0.00	0.00
06/01/2021	6	NRO	1424	Greylag goose	2	90.00	0.00	49.47	0.00	0.00	0.00	40.53	0.00	0.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)			
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m
08/01/2021	2	NRO	954	Greylag goose	1	30.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00
08/01/2021	2	NRO	1016	Greylag goose	6	30.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00
08/01/2021	2	PRO	1334	Greylag goose	4	26.00	0.00	0.00	0.00	0.00	8.00	18.00	0.00	0.00
08/01/2021	2	PRO	1406	Greylag goose	6	45.00	0.00	0.00	0.00	0.00	10.00	35.00	0.00	0.00
08/01/2021	2	PRO	1433	Greylag goose	18	50.00	0.00	0.00	0.00	0.00	10.00	40.00	0.00	0.00
08/01/2021	2	PRO	1434	Greylag goose	8	28.00	0.00	0.00	0.00	0.00	10.00	18.00	0.00	0.00
08/01/2021	2	PRO	1501	Greylag goose	26	38.00	0.00	0.00	0.00	0.00	8.00	30.00	0.00	0.00
08/01/2021	2	PRO	1511	Greylag goose	78	50.00	0.00	0.00	0.00	0.00	10.00	40.00	0.00	0.00
08/01/2021	2	PRO	1536	Greylag goose	72	45.00	0.00	0.00	0.00	0.00	45.00	0.00	0.00	0.00
08/01/2021	2	PRO	1548	Greylag goose	66	57.00	0.00	0.00	0.00	0.00	10.00	47.00	0.00	0.00
08/01/2021	2	PRO	1604	Greylag goose	41	49.00	0.00	0.00	0.00	0.00	8.00	41.00	0.00	0.00
12/01/2021	4	PRO	1514	Greylag goose	7	35.00	0.00	0.00	0.00	0.00	0.00	35.00	0.00	0.00
01/03/2021	1	PCL	1650	Greylag goose	1	31.00	0.00	0.00	0.00	0.00	5.00	26.00	0.00	0.00
01/03/2021	1	PCL	1700	Greylag goose	1	20.00	0.00	0.00	0.00	0.00	2.00	18.00	0.00	0.00
01/03/2021	1	PCL	1705	Greylag goose	1	90.00	0.00	18.12	0.00	0.00	0.00	71.88	0.00	0.00
02/03/2021	5	JSN	1639	Greylag goose	3	20.00	0.00	15.55	0.00	0.00	0.00	4.45	0.00	0.00
02/03/2021	6	PCL	1637	Greylag goose	3	90.00	0.00	0.00	0.00	0.00	0.00	90.00	0.00	0.00
03/03/2021	1	PCL	1458	Greylag goose	2	8.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00
03/03/2021	1	PCL	1508	Greylag goose	2	6.00	0.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00
03/03/2021	1	PCL	1611	Greylag goose	2	360.00	0.00	0.00	0.00	0.00	0.00	360.00	0.00	0.00
03/03/2021	1	PCL	1637	Greylag goose	2	120.00	0.00	0.00	0.00	0.00	0.00	120.00	0.00	0.00
03/03/2021	1	PCL	1639	Greylag goose	2	60.00	0.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00
04/03/2021	3	PCL	1102	Greylag goose	3	60.00	0.00	0.00	0.00	41.62	0.00	0.00	0.00	18.38
04/03/2021	3	PCL	1140	Greylag goose	2	26.00	0.00	21.16	0.00	0.00	0.00	4.84	0.00	0.00
04/03/2021	3	PCL	1221	Greylag goose	2	12.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04/03/2021	4	JSN	1243	Greylag goose	2	20.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00
05/03/2021	1	JSN	900	Greylag goose	3	20.00	0.00	11.21	0.00	0.00	0.00	8.79	0.00	0.00
05/03/2021	2	PCL	912	Greylag goose	1	24.00	0.00	0.00	0.00	0.00	0.00	24.00	0.00	0.00
05/03/2021	2	PCL	1034	Greylag goose	2	26.00	0.00	0.00	0.00	0.00	0.00	26.00	0.00	0.00
05/03/2021	2	PCL	1258	Greylag goose	1	15.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00
09/03/2021	3	PCL	1236	Greylag goose	2	60.00	60.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)			
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m
09/03/2021	3	PCL	1303	Greylag goose	1	70.00	0.00	30.67	0.00	0.00	0.00	39.33	0.00	0.00
09/03/2021	3	PCL	1317	Greylag goose	1	70.00	0.00	56.63	0.00	0.00	0.00	13.37	0.00	0.00
09/03/2021	3	PCL	1332	Greylag goose	1	31.00	0.00	31.00	0.00	0.00	0.00	0.00	0.00	0.00
09/03/2021	3	PCL	1418	Greylag goose	4	20.00	0.00	17.90	0.00	0.00	0.00	2.10	0.00	0.00
09/03/2021	3	PCL	1425	Greylag goose	2	25.00	24.41	0.00	0.00	0.00	0.59	0.00	0.00	0.00
09/03/2021	3	PCL	12588	Greylag goose	4	90.00	0.00	53.95	0.00	0.00	0.00	36.05	0.00	0.00
09/03/2021	4	JSN	1427	Greylag goose	2	10.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
10/03/2021	4	PCL	828	Greylag goose	2	85.00	0.00	0.00	0.00	0.00	20.00	65.00	0.00	0.00
10/03/2021	4	PCL	1022	Greylag goose	2	30.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00
07/04/2021	3	JSN	943	Greylag goose	2	5.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/04/2021	3	JSN	950	Greylag goose	3	10.00	0.00	5.20	0.00	0.00	0.00	4.80	0.00	0.00
07/04/2021	3	JSN	1049	Greylag goose	2	5.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/04/2021	4	PCL	911	Greylag goose	2	58.00	0.00	0.00	0.00	0.00	20.00	38.00	0.00	0.00
07/04/2021	4	PCL	943	Greylag goose	2	60.00	0.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00
07/04/2021	4	PCL	946	Greylag goose	2	16.00	0.00	1.89	0.00	0.00	0.00	14.11	0.00	0.00
07/04/2021	4	PCL	957	Greylag goose	2	10.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
07/04/2021	4	PCL	1030	Greylag goose	2	30.00	0.00	0.00	0.00	0.00	10.00	20.00	0.00	0.00
08/04/2021	1	PCL	856	Greylag goose	1	90.00	0.00	0.00	0.00	0.00	30.00	60.00	0.00	0.00
08/04/2021	1	PCL	900	Greylag goose	1	8.00	0.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00
08/04/2021	1	PCL	913	Greylag goose	2	44.00	0.00	0.00	0.00	0.00	8.00	36.00	0.00	0.00
08/04/2021	1	PCL	928	Greylag goose	2	47.00	0.00	0.00	0.00	0.00	17.00	30.00	0.00	0.00
08/04/2021	1	PCL	1010	Greylag goose	2	40.00	0.00	0.00	0.00	0.00	0.00	40.00	0.00	0.00
08/04/2021	1	PCL	1025	Greylag goose	3	20.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00
08/04/2021	1	PCL	1153	Greylag goose	2	53.00	0.00	0.00	0.00	0.00	0.00	53.00	0.00	0.00
08/04/2021	1	PCL	1214	Greylag goose	1	75.00	0.00	0.00	0.00	0.00	0.00	75.00	0.00	0.00
08/04/2021	1	PCL	1232	Greylag goose	3	64.00	0.00	0.00	0.00	0.00	20.00	44.00	0.00	0.00
08/04/2021	1	PCL	1343	Greylag goose	2	65.00	0.00	0.00	0.00	0.00	5.00	60.00	0.00	0.00
08/04/2021	1	PCL	1357	Greylag goose	2	8.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00
08/04/2021	1	PCL	1359	Greylag goose	2	10.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00
08/04/2021	1	PCL	1409	Greylag goose	13	20.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00
08/04/2021	1	PCL	1411	Greylag goose	4	15.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00	0.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)			
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m
08/04/2021	1	PCL	1415	Greylag goose	11	72.00	0.00	32.83	0.00	0.00	0.00	39.17	0.00	0.00
08/04/2021	1	PCL	1418	Greylag goose	11	20.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00
08/04/2021	2	JSN	830	Greylag goose	2	5.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
08/04/2021	2	JSN	1030	Greylag goose	2	8.00	0.00	0.00	0.00	0.00	3.00	5.00	0.00	0.00
12/04/2021	1	JSN	1312	Greylag goose	3	15.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00	0.00
12/04/2021	1	JSN	1338	Greylag goose	3	10.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
12/04/2021	1	JSN	1406	Greylag goose	2	10.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
12/04/2021	1	JSN	1528	Greylag goose	5	5.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
12/04/2021	2	DBU	1312	Greylag goose	1	37.00	0.00	0.00	0.00	0.00	0.00	37.00	0.00	0.00
12/04/2021	2	DBU	1342	Greylag goose	1	7.00	0.00	0.00	0.00	0.00	7.00	0.00	0.00	0.00
12/04/2021	2	DBU	1507	Greylag goose	2	21.00	0.00	0.00	0.00	0.00	0.00	21.00	0.00	0.00
12/04/2021	6	JSN	1715	Greylag goose	2	5.00	4.82	0.00	0.00	0.00	0.18	0.00	0.00	0.00
16/04/2021	4	DBU	814	Greylag goose	4	9.00	0.00	0.17	0.00	0.00	0.00	8.83	0.00	0.00
16/04/2021	4	DBU	859	Greylag goose	1	10.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
16/04/2021	4	DBU	1002	Greylag goose	2	5.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
16/04/2021	4	DBU	1003	Greylag goose	1	8.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00
16/04/2021	4	DBU	1038	Greylag goose	2	17.00	0.00	5.18	0.00	0.00	0.00	11.82	0.00	0.00
01/06/2021	3	PRO	2013	Greylag goose	5	60.00	0.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00
01/06/2021	3	PRO	2013	Greylag goose	3	65.00	0.00	16.50	0.00	0.00	0.00	48.50	0.00	0.00
01/06/2021	3	PRO	2029	Greylag goose	5	40.00	0.00	0.00	0.00	0.00	0.00	40.00	0.00	0.00
01/06/2021	4	NRO	2012	Greylag goose	5	45.00	0.00	0.00	0.00	0.00	0.00	45.00	0.00	0.00
01/06/2021	4	NRO	2028	Greylag goose	5	50.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00
02/06/2021	5	PRO	1247	Greylag goose	4	85.00	0.00	0.00	0.00	0.00	0.00	85.00	0.00	0.00
02/06/2021	5	NRO	1734	Greylag goose	5	120.00	0.00	93.07	0.00	0.00	0.00	26.93	0.00	0.00
02/06/2021	6	NRO	1246	Greylag goose	2	90.00	0.00	16.08	0.00	0.00	0.00	73.92	0.00	0.00
02/06/2021	6	PRO	1736	Greylag goose	5	115.00	0.00	39.76	21.21	0.00	0.00	35.24	18.79	0.00
03/06/2021	1	NRO	1532	Greylag goose	2	160.00	0.00	6.61	0.00	0.00	0.00	153.39	0.00	0.00
03/06/2021	1	PRO	1631	Greylag goose	2	40.00	0.00	0.00	0.00	0.00	0.00	40.00	0.00	0.00
03/06/2021	1	PRO	1745	Greylag goose	9	555.00	0.00	0.00	0.00	0.00	0.00	555.00	0.00	0.00
03/06/2021	1	PRO	1823	Greylag goose	2	50.00	0.00	2.89	0.00	0.00	0.00	47.11	0.00	0.00
03/06/2021	2	PRO	1311	Greylag goose	2	25.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)			
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m
03/06/2021	2	NRO	1737	Greylag goose	9	40.00	0.00	0.00	0.00	0.00	0.00	40.00	0.00	0.00
28/06/2021	2	DJP	1745	Greylag goose	2	180.00	0.00	0.00	0.00	0.00	0.00	180.00	0.00	0.00
08/10/2020	6	NRO	1107	Hen harrier	1	45.00	0.00	38.15	0.00	0.00	0.00	6.85	0.00	0.00
30/10/2020	4	PCL	1052	Hen harrier	1	8.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00
10/11/2020	1	PRO	1519	Hen harrier	1	185.00	16.72	17.64	0.00	0.00	73.28	77.36	0.00	0.00
10/11/2020	1	PRO	1541	Hen harrier	1	210.00	0.00	0.00	0.00	0.00	0.00	210.00	0.00	0.00
12/11/2020	5	NRO	931	Hen harrier	1	50.00	0.00	21.10	0.00	0.00	0.00	28.90	0.00	0.00
12/11/2020	6	PRO	932	Hen harrier	1	85.00	21.62	51.89	0.00	0.00	3.38	8.11	0.00	0.00
15/12/2020	4	PRO	1039	Hen harrier	1	60.00	0.00	0.00	0.00	0.00	35.00	25.00	0.00	0.00
15/12/2020	4	PRO	1110	Hen harrier	1	27.00	0.00	0.00	0.00	0.00	15.00	12.00	0.00	0.00
18/12/2020	1	PRO	1026	Hen harrier	1	795.00	31.91	4.07	0.00	0.00	673.09	85.93	0.00	0.00
12/01/2021	4	PRO	1341	Hen harrier	1	30.00	0.00	0.00	0.00	0.00	15.00	15.00	0.00	0.00
12/01/2021	4	PRO	1343	Hen harrier	1	35.00	0.00	0.00	0.00	0.00	35.00	0.00	0.00	0.00
02/03/2021	6	PCL	1654	Hen harrier	1	138.00	36.97	21.00	0.00	0.00	51.03	29.00	0.00	0.00
05/03/2021	1	JSN	1211	Hen harrier	1	15.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00
05/03/2021	1	JSN	1416	Hen harrier	1	8.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00
05/03/2021	1	JSN	1416	Hen harrier	1	4.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
04/08/2021	1	DJP	1048	Marsh harrier	1	60.00	0.00	0.00	0.00	0.00	40.00	20.00	0.00	0.00
04/08/2021	1	DJP	1053	Marsh harrier	1	100.00	0.00	0.00	0.00	0.00	75.00	25.00	0.00	0.00
04/08/2021	1	DJP	1104	Marsh harrier	1	180.00	0.00	0.00	0.00	0.00	180.00	0.00	0.00	0.00
04/08/2021	1	DJP	1322	Marsh harrier	1	225.00	0.00	0.00	0.00	0.00	225.00	0.00	0.00	0.00
05/08/2021	3	DJP	1002	Marsh harrier	1	180.00	122.41	7.20	0.00	0.00	47.59	2.80	0.00	0.00
08/03/2021	6	PCL	1658	Merlin	1	10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/06/2021	2	JSN	1219	Merlin	1	30.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00	0.00
30/06/2021	3	DJP	1239	Merlin	1	5.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21/07/2021	3	DBU	1140	Merlin	1	14.00	14.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23/07/2021	1	DBU	752	Merlin	1	26.00	0.00	0.00	0.00	0.00	9.00	17.00	0.00	0.00
03/08/2021	5	DJP	1239	Merlin	1	20.00	17.98	0.00	0.00	0.00	2.02	0.00	0.00	0.00
03/08/2021	5	DJP	1431	Merlin	1	20.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29/09/2020	1	NRO	1517	Peregrine falcon	1	110.00	0.00	0.00	0.00	0.00	10.00	100.00	0.00	0.00
29/09/2020	1	NRO	1550	Peregrine falcon	1	35.00	1.17	7.02	0.00	0.00	3.83	22.98	0.00	0.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)			
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m
29/09/2020	1	NRO	1605	Peregrine falcon	1	38.00	0.00	0.00	0.00	0.00	28.00	10.00	0.00	0.00
29/09/2020	3	NRO	1231	Peregrine falcon	1	24.00	6.00	18.00	0.00	0.00	0.00	0.00	0.00	0.00
07/10/2020	5	NRO	910	Peregrine falcon	1	180.00	0.00	158.83	0.00	0.00	0.00	21.17	0.00	0.00
07/10/2020	6	DJP	1003	Peregrine falcon	1	5.00	0.00	1.06	0.00	0.00	0.00	3.94	0.00	0.00
07/10/2020	6	NRO	1210	Peregrine falcon	1	30.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00
08/10/2020	5	NRO	1325	Peregrine falcon	1	55.00	2.86	7.62	0.00	0.00	12.14	32.38	0.00	0.00
08/10/2020	5	NRO	1338	Peregrine falcon	1	190.00	0.00	8.48	4.95	0.00	0.00	111.52	65.05	0.00
08/10/2020	6	NRO	1108	Peregrine falcon	1	50.00	0.00	46.79	0.00	0.00	0.00	3.21	0.00	0.00
09/10/2020	1	DJP	1008	Peregrine falcon	1	65.00	0.00	0.00	0.00	0.00	30.00	35.00	0.00	0.00
28/10/2020	5	NRO	914	Peregrine falcon	1	145.00	0.00	0.00	0.00	0.00	100.00	45.00	0.00	0.00
28/10/2020	6	PCL	855	Peregrine falcon	1	90.00	0.00	3.85	0.00	0.00	0.00	86.15	0.00	0.00
30/10/2020	3	NRO	1219	Peregrine falcon	1	370.00	2.98	17.91	89.53	0.00	7.02	42.09	210.47	0.00
10/11/2020	2	NRO	1540	Peregrine falcon	1	70.00	0.00	0.00	0.00	0.00	40.00	30.00	0.00	0.00
13/11/2020	1	NRO	900	Peregrine falcon	1	75.00	0.00	0.00	0.00	0.00	15.00	60.00	0.00	0.00
13/11/2020	1	NRO	9266	Peregrine falcon	1	186.00	0.00	0.00	0.00	0.00	6.00	180.00	0.00	0.00
13/11/2020	2	PRO	943	Peregrine falcon	1	11.00	0.00	0.00	0.00	0.00	4.00	7.00	0.00	0.00
16/12/2020	2	PRO	1257	Peregrine falcon	1	53.00	0.00	0.00	0.00	0.00	8.00	45.00	0.00	0.00
16/12/2020	2	PRO	1433	Peregrine falcon	1	181.00	0.00	0.00	0.00	0.00	6.00	175.00	0.00	0.00
18/12/2020	1	PRO	944	Peregrine falcon	1	35.00	0.00	0.00	0.00	0.00	0.00	35.00	0.00	0.00
18/12/2020	2	DJP	931	Peregrine falcon	1	65.00	0.00	0.00	0.00	0.00	10.00	55.00	0.00	0.00
18/12/2020	2	DJP	938	Peregrine falcon	1	155.00	0.00	0.00	0.00	0.00	40.00	115.00	0.00	0.00
02/03/2021	5	PCL	1315	Peregrine falcon	1	60.00	0.00	0.00	0.00	0.00	0.00	40.00	20.00	0.00
02/03/2021	5	PCL	1330	Peregrine falcon	1	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00
04/03/2021	3	PCL	1054	Peregrine falcon	1	5.00	0.00	0.43	0.00	0.00	0.00	4.57	0.00	0.00
04/03/2021	3	PCL	1054	Peregrine falcon	1	5.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
04/03/2021	3	PCL	1055	Peregrine falcon	1	45.00	40.40	0.00	0.00	0.00	4.60	0.00	0.00	0.00
04/03/2021	4	PCL	1421	Peregrine falcon	1	148.00	0.00	0.00	0.00	0.00	0.00	148.00	0.00	0.00
09/03/2021	3	PCL	1501	Peregrine falcon	1	60.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.00
09/03/2021	4	JSN	1300	Peregrine falcon	1	15.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00
10/03/2021	1	JSN	1343	Peregrine falcon	1	60.00	0.00	0.00	8.33	0.00	0.00	0.00	51.67	0.00
10/03/2021	3	PCL	1240	Peregrine falcon	1	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)			
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m
10/03/2021	5	JSN	1247	Peregrine falcon	1	30.00	0.00	0.46	0.00	0.00	0.00	29.54	0.00	0.00
11/03/2021	1	PCL	580	Peregrine falcon	2	118.00	0.00	23.81	0.00	0.00	0.00	94.19	0.00	0.00
07/04/2021	3	JSN	1148	Peregrine falcon	1	30.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00
07/04/2021	5	PCL	1432	Peregrine falcon	1	200.00	0.00	0.00	7.00	20.99	0.00	0.00	43.00	129.01
07/04/2021	6	JSN	1436	Peregrine falcon	1	60.00	0.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00
08/04/2021	1	PCL	1010	Peregrine falcon	1	10.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
08/04/2021	1	PCL	1036	Peregrine falcon	1	157.00	0.00	103.53	0.00	0.00	0.00	53.47	0.00	0.00
08/04/2021	1	PCL	1449	Peregrine falcon	1	20.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00
12/04/2021	1	JSN	1447	Peregrine falcon	1	55.00	0.00	0.00	0.00	0.00	50.00	5.00	0.00	0.00
12/04/2021	5	DBU	1448	Peregrine falcon	1	22.00	15.46	0.00	0.00	0.00	6.54	0.00	0.00	0.00
16/04/2021	4	JSN	1418	Peregrine falcon	1	10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20/05/2021	6	DBU	1018	Peregrine falcon	1	56.00	0.00	0.00	0.00	0.00	0.00	56.00	0.00	0.00
16/06/2021	6	JSN	1634	Peregrine falcon	1	40.00	0.00	12.14	0.00	0.00	0.00	27.86	0.00	0.00
30/06/2021	3	JSN	940	Peregrine falcon	1	15.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30/06/2021	4	JSN	1254	Peregrine falcon	1	15.00	0.00	0.00	0.00	0.00	0.00	10.00	5.00	0.00
01/07/2021	5	DJP	1108	Peregrine falcon	1	25.00	15.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00
21/07/2021	3	JSN	1240	Peregrine falcon	1	180.00	177.05	0.00	0.00	0.00	2.95	0.00	0.00	0.00
04/08/2021	1	DJP	1027	Peregrine falcon	1	180.00	0.00	0.00	0.00	0.00	0.00	180.00	0.00	0.00
05/08/2021	3	DJP	849	Peregrine falcon	1	10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
05/08/2021	3	DJP	936	Peregrine falcon	1	60.00	0.00	60.00	0.00	0.00	0.00	0.00	0.00	0.00
05/08/2021	4	JSN	844	Peregrine falcon	1	30.00	3.03	0.00	0.00	0.00	26.97	0.00	0.00	0.00
08/10/2020	4	DJP	1011	Pink-footed goose	72	167.00	0.00	0.00	0.00	0.00	0.00	0.00	60.00	107.00
11/11/2020	3	NRO	1011	Pink-footed goose	46	100.00	0.00	24.83	2.76	0.00	0.00	65.17	7.24	0.00
02/03/2021	6	PCL	1716	Pink-footed goose	20	180.00	0.00	0.00	0.00	99.84	0.00	0.00	0.00	80.16
03/03/2021	1	PCL	1520	Pink-footed goose	48	90.00	0.00	0.00	27.40	0.00	0.00	0.00	62.60	0.00
03/03/2021	1	PCL	1531	Pink-footed goose	48	360.00	0.00	0.00	0.00	0.00	0.00	0.00	360.00	0.00
03/03/2021	1	PCL	1537	Pink-footed goose	48	120.00	0.00	0.00	47.99	0.00	0.00	0.00	72.01	0.00
03/03/2021	2	JSN	1518	Pink-footed goose	48	30.00	0.00	0.00	0.00	0.00	10.00	20.00	0.00	0.00
05/03/2021	1	JSN	1320	Pink-footed goose	90	240.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	240.00
05/03/2021	2	PCL	810	Pink-footed goose	35	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00
05/03/2021	2	PCL	851	Pink-footed goose	60	90.00	0.00	0.00	0.00	0.00	0.00	90.00	0.00	0.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)			
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m
05/03/2021	2	PCL	1059	Pink-footed goose	7	60.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.00
05/03/2021	2	PCL	1105	Pink-footed goose	9	25.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00
05/03/2021	2	PCL	1145	Pink-footed goose	16	75.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	75.00
05/03/2021	2	PCL	1316	Pink-footed goose	85	120.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	120.00
29/09/2020	3	NRO	1235	Red kite	1	210.00	0.00	0.00	0.00	0.00	0.00	60.00	30.00	120.00
29/09/2020	4	DJP	1141	Red kite	1	76.00	0.00	0.00	0.00	0.00	46.00	30.00	0.00	0.00
01/06/2021	3	NRO	1403	Red kite	1	410.00	47.17	339.63	0.00	0.00	2.83	20.37	0.00	0.00
01/06/2021	4	PRO	1410	Red kite	1	635.00	4.37	106.56	0.00	0.00	20.63	503.44	0.00	0.00
03/06/2021	2	PRO	1301	Red kite	1	185.00	0.00	0.00	0.00	0.00	50.00	135.00	0.00	0.00
18/06/2021	6	DBU	808	Red kite	1	89.00	0.00	89.00	0.00	0.00	0.00	0.00	0.00	0.00
18/06/2021	6	DBU	831	Red kite	1	106.00	0.00	104.57	0.00	0.00	0.00	1.43	0.00	0.00
18/06/2021	6	DBU	834	Red kite	1	14.00	14.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/06/2021	6	DBU	838	Red kite	1	5.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/06/2021	6	DBU	915	Red kite	1	175.00	55.00	120.00	0.00	0.00	0.00	0.00	0.00	0.00
18/06/2021	6	DBU	935	Red kite	1	255.00	0.00	226.26	0.00	0.00	0.00	28.74	0.00	0.00
28/06/2021	2	DJP	1431	Red kite	1	450.00	0.00	0.00	0.00	0.00	0.00	120.00	300.00	30.00
30/06/2021	3	DJP	1321	Red kite	1	20.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00
30/06/2021	3	DJP	1344	Red kite	1	240.00	0.00	0.00	0.00	0.00	0.00	240.00	0.00	0.00
17/05/2021	3	JSN	1822	Short-eared owl	1	500.00	459.48	0.00	0.00	0.00	40.52	0.00	0.00	0.00
17/05/2021	3	JSN	1951	Short-eared owl	1	180.00	171.60	0.00	0.00	0.00	8.40	0.00	0.00	0.00
17/05/2021	3	JSN	2002	Short-eared owl	1	125.00	120.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
17/05/2021	3	JSN	2010	Short-eared owl	1	60.00	59.08	0.00	0.00	0.00	0.92	0.00	0.00	0.00
17/05/2021	3	JSN	2018	Short-eared owl	1	60.00	59.49	0.00	0.00	0.00	0.51	0.00	0.00	0.00
17/05/2021	4	DBU	2002	Short-eared owl	1	25.00	7.19	0.00	0.00	0.00	17.81	0.00	0.00	0.00
19/05/2021	2	DBU	1603	Short-eared owl	1	521.00	0.00	0.00	0.00	0.00	521.00	0.00	0.00	0.00
19/05/2021	2	DBU	1621	Short-eared owl	1	18.00	0.00	0.00	0.00	0.00	18.00	0.00	0.00	0.00
19/05/2021	2	DBU	1711	Short-eared owl	1	4.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
03/06/2021	1	PRO	1801	Short-eared owl	1	10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03/06/2021	1	PRO	1802	Short-eared owl	1	135.00	0.00	0.00	0.00	0.00	125.00	10.00	0.00	0.00
03/06/2021	1	PRO	1807	Short-eared owl	1	150.00	0.00	0.00	0.00	0.00	150.00	0.00	0.00	0.00
03/06/2021	1	PRO	1917	Short-eared owl	1	35.00	0.00	0.00	0.00	0.00	0.00	35.00	0.00	0.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)			
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m
14/06/2021	3	DBU	2023	Short-eared owl	1	8.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14/06/2021	3	DBU	2028	Short-eared owl	1	195.00	195.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14/06/2021	3	DBU	2032	Short-eared owl	1	28.00	28.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14/06/2021	3	DBU	2035	Short-eared owl	1	93.00	43.99	0.00	0.00	0.00	49.01	0.00	0.00	0.00
14/06/2021	3	DBU	2102	Short-eared owl	1	15.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14/06/2021	3	DBU	2131	Short-eared owl	1	165.00	103.12	0.00	0.00	0.00	61.88	0.00	0.00	0.00
14/06/2021	3	DBU	2145	Short-eared owl	1	11.00	11.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16/06/2021	1	JSN	1925	Short-eared owl	1	20.00	0.30	0.00	0.00	0.00	19.70	0.00	0.00	0.00
16/06/2021	1	JSN	2007	Short-eared owl	1	80.00	0.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
16/06/2021	1	JSN	2023	Short-eared owl	1	20.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00
16/06/2021	1	JSN	2044	Short-eared owl	2	80.00	2.52	0.00	0.00	0.00	77.48	0.00	0.00	0.00
16/06/2021	2	DBU	1917	Short-eared owl	1	9.00	0.00	0.00	0.00	0.00	9.00	0.00	0.00	0.00
16/06/2021	2	DBU	1919	Short-eared owl	1	4.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
16/06/2021	2	DBU	1922	Short-eared owl	1	3.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00
16/06/2021	2	DBU	1938	Short-eared owl	1	18.00	0.00	0.00	0.00	0.00	18.00	0.00	0.00	0.00
16/06/2021	2	DBU	1953	Short-eared owl	2	531.00	0.00	0.00	0.00	0.00	523.00	8.00	0.00	0.00
16/06/2021	2	DBU	2013	Short-eared owl	1	6.00	0.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00
16/06/2021	2	DBU	2034	Short-eared owl	1	447.00	0.00	0.00	0.00	0.00	447.00	0.00	0.00	0.00
16/06/2021	2	DBU	2107	Short-eared owl	1	437.00	0.00	0.00	0.00	0.00	437.00	0.00	0.00	0.00
16/06/2021	2	DBU	2130	Short-eared owl	1	89.00	0.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
16/06/2021	2	DBU	2139	Short-eared owl	1	159.00	0.00	0.00	0.00	0.00	159.00	0.00	0.00	0.00
28/06/2021	1	JSN	1826	Short-eared owl	1	190.00	0.00	0.00	0.00	0.00	10.00	180.00	0.00	0.00
28/06/2021	1	JSN	1915	Short-eared owl	1	30.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00	0.00
28/06/2021	2	DJP	1644	Short-eared owl	1	90.00	0.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
28/06/2021	2	DJP	1649	Short-eared owl	1	45.00	0.00	0.00	0.00	0.00	45.00	0.00	0.00	0.00
28/06/2021	2	DJP	1857	Short-eared owl	1	75.00	0.00	0.00	0.00	0.00	75.00	0.00	0.00	0.00
30/06/2021	3	JSN	837	Short-eared owl	1	30.00	0.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00
30/06/2021	3	JSN	950	Short-eared owl	1	5.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30/06/2021	3	JSN	1000	Short-eared owl	1	20.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30/06/2021	3	JSN	1015	Short-eared owl	1	10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30/06/2021	3	JSN	1031	Short-eared owl	1	5.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Date	VP	Observer	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)				Outside CRAA (seconds)			
							0-10m	11-150m	151-200m	>201m	0-20m	21-40m	41-100m	101-150m
30/06/2021	3	JSN	1033	Short-eared owl	2	5.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30/06/2021	3	DJP	1138	Short-eared owl	1	15.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30/06/2021	3	DJP	1208	Short-eared owl	1	300.00	222.95	0.00	0.00	0.00	77.05	0.00	0.00	0.00
30/06/2021	3	DJP	1225	Short-eared owl	1	60.00	60.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30/06/2021	3	DJP	1239	Short-eared owl	1	15.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08/03/2021	5	PCL	1206	White-tailed eagle	1	15.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00
08/03/2021	6	JSN	1206	White-tailed eagle	1	55.00	0.00	6.21	8.28	8.28	0.00	8.79	11.72	11.72

D.2 Moorland Breeding Bird Records

Moorland breeding bird surveys were undertaken during the 2022 breeding season and focussed on recording activity of upland wader species within the survey area (**Table D-3**). Survey methodology is detailed in **Annex B** and survey timing/weather conditions in **Annex C**.

Table D-3 Wader activity: 2022 breeding season (sorted by species)

Date	Observer	Species	Number recorded	Notes	Territory ID (minimum)	Territory ID (maximum)
20/04/2022	JR	Common sandpiper	1		N/A	N/A
20/04/2022	JR	Common sandpiper	1		CS_6	CS_6
20/04/2022	JR	Common sandpiper	1		CS_9	CS_9
20/04/2022	JR	Common sandpiper	1		CS_8	CS_8
21/04/2022	JR	Common sandpiper	1		N/A	CS_1
21/04/2022	JR	Common sandpiper	1		N/A	CS_1
02/05/2022	JRM	Common sandpiper	1		CS_5	CS_5
03/05/2022	JRM	Common sandpiper	1		CS_6	CS_6
04/05/2022	JRM	Common sandpiper	1		CS_9	CS_10
16/05/2022	TH	Common sandpiper	1		N/A	N/A
16/05/2022	TH	Common sandpiper	1		CS_7	CS_7
17/05/2022	JRM	Common sandpiper	1	Singing.	CS_6	CS_6
17/05/2022	SK	Common sandpiper	1		CS_6	CS_6
20/05/2022	JRM	Common sandpiper	1	Alarm calling.	CS_2	CS_2
20/05/2022	JRM	Common sandpiper	1		N/A	N/A
20/05/2022	JRM	Common sandpiper	1		N/A	N/A
06/06/2022	MW	Common sandpiper	1		CS_6	CS_6
06/06/2022	MW	Common sandpiper	1		CS_9	CS_10
07/06/2022	MW	Common sandpiper	1		CS_7	CS_7
07/06/2022	MW	Common sandpiper	1		CS_6	CS_6
07/06/2022	MW	Common sandpiper	1		CS_8	CS_8
08/06/2022	MW	Common sandpiper	1		N/A	CS_3
09/06/2022	MW	Common sandpiper	1		CS_7	CS_7
09/06/2022	MW	Common sandpiper	1		CS_7	CS_7
09/06/2022	MW	Common sandpiper	1		CS_9	CS_9
10/06/2022	MW	Common sandpiper	8	Minimum count within whole area surveyed.	N/A	N/A

Date	Observer	Species	Number recorded	Notes	Territory ID (minimum)	Territory ID (maximum)
16/06/2022	SK	Common sandpiper	1	Took off in flight.	CS_9	CS_10
16/06/2022	SK	Common sandpiper	1		CS_9	CS_9
16/06/2022	SK	Common sandpiper	1	Different bird from above.	CS_8	CS_8
16/06/2022	SK	Common sandpiper	1		N/A	N/A
16/06/2022	SK	Common sandpiper	2	Alarm calling.	N/A	CS_4
16/06/2022	SK	Common sandpiper	3	Family.	CS_5	CS_5
16/06/2022	SK	Common sandpiper	1	Alarm calling.	CS_5	CS_5
16/06/2022	SK	Common sandpiper	1	Calling.	CS_6	CS_6
16/06/2022	SK	Common sandpiper	1	Alarm calling.	CS_7	CS_7
17/06/2022	TH	Common sandpiper	2	Calling.	CS_5	CS_5
12/07/2022	MW	Common sandpiper	1		N/A	CS_3
12/07/2022	MW	Common sandpiper	1		N/A	N/A
12/07/2022	MW	Common sandpiper	1		N/A	N/A
12/07/2022	SK	Common sandpiper	1	Calling.	CS_5	CS_5
13/07/2022	MW	Common sandpiper	1		CS_9	CS_10
13/07/2022	MW	Common sandpiper	1		CS_2	CS_2
01/08/2022	MW	Common sandpiper	1	At Watch Water Reservoir.	N/A	N/A
03/08/2022	MW	Common sandpiper	1	At Watch Water Reservoir.	N/A	N/A
04/08/2022	MW	Common sandpiper	1		N/A	CS_3
16/03/2022	JRM	Curlew	2	Pair; singing.	N/A	CU_21
16/03/2022	JRM	Curlew	2	Pair; singing.	CU_22	CU_22
16/03/2022	JRM	Curlew	2	Pair.	N/A	CU_21
16/03/2022	JRM	Curlew	1	Singing.	CU_24	CU_24
12/04/2022	EB	Curlew	2		N/A	CU_19
12/04/2022	EB	Curlew	1	Singing.	N/A	CU_19
12/04/2022	EB	Curlew	1	Calling.	N/A	CU_19
12/04/2022	EB	Curlew	1		N/A	CU_19
12/04/2022	EB	Curlew	1	Calling.	CU_20	CU_20
12/04/2022	EB	Curlew	2		N/A	N/A
12/04/2022	EB	Curlew	2	Singing.	CU_26	CU_28
12/04/2022	EB	Curlew	2	Singing.	CU_26	CU_26
12/04/2022	EB	Curlew	1		CU_26	CU_26
12/04/2022	EB	Curlew	1	Calling.	CU_26	CU_28

Date	Observer	Species	Number recorded	Notes	Territory ID (minimum)	Territory ID (maximum)
12/04/2022	EB	Curlew	2	Calling.	CU_23	CU_23
12/04/2022	EB	Curlew	1	Calling.	CU_24	CU_25
12/04/2022	SK	Curlew	2	Calling.	CU_12	CU_12
12/04/2022	SK	Curlew	2	Calling.	CU_12	CU_12
12/04/2022	SK	Curlew	1	Calling.	CU_12	CU_12
12/04/2022	SK	Curlew	2	Calling.	CU_16	CU_17
12/04/2022	SK	Curlew	1	Singing.	CU_16	CU_16
12/04/2022	SK	Curlew	1	Singing.	CU_16	CU_18
12/04/2022	SK	Curlew	1	Singing; different bird to above.	CU_12	CU_13
12/04/2022	SK	Curlew	1	Singing; different bird to above.	CU_15	CU_15
12/04/2022	SK	Curlew	1	Singing.	CU_16	CU_16
12/04/2022	SK	Curlew	1	Alarm calling.	CU_15	CU_15
12/04/2022	TH	Curlew	1	Singing; heard only.	CU_6	CU_6
12/04/2022	TH	Curlew	1	Singing; heard only.	CU_12	CU_12
15/04/2022	EB	Curlew	1	Calling.	CU_8	CU_8
15/04/2022	EB	Curlew	1	Singing.	CU_8	CU_8
15/04/2022	EB	Curlew	2		CU_11	CU_11
15/04/2022	EB	Curlew	1		CU_10	CU_10
15/04/2022	EB	Curlew	1	Singing.	CU_10	CU_10
15/04/2022	EB	Curlew	2		CU_7	CU_7
15/04/2022	EB	Curlew	1	Calling.	CU_7	CU_7
15/04/2022	EB	Curlew	2		N/A	N/A
15/04/2022	EB	Curlew	2	Singing.	CU_32	CU_32
15/04/2022	EB	Curlew	1	Singing.	CU_34	CU_34
15/04/2022	EB	Curlew	1	Calling.	CU_34	CU_34
15/04/2022	EB	Curlew	2	Calling.	CU_32	CU_32
15/04/2022	EB	Curlew	1	Singing.	CU_32	CU_32
15/04/2022	EB	Curlew	1	Alarm calling.	CU_32	CU_32
15/04/2022	EB	Curlew	1	Calling.	CU_14	CU_14
15/04/2022	SK	Curlew	2		CU_4	CU_5
15/04/2022	SK	Curlew	1	Singing.	CU_4	CU_5
15/04/2022	SK	Curlew	1	Singing.	CU_4	CU_5
15/04/2022	SK	Curlew	1	Singing.	CU_4	CU_4

Date	Observer	Species	Number recorded	Notes	Territory ID (minimum)	Territory ID (maximum)
15/04/2022	SK	Curlew	2	Calling.	CU_4	CU_4
15/04/2022	TH	Curlew	1	Heard only; singing.	CU_8	CU_9
18/04/2022	JM	Curlew	1		CU_36	CU_36
18/04/2022	JM	Curlew	1	Alarm calling.	CU_36	CU_36
18/04/2022	JM	Curlew	1		N/A	N/A
18/04/2022	JM	Curlew	1	Alarm calling.	CU_33	CU_33
18/04/2022	JM	Curlew	2		N/A	N/A
18/04/2022	JM	Curlew	1		N/A	N/A
18/04/2022	JM	Curlew	1		CU_34	CU_34
18/04/2022	JM	Curlew	1	Alarm calling.	CU_33	CU_33
18/04/2022	JM	Curlew	1	Alarm calling.	CU_33	CU_33
18/04/2022	JM	Curlew	1		N/A	N/A
18/04/2022	JM	Curlew	1	Alarm calling.	CU_35	CU_35
18/04/2022	JM	Curlew	1		N/A	N/A
18/04/2022	JM	Curlew	1		CU_30	CU_30
18/04/2022	JM	Curlew	1		CU_30	CU_30
18/04/2022	JM	Curlew	1		CU_30	CU_30
18/04/2022	JM	Curlew	1		CU_30	CU_30
18/04/2022	JM	Curlew	1		N/A	N/A
18/04/2022	JM	Curlew	1		N/A	N/A
19/04/2022	JM	Curlew	1		N/A	N/A
19/04/2022	JM	Curlew	1	Calling.	CU_31	CU_31
19/04/2022	JM	Curlew	1	Calling.	CU_31	CU_31
19/04/2022	JM	Curlew	1		CU_31	CU_31
19/04/2022	JM	Curlew	1		N/A	N/A
19/04/2022	JM	Curlew	1	Singing.	CU_37	CU_37
19/04/2022	JM	Curlew	1	Calling.	N/A	N/A
19/04/2022	JM	Curlew	1	Singing.	CU_37	CU_37
19/04/2022	JM	Curlew	1	Calling.	CU_38	CU_38
19/04/2022	JM	Curlew	1		CU_39	CU_39
19/04/2022	JM	Curlew	1		CU_38	CU_38
19/04/2022	JM	Curlew	2		CU_38	CU_38

Date	Observer	Species	Number recorded	Notes	Territory ID (minimum)	Territory ID (maximum)
19/04/2022	JM	Curlew	1	Singing.	CU_39	CU_40
19/04/2022	JM	Curlew	2		N/A	N/A
19/04/2022	JM	Curlew	1	Calling.	CU_39	CU_39
19/04/2022	JM	Curlew	1		N/A	N/A
19/04/2022	JM	Curlew	1	Calling.	CU_41	CU_41
19/04/2022	JM	Curlew	1		CU_41	CU_41
19/04/2022	JM	Curlew	1		N/A	N/A
19/04/2022	JM	Curlew	1		N/A	N/A
19/04/2022	JM	Curlew	1		N/A	N/A
19/04/2022	JM	Curlew	3		N/A	N/A
19/04/2022	JM	Curlew	1	Calling.	CU_41	CU_41
19/04/2022	JM	Curlew	1		CU_41	CU_41
19/04/2022	JM	Curlew	1		N/A	N/A
19/04/2022	JM	Curlew	1	Calling.	CU_41	CU_41
19/04/2022	JM	Curlew	1	Calling.	CU_41	CU_41
19/04/2022	JR	Curlew	1		CU_16	CU_18
19/04/2022	JR	Curlew	1		N/A	N/A
19/04/2022	JR	Curlew	1		N/A	CU_27
19/04/2022	JR	Curlew	1		CU_24	CU_24
19/04/2022	JR	Curlew	1		CU_24	CU_25
19/04/2022	JR	Curlew	1		CU_26	CU_26
19/04/2022	JR	Curlew	1		N/A	N/A
19/04/2022	JR	Curlew	1		N/A	N/A
19/04/2022	JR	Curlew	2	Pair.	CU_22	CU_22
19/04/2022	JR	Curlew	2	Pair.	CU_24	CU_24
19/04/2022	JR	Curlew	2	Pair.	CU_24	CU_25
20/04/2022	JR	Curlew	1		CU_6	CU_6
20/04/2022	JR	Curlew	1		CU_32	CU_32
21/04/2022	JR	Curlew	1		N/A	N/A
21/04/2022	JR	Curlew	1		N/A	N/A
21/04/2022	JR	Curlew	1		N/A	N/A
21/04/2022	JR	Curlew	2		N/A	N/A
21/04/2022	JR	Curlew	1		N/A	N/A

Date	Observer	Species	Number recorded	Notes	Territory ID (minimum)	Territory ID (maximum)
21/04/2022	JR	Curlew	1		N/A	N/A
02/05/2022	JRM	Curlew	2		CU_7	CU_7
02/05/2022	JRM	Curlew	2	Pair; displaying.	CU_6	CU_6
03/05/2022	JRM	Curlew	1		CU_6	CU_6
03/05/2022	JRM	Curlew	1		CU_20	CU_20
03/05/2022	JRM	Curlew	1		N/A	N/A
03/05/2022	JRM	Curlew	1		CU_23	CU_23
03/05/2022	JRM	Curlew	1		CU_22	CU_22
03/05/2022	JRM	Curlew	1	Mobbing carrion crow.	CU_22	CU_22
03/05/2022	TH	Curlew	2		CU_6	CU_6
04/05/2022	JRM	Curlew	1		CU_24	CU_24
04/05/2022	JRM	Curlew	1		CU_22	CU_22
04/05/2022	JRM	Curlew	2	Pair.	N/A	CU_21
04/05/2022	JRM	Curlew	1		CU_22	CU_22
16/05/2022	SK	Curlew	2		N/A	N/A
17/05/2022	JRM	Curlew	1		CU_6	CU_6
17/05/2022	SK	Curlew	2	Took off in flight; singing.	CU_6	CU_6
17/05/2022	SK	Curlew	1		CU_6	CU_6
17/05/2022	SK	Curlew	1		CU_6	CU_6
17/05/2022	SK	Curlew	4		N/A	N/A
17/05/2022	SK	Curlew	1		N/A	N/A
17/05/2022	SK	Curlew	1	Landed; calling.	CU_12	CU_12
17/05/2022	SK	Curlew	2	In flight; singing.	CU_16	CU_17
17/05/2022	SK	Curlew	2	In flight; singing.	CU_12	CU_12
17/05/2022	SK	Curlew	1	Alarm calling.	CU_12	CU_12
17/05/2022	SK	Curlew	2	Alarm calling.	CU_16	CU_17
17/05/2022	SK	Curlew	1	Calling.	CU_16	CU_16
17/05/2022	SK	Curlew	1	Landed; singing.	CU_16	CU_18
17/05/2022	SK	Curlew	2	Singing.	CU_12	CU_13
17/05/2022	SK	Curlew	1	In flight; singing.	CU_12	CU_13
17/05/2022	SK	Curlew	2	In flight; singing.	CU_6	CU_6
17/05/2022	TH	Curlew	1	In flight; singing.	CU_20	CU_20
17/05/2022	TH	Curlew	1		CU_15	CU_15

Date	Observer	Species	Number recorded	Notes	Territory ID (minimum)	Territory ID (maximum)
17/05/2022	TH	Curlew	1	In flight; singing.	CU_20	CU_20
18/05/2022	JRM	Curlew	2	Alarm calling.	CU_38	CU_38
18/05/2022	JRM	Curlew	2	Alarm calling.	CU_42	CU_42
18/05/2022	JRM	Curlew	1	Singing.	CU_20	CU_20
19/05/2022	JRM	Curlew	2	Pair; singing.	CU_36	CU_36
19/05/2022	JRM	Curlew	2	Alarm calling.	CU_30	CU_30
19/05/2022	JRM	Curlew	2	Alarm calling.	CU_30	CU_30
19/05/2022	JRM	Curlew	1		N/A	N/A
19/05/2022	JRM	Curlew	2	Pair; singing.	N/A	CU_29
19/05/2022	SK	Curlew	1	Singing.	CU_31	CU_31
19/05/2022	SK	Curlew	1		CU_31	CU_31
19/05/2022	SK	Curlew	2		N/A	N/A
19/05/2022	SK	Curlew	1	Alarm calling.	CU_36	CU_36
19/05/2022	SK	Curlew	2		CU_37	CU_37
19/05/2022	SK	Curlew	2	Singing.	CU_39	CU_40
19/05/2022	SK	Curlew	2	Singing.	CU_39	CU_39
19/05/2022	SK	Curlew	2	In flight; singing.	CU_34	CU_34
19/05/2022	SK	Curlew	1	In flight; singing.	CU_35	CU_35
19/05/2022	SK	Curlew	2	Singing.	CU_35	CU_35
19/05/2022	SK	Curlew	2	Singing.	CU_42	CU_42
19/05/2022	SK	Curlew	1		CU_30	CU_30
19/05/2022	SK	Curlew	1	Singing.	CU_43	CU_43
19/05/2022	SK	Curlew	1		CU_30	CU_30
19/05/2022	SK	Curlew	2	Alarm calling.	CU_41	CU_41
19/05/2022	SK	Curlew	2	Singing.	CU_35	CU_35
19/05/2022	SK	Curlew	1	Singing.	CU_35	CU_35
19/05/2022	SK	Curlew	2		CU_30	CU_30
19/05/2022	SK	Curlew	2		CU_30	CU_30
19/05/2022	SK	Curlew	2		CU_30	CU_30
19/05/2022	SK	Curlew	2		CU_30	CU_30
19/05/2022	TH	Curlew	1	Took off in flight; singing.	CU_10	CU_10
19/05/2022	TH	Curlew	1	In flight; singing.	CU_11	CU_11
19/05/2022	TH	Curlew	1		N/A	N/A

Date	Observer	Species	Number recorded	Notes	Territory ID (minimum)	Territory ID (maximum)
19/05/2022	TH	Curlew	1	Mobbing buzzard.	N/A	N/A
19/05/2022	TH	Curlew	1		N/A	N/A
20/05/2022	JRM	Curlew	1	Singing.	N/A	CU_21
20/05/2022	JRM	Curlew	1	Alarm calling.	CU_22	CU_22
20/05/2022	JRM	Curlew	1	Alarm calling.	CU_22	CU_22
20/05/2022	SK	Curlew	2		CU_2	CU_2
20/05/2022	SK	Curlew	2		CU_2	CU_2
20/05/2022	SK	Curlew	2		CU_1	CU_1
20/05/2022	SK	Curlew	1	Alarm calling.	CU_3	CU_3
20/05/2022	SK	Curlew	2		CU_3	CU_3
20/05/2022	SK	Curlew	2		CU_3	CU_3
06/06/2022	MW	Curlew	10	Pairs plus young; total count within survey area.	N/A	N/A
07/06/2022	MW	Curlew	1		CU_20	CU_20
07/06/2022	MW	Curlew	1		CU_20	CU_20
07/06/2022	MW	Curlew	1		N/A	CU_28
07/06/2022	MW	Curlew	1		CU_24	CU_24
08/06/2022	MW	Curlew	1		N/A	CU_27
08/06/2022	MW	Curlew	1		N/A	CU_27
08/06/2022	MW	Curlew	1		CU_22	CU_22
09/06/2022	MW	Curlew	1		N/A	N/A
09/06/2022	MW	Curlew	1		N/A	N/A
09/06/2022	MW	Curlew	1		CU_38	CU_38
09/06/2022	MW	Curlew	1		CU_37	CU_37
09/06/2022	MW	Curlew	1		N/A	N/A
10/06/2022	MW	Curlew	1		N/A	N/A
10/06/2022	MW	Curlew	30	Total count of pairs within whole area surveyed; several with young present.	N/A	N/A
13/06/2022	JRM	Curlew	2	Pair.	CU_8	CU_9
13/06/2022	JRM	Curlew	2	Pair; alarm calling.	CU_10	CU_10
13/06/2022	JRM	Curlew	2	Pair; alarm calling.	CU_7	CU_7
16/06/2022	EB	Curlew	1		CU_15	CU_15
16/06/2022	EB	Curlew	1		N/A	CU_19
16/06/2022	EB	Curlew	2	Calling.	CU_20	CU_20

Date	Observer	Species	Number recorded	Notes	Territory ID (minimum)	Territory ID (maximum)
16/06/2022	EB	Curlew	1	Alarm calling.	CU_15	CU_15
16/06/2022	EB	Curlew	1	Singing.	CU_24	CU_24
16/06/2022	EB	Curlew	2	Singing; probably the same bird as above and another curlew.	CU_24	CU_24
16/06/2022	EB	Curlew	1	Calling.	CU_26	CU_26
16/06/2022	EB	Curlew	1	Singing; different bird from above.	N/A	CU_27
16/06/2022	EB	Curlew	1	Calling.	CU_26	CU_28
16/06/2022	EB	Curlew	1	Singing.	CU_23	CU_23
16/06/2022	EB	Curlew	1	Singing.	CU_23	CU_23
16/06/2022	JRM	Curlew	2	Pair; alarm calling.	CU_37	CU_37
16/06/2022	JRM	Curlew	2	Pair; alarm calling; different birds from above.	CU_38	CU_38
16/06/2022	JRM	Curlew	2	Pair; alarm calling.	CU_39	CU_39
16/06/2022	JRM	Curlew	2	Pair; alarm calling.	CU_33	CU_33
16/06/2022	JRM	Curlew	2	Pair; alarm calling.	CU_34	CU_34
16/06/2022	JRM	Curlew	1	Alarm calling.	CU_43	CU_43
16/06/2022	JRM	Curlew	1	Alarm calling.	CU_30	CU_30
16/06/2022	JRM	Curlew	2	Pair; alarm calling; probably the same bird as above and another curlew.	CU_30	CU_30
16/06/2022	JRM	Curlew	2	Pair; alarm calling; different birds from above.	CU_41	CU_41
16/06/2022	JRM	Curlew	2	Pair; calling.	CU_35	CU_35
16/06/2022	JRM	Curlew	3	Alarm calling.	CU_30	CU_30
16/06/2022	SK	Curlew	1	Singing.	CU_20	CU_20
16/06/2022	SK	Curlew	2	Singing.	CU_1	CU_1
16/06/2022	SK	Curlew	2	Alarm calling.	CU_2	CU_2
16/06/2022	SK	Curlew	2	Singing.	CU_3	CU_3
16/06/2022	SK	Curlew	1	Alarm calling.	CU_8	CU_9
16/06/2022	SK	Curlew	2		CU_8	CU_9
16/06/2022	SK	Curlew	2	Singing.	CU_10	CU_10
16/06/2022	SK	Curlew	1	Alarm calling.	CU_11	CU_11
16/06/2022	SK	Curlew	2		CU_8	CU_8
16/06/2022	TH	Curlew	1	In flight; singing.	CU_6	CU_6
16/06/2022	TH	Curlew	2	In flight; singing.	CU_12	CU_12
16/06/2022	TH	Curlew	1	In flight; calling.	CU_14	CU_14

Date	Observer	Species	Number recorded	Notes	Territory ID (minimum)	Territory ID (maximum)
16/06/2022	TH	Curlew	2	In flight; singing.	CU_12	CU_13
16/06/2022	TH	Curlew	1	In flight; calling.	CU_15	CU_15
17/06/2022	EB	Curlew	1		CU_4	CU_4
17/06/2022	TH	Curlew	1	In flight; alarm calling.	CU_6	CU_6
17/06/2022	TH	Curlew	1		CU_6	CU_6
11/07/2022	SK	Curlew	2	Calling.	CU_14	CU_14
11/07/2022	SK	Curlew	1		CU_12	CU_13
11/07/2022	SK	Curlew	2	Alarm calling.	CU_15	CU_15
12/07/2022	JRM	Curlew	3	Family; adult and 2 juveniles.	CU_3	CU_3
12/07/2022	MW	Curlew	2	Juveniles.	CU_26	CU_26
12/07/2022	SK	Curlew	1	In flight; juvenile; calling.	CU_6	CU_6
13/07/2022	MW	Curlew	1		CU_26	CU_26
13/07/2022	SK	Curlew	1	Alarm calling.	CU_4	CU_5
13/07/2022	SK	Curlew	1	Alarm calling.	CU_4	CU_5
13/07/2022	SK	Curlew	1	Calling.	CU_4	CU_5
16/03/2022	JRM	Golden plover	1	Calling.	N/A	N/A
16/03/2022	JRM	Golden plover	13	In flight.	N/A	N/A
17/03/2022	JR	Golden plover	1		N/A	N/A
17/03/2022	JR	Golden plover	7		N/A	N/A
17/03/2022	JRM	Golden plover	50	Flushed whilst leaving survey area.	N/A	N/A
12/04/2022	EB	Golden plover	1	Calling.	GP_2	GP_2
12/04/2022	EB	Golden plover	2	Alarm calling.	GP_2	GP_2
12/04/2022	EB	Golden plover	1	Calling.	GP_2	GP_2
12/04/2022	EB	Golden plover	20	Non-breeding flock.	N/A	N/A
12/04/2022	EB	Golden plover	1	Singing.	GP_1	GP_1
12/04/2022	SK	Golden plover	45		N/A	N/A
12/04/2022	SK	Golden plover	1	Calling.	GP_19	GP_19
12/04/2022	SK	Golden plover	5	Calling.	GP_18 GP_19	GP_18 GP_19
12/04/2022	SK	Golden plover	4	Calling.	GP_18 GP_19	GP_18 GP_19
12/04/2022	SK	Golden plover	1		GP_19	GP_19
12/04/2022	SK	Golden plover	1	Calling.	GP_24	GP_24
12/04/2022	SK	Golden plover	2		N/A	N/A
12/04/2022	SK	Golden plover	3	Singing.	GP_22	GP_22

Date	Observer	Species	Number recorded	Notes	Territory ID (minimum)	Territory ID (maximum)
12/04/2022	SK	Golden plover	1	Calling.	GP_24	GP_24
12/04/2022	SK	Golden plover	2	Singing.	GP_24	GP_24
12/04/2022	SK	Golden plover	1	Calling.	GP_20	GP_20
12/04/2022	SK	Golden plover	2	Calling.	GP_20	GP_20
12/04/2022	SK	Golden plover	1	Singing; different bird to above.	GP_22	GP_22
12/04/2022	SK	Golden plover	1	Singing; different bird to above.	GP_22	GP_23
12/04/2022	SK	Golden plover	1	Calling.	GP_24	GP_24
12/04/2022	SK	Golden plover	1	Calling.	GP_1	GP_1
12/04/2022	SK	Golden plover	2	Calling.	GP_22	GP_22
12/04/2022	SK	Golden plover	1	Calling.	GP_24	GP_24
12/04/2022	SK	Golden plover	1	Singing.	GP_18	GP_18
12/04/2022	SK	Golden plover	2	Singing.	GP_19	GP_19
12/04/2022	TH	Golden plover	1		N/A	N/A
12/04/2022	TH	Golden plover	12		N/A	N/A
12/04/2022	TH	Golden plover	1		N/A	N/A
15/04/2022	EB	Golden plover	1	Singing.	N/A	GP_14
15/04/2022	EB	Golden plover	2	Alarm calling.	GP_9	GP_9
15/04/2022	EB	Golden plover	1	Calling.	GP_10	GP_10
15/04/2022	EB	Golden plover	1	Singing.	GP_11	GP_11
15/04/2022	EB	Golden plover	1	Calling.	GP_11	GP_12
15/04/2022	SK	Golden plover	1	Singing.	GP_6	GP_6
15/04/2022	SK	Golden plover	1	Calling.	GP_6	GP_6
15/04/2022	SK	Golden plover	2		GP_6	GP_7
15/04/2022	SK	Golden plover	2	Calling.	GP_6	GP_8
15/04/2022	SK	Golden plover	1	Singing.	GP_6	GP_8
15/04/2022	TH	Golden plover	1	Alarm calling.	N/A	GP_4
15/04/2022	TH	Golden plover	1	Alarm calling.	N/A	GP_4
18/04/2022	JM	Golden plover	1	Alarm calling.	N/A	GP_14
18/04/2022	JM	Golden plover	8		N/A	N/A
19/04/2022	JM	Golden plover	1	Calling.	N/A	GP_16
19/04/2022	JM	Golden plover	1	Calling.	N/A	GP_16
19/04/2022	JM	Golden plover	1	Calling.	N/A	GP_16
19/04/2022	JM	Golden plover	1	Calling.	N/A	GP_16

Date	Observer	Species	Number recorded	Notes	Territory ID (minimum)	Territory ID (maximum)
19/04/2022	JM	Golden plover	1	Calling.	N/A	GP_17
19/04/2022	JR	Golden plover	14	Non-breeding flock.	N/A	N/A
19/04/2022	JR	Golden plover	2	Pair.	GP_20	GP_21
19/04/2022	JR	Golden plover	1		GP_20	GP_20
20/04/2022	JR	Golden plover	1		N/A	N/A
21/04/2022	JR	Golden plover	1		N/A	N/A
02/05/2022	JRM	Golden plover	1		GP_6	GP_7
02/05/2022	JRM	Golden plover	1		N/A	N/A
03/05/2022	JRM	Golden plover	1		GP_25	GP_25
03/05/2022	JRM	Golden plover	1		N/A	N/A
17/05/2022	SK	Golden plover	1	Calling.	GP_19	GP_19
17/05/2022	SK	Golden plover	1	Calling.	GP_20	GP_20
17/05/2022	TH	Golden plover	1	Calling.	GP_2	GP_2
17/05/2022	TH	Golden plover	1	Took off in flight.	N/A	N/A
19/05/2022	SK	Golden plover	1	Singing.	N/A	GP_16
19/05/2022	SK	Golden plover	1	Singing.	N/A	GP_15
19/05/2022	SK	Golden plover	1	Took off in flight; singing.	N/A	GP_13
19/05/2022	TH	Golden plover	2	Pair; calling.	GP_9	GP_9
19/05/2022	TH	Golden plover	1	Calling.	GP_10	GP_10
20/05/2022	JRM	Golden plover	1		N/A	N/A
20/05/2022	TH	Golden plover	2	In flight; calling.	GP_6	GP_6
06/06/2022	MW	Golden plover	1		GP_2	GP_2
06/06/2022	MW	Golden plover	1		GP_2	GP_2
06/06/2022	MW	Golden plover	1		GP_2	GP_2
06/06/2022	MW	Golden plover	1		GP_22	GP_23
07/06/2022	MW	Golden plover	1		GP_22	GP_23
07/06/2022	MW	Golden plover	1		GP_22	GP_23
07/06/2022	MW	Golden plover	1		GP_2	GP_2
07/06/2022	MW	Golden plover	1		GP_2	GP_2
10/06/2022	MW	Golden plover	1		GP_2	GP_2
10/06/2022	MW	Golden plover	1		GP_2	GP_2
10/06/2022	MW	Golden plover	1		GP_22	GP_23

Date	Observer	Species	Number recorded	Notes	Territory ID (minimum)	Territory ID (maximum)
10/06/2022	MW	Golden plover	10	Total count of pairs within whole area surveyed; several with young present.	N/A	N/A
13/06/2022	JRM	Golden plover	2	Family; adult male with juvenile.	GP_9	GP_9
14/06/2022	JRM	Golden plover	1	Agitated behaviour; trying to lure away observer; probable young nearby.	GP_5	GP_5
15/06/2022	SK	Golden plover		Heard only.	N/A	N/A
16/06/2022	EB	Golden plover	2	Calling.	GP_25	GP_25
16/06/2022	EB	Golden plover	2	Calling; different birds from above.	GP_24	GP_24
16/06/2022	EB	Golden plover	2	Calling.	GP_20	GP_20
16/06/2022	EB	Golden plover	2	Calling; probably the same birds as above.	GP_20	GP_21
16/06/2022	EB	Golden plover	2	Calling.	GP_1	GP_1
16/06/2022	JRM	Golden plover	3	Alarm calling.	N/A	GP_14
16/06/2022	JRM	Golden plover	2	Alarm calling.	GP_11	GP_12
16/06/2022	JRM	Golden plover	1	Alarm calling.	GP_11	GP_11
16/06/2022	MW	Golden plover	1		GP_2	GP_2
16/06/2022	MW	Golden plover	10	With young.	GP_25	GP_25
16/06/2022	SK	Golden plover	2	Calling.	N/A	GP_4
16/06/2022	SK	Golden plover	1	Alarm calling.	N/A	GP_3
16/06/2022	SK	Golden plover	2	Alarm calling.	GP_9	GP_9
16/06/2022	SK	Golden plover	2	Alarm calling.	GP_10	GP_10
16/06/2022	SK	Golden plover	1	Calling.	GP_10	GP_10
17/06/2022	EB	Golden plover	2	Calling.	GP_6	GP_6
17/06/2022	EB	Golden plover	2	Calling.	GP_6	GP_7
11/07/2022	JRM	Golden plover	8	Minimum count; flushed and alarm calling then returned to land after observer had moved on.	N/A	N/A
11/07/2022	SK	Golden plover	1	Calling.	GP_25	GP_25
11/07/2022	SK	Golden plover	1	Calling; different bird from above.	GP_24	GP_24
12/07/2022	JRM	Golden plover	1	Calling; heard only.	N/A	GP_4
12/07/2022	JRM	Golden plover	3	Flushed; calling.	N/A	GP_14
12/07/2022	SK	Golden plover	3	Family.	GP_18	GP_18
12/07/2022	SK	Golden plover	3	Family; calling.	GP_19	GP_19
12/07/2022	SK	Golden plover	2	Pair; calling.	GP_22	GP_22
13/07/2022	SK	Golden plover	1	Female; calling.	GP_6	GP_6

Date	Observer	Species	Number recorded	Notes	Territory ID (minimum)	Territory ID (maximum)
13/07/2022	SK	Golden plover	1	Male; calling.	GP_6	GP_8
13/07/2022	SK	Golden plover	3	Family; 1 adult with 2 juveniles.	GP_6	GP_7
14/07/2022	SK	Golden plover	1	Female; calling.	GP_20	GP_20
04/08/2022	MW	Golden plover	1		GP_2	GP_2
16/03/2022	JR	Lapwing	2	Pair.	L_31	L_31
16/03/2022	JR	Lapwing	2	Pair.	L_20	L_21
16/03/2022	JRM	Lapwing	7	Pairs.	BR	BR
16/03/2022	JRM	Lapwing	100		N/A	N/A
16/03/2022	JRM	Lapwing	5		N/A	N/A
17/03/2022	JRM	Lapwing	100	Approximate count. Active around fields near Byreclough Farm; many short and low flights which were too frequent to record.	N/A	N/A
12/04/2022	EB	Lapwing	2	Calling.	L_25	L_25
12/04/2022	EB	Lapwing	2	Calling.	L_25	L_25
12/04/2022	EB	Lapwing	2	Calling.	L_13	L_13
12/04/2022	EB	Lapwing	2	Calling.	L_14	L_14
12/04/2022	SK	Lapwing	9		N/A	N/A
12/04/2022	SK	Lapwing	1		N/A	N/A
12/04/2022	SK	Lapwing	1	Calling.	N/A	N/A
12/04/2022	TH	Lapwing	10		N/A	N/A
12/04/2022	TH	Lapwing	4		N/A	N/A
15/04/2022	EB	Lapwing	2		L_31	L_31
15/04/2022	EB	Lapwing	1		L_32	L_32
15/04/2022	EB	Lapwing	1		L_32	L_32
15/04/2022	EB	Lapwing	1		L_20	L_21
15/04/2022	EB	Lapwing	2	Calling.	L_28	L_28
15/04/2022	EB	Lapwing	2	Calling.	L_33	L_33
15/04/2022	EB	Lapwing	2		L_35	L_35
15/04/2022	EB	Lapwing	1	Calling.	L_36	L_36
15/04/2022	SK	Lapwing	1	Singing.	L_22	L_22
15/04/2022	SK	Lapwing	1	Singing.	L_22	L_22
15/04/2022	TH	Lapwing	1	Singing.	L_20	L_20
15/04/2022	TH	Lapwing	1	Alarm calling.	L_20	L_21

Date	Observer	Species	Number recorded	Notes	Territory ID (minimum)	Territory ID (maximum)
15/04/2022	TH	Lapwing	1	Singing.	L_29	L_29
15/04/2022	TH	Lapwing	1	Singing.	L_32	L_32
18/04/2022	JM	Lapwing	1		L_5	L_5
18/04/2022	JM	Lapwing	1	Alarm calling.	L_5	L_5
18/04/2022	JM	Lapwing	1	Alarm calling.	L_5	L_5
18/04/2022	JM	Lapwing	1		L_5	L_5
18/04/2022	JM	Lapwing	3		N/A	N/A
18/04/2022	JM	Lapwing	1		L_8	L_9
18/04/2022	JM	Lapwing	3		N/A	N/A
18/04/2022	JM	Lapwing	1	Alarm calling.	L_6	L_6
18/04/2022	JM	Lapwing	1		L_6	L_6
19/04/2022	JM	Lapwing	2		L_5	L_5
19/04/2022	JR	Lapwing	2	Pair.	L_18	L_19
19/04/2022	JR	Lapwing	2	Pair.	L_18	L_18
19/04/2022	JR	Lapwing	2	Pair.	L_13	L_13
19/04/2022	JR	Lapwing	2	Pair.	L_15	L_15
19/04/2022	JR	Lapwing	2	Pair.	L_12	L_12
19/04/2022	JR	Lapwing	2	Pair.	L_16	L_16
19/04/2022	JR	Lapwing	2	Pair.	L_11	L_11
19/04/2022	JR	Lapwing	2	Pair.	L_11	L_11
20/04/2022	JR	Lapwing	2	Pair.	L_29	L_29
20/04/2022	JR	Lapwing	2	Pair.	L_33	L_33
20/04/2022	JR	Lapwing	2	Pair.	L_33	L_33
20/04/2022	JR	Lapwing	2	Pair.	L_24	L_24
20/04/2022	JR	Lapwing	2	Pair.	L_8	L_9
21/04/2022	JR	Lapwing	2	Pair.	L_1	L_1
21/04/2022	JR	Lapwing	2	Pair.	L_1	L_1
21/04/2022	JR	Lapwing	12	6 pairs.	L_2 L_3 L_4	L_2 L_3 L_4
21/04/2022	JR	Lapwing	4	2 pairs.	N/A	N/A
02/05/2022	JRM	Lapwing	3	Displaying.	L_22	L_22
02/05/2022	JRM	Lapwing	5		N/A	N/A
03/05/2022	JRM	Lapwing	1		L_31	L_31
03/05/2022	JRM	Lapwing	10		N/A	N/A

Date	Observer	Species	Number recorded	Notes	Territory ID (minimum)	Territory ID (maximum)
03/05/2022	JRM	Lapwing	1	Mobbing short-eared owl.	L_10	L_10
03/05/2022	JRM	Lapwing	2	Pair.	L_13	L_13
04/05/2022	JRM	Lapwing	10		N/A	N/A
04/05/2022	JRM	Lapwing	6	3 pairs.	BR	BR
04/05/2022	JRM	Lapwing	1		L_16	L_16
04/05/2022	JRM	Lapwing	2	Pair.	L_14	L_14
16/05/2022	SK	Lapwing	1		L_7	L_7
16/05/2022	SK	Lapwing	2		L_6	L_6
16/05/2022	SK	Lapwing	2		L_6	L_6
16/05/2022	SK	Lapwing	1	Singing.	L_6	L_6
16/05/2022	SK	Lapwing	1		L_6	L_6
16/05/2022	TH	Lapwing	1		L_22	L_22
16/05/2022	TH	Lapwing	1		L_20	L_21
16/05/2022	TH	Lapwing	1		L_20	L_21
16/05/2022	TH	Lapwing	1		L_20	L_21
16/05/2022	TH	Lapwing	1		L_23	L_23
16/05/2022	TH	Lapwing	7		N/A	N/A
16/05/2022	TH	Lapwing	1		L_33	L_33
16/05/2022	TH	Lapwing	2		L_27	L_27
16/05/2022	TH	Lapwing	1		L_34	L_34
16/05/2022	TH	Lapwing	3		N/A	N/A
16/05/2022	TH	Lapwing	4	Family.	L_35	L_35
17/05/2022	JRM	Lapwing	2	Pair; mobbing buzzard.	L_20	L_20
17/05/2022	JRM	Lapwing	1	Displaying.	L_31	L_31
17/05/2022	JRM	Lapwing	1	Alarm calling.	L_23	L_23
17/05/2022	JRM	Lapwing	1		N/A	N/A
17/05/2022	JRM	Lapwing	1		L_20	L_20
17/05/2022	SK	Lapwing	1		L_23	L_23
17/05/2022	SK	Lapwing	24	Minimum count; 2 families also present.	BR	BR
17/05/2022	TH	Lapwing	2	Took off in flight; singing.	L_18	L_18
18/05/2022	JRM	Lapwing	1		L_6	L_6
18/05/2022	JRM	Lapwing	3	Family; adult pair and one juvenile.	L_6	L_6
18/05/2022	JRM	Lapwing	2	Alarm calling.	L_10	L_10

Date	Observer	Species	Number recorded	Notes	Territory ID (minimum)	Territory ID (maximum)
19/05/2022	JRM	Lapwing	1		L_6	L_6
19/05/2022	JRM	Lapwing	1		L_6	L_6
19/05/2022	JRM	Lapwing	1		L_7	L_7
19/05/2022	SK	Lapwing	6		N/A	N/A
19/05/2022	SK	Lapwing	6		N/A	N/A
19/05/2022	SK	Lapwing	6		N/A	N/A
19/05/2022	SK	Lapwing	2		L_8	L_8
19/05/2022	SK	Lapwing	4		N/A	N/A
19/05/2022	TH	Lapwing	1		L_20	L_20
19/05/2022	TH	Lapwing	1	In flight; singing.	L_31	L_31
20/05/2022	JRM	Lapwing	5		N/A	N/A
20/05/2022	JRM	Lapwing	10		N/A	N/A
20/05/2022	JRM	Lapwing	40	20 pairs.	BR	BR
20/05/2022	JRM	Lapwing	20	10 pairs.	BR	BR
07/06/2022	MW	Lapwing	1		N/A	N/A
07/06/2022	MW	Lapwing	1		N/A	N/A
07/06/2022	MW	Lapwing	1		L_13	L_13
07/06/2022	MW	Lapwing	1		L_13	L_13
07/06/2022	MW	Lapwing	1		L_14	L_14
08/06/2022	MW	Lapwing	1		L_15	L_15
08/06/2022	MW	Lapwing	1		L_16	L_16
08/06/2022	MW	Lapwing	1		N/A	L_17
09/06/2022	MW	Lapwing	8	With young.	L_2 L_3 L_4	L_2 L_3 L_4
10/06/2022	MW	Lapwing	1		L_2 L_3 L_4	L_2 L_3 L_4
10/06/2022	MW	Lapwing	1		L_15	L_15
10/06/2022	MW	Lapwing	1		L_16	L_16
10/06/2022	MW	Lapwing	1		N/A	L_17
10/06/2022	MW	Lapwing	20	Total count of pairs within whole area surveyed; several with young present.	N/A	N/A
13/06/2022	JRM	Lapwing	2	Pair; mobbing peregrine falcon.	L_8	L_9
13/06/2022	JRM	Lapwing	1		L_20	L_20
13/06/2022	JRM	Lapwing	5		N/A	N/A
14/06/2022	JRM	Lapwing	1	Took off in flight; singing.	L_23	L_23

Date	Observer	Species	Number recorded	Notes	Territory ID (minimum)	Territory ID (maximum)
16/06/2022	EB	Lapwing	1		L_25	L_25
16/06/2022	EB	Lapwing	1	Calling.	L_18	L_18
16/06/2022	EB	Lapwing	2	Calling.	L_15	L_15
16/06/2022	EB	Lapwing	1	Calling.	N/A	L_17
16/06/2022	JRM	Lapwing	8	4 pairs; alarm calling.	L_6	L_6 L_7 L_8 L_9
16/06/2022	JRM	Lapwing	2	Pair; alarm calling.	L_24	L_24
16/06/2022	JRM	Lapwing	2	Mobbing buzzard.	L_8	L_8
16/06/2022	JRM	Lapwing	5	Alarm calling.	L_8	L_8
16/06/2022	MW	Lapwing	1		L_12	L_12
16/06/2022	MW	Lapwing	1		L_12	L_12
16/06/2022	MW	Lapwing	1		L_14	L_14
16/06/2022	SK	Lapwing	2		L_33	L_33
16/06/2022	SK	Lapwing	2	Different birds from above.	L_34	L_34
16/06/2022	SK	Lapwing	2		L_36	L_36
16/06/2022	SK	Lapwing	3	Family.	L_36	L_36
16/06/2022	SK	Lapwing	3	Family.	L_35	L_35
16/06/2022	SK	Lapwing	2		N/A	N/A
16/06/2022	SK	Lapwing	1		L_22	L_22
16/06/2022	SK	Lapwing	2		L_20	L_20
16/06/2022	SK	Lapwing	2		L_20	L_21
16/06/2022	SK	Lapwing	4	2 pairs.	L_29 L_30	L_29 L_30
16/06/2022	SK	Lapwing	1		L_32	L_32
16/06/2022	SK	Lapwing	4	2 pairs.	L_27 L_28	L_27 L_28
16/06/2022	SK	Lapwing	4	2 pairs.	L_29 L_30	L_29 L_30
16/06/2022	SK	Lapwing	6	3 pairs.	BR	BR
16/06/2022	SK	Lapwing	4	2 pairs.	L_26 L_27	L_26 L_27
16/06/2022	SK	Lapwing	12	6 pairs.	BR	BR
16/06/2022	TH	Lapwing	7		N/A	N/A
16/06/2022	TH	Lapwing	2	Alarm calling.	L_26	L_26
16/06/2022	TH	Lapwing	1		N/A	N/A
17/06/2022	TH	Lapwing	1		L_23	L_23
12/07/2022	JRM	Lapwing	2		L_20	L_21
12/07/2022	JRM	Lapwing	2		L_5	L_5

Date	Observer	Species	Number recorded	Notes	Territory ID (minimum)	Territory ID (maximum)
12/07/2022	MW	Lapwing	8	Minimum count. Not mapped.	N/A	N/A
12/07/2022	SK	Lapwing	33	28 adults and 5 juveniles.	BR	BR
12/07/2022	SK	Lapwing	6		N/A	N/A
13/07/2022	MW	Lapwing	1		N/A	N/A
16/03/2022	JR	Oystercatcher	2	Pair.	OC_11	OC_11
16/03/2022	JR	Oystercatcher	2	Pair.	N/A	OC_1
16/03/2022	JRM	Oystercatcher	90		N/A	N/A
12/04/2022	EB	Oystercatcher	1	Calling.	N/A	OC_13
12/04/2022	TH	Oystercatcher	1		N/A	N/A
15/04/2022	EB	Oystercatcher	2		OC_22	OC_22
15/04/2022	EB	Oystercatcher	2	Calling.	OC_16	OC_16
15/04/2022	EB	Oystercatcher	2		OC_15	OC_15
15/04/2022	EB	Oystercatcher	1		N/A	OC_15
15/04/2022	EB	Oystercatcher	1		N/A	OC_15
15/04/2022	EB	Oystercatcher	2		N/A	OC_14
15/04/2022	SK	Oystercatcher	1	Calling.	N/A	N/A
15/04/2022	SK	Oystercatcher	2	Calling.	OC_9	OC_9
15/04/2022	SK	Oystercatcher	2		OC_9	OC_9
15/04/2022	SK	Oystercatcher	1		OC_9	OC_10
15/04/2022	SK	Oystercatcher	1	Calling.	OC_11	OC_11
15/04/2022	TH	Oystercatcher	2	Alarm calling.	OC_11	OC_11
15/04/2022	TH	Oystercatcher	5	Singing.	OC_18 OC_19	OC_18 OC_19
19/04/2022	JR	Oystercatcher	2	Pair.	N/A	OC_4
20/04/2022	JR	Oystercatcher	2	Pair.	OC_9	OC_10
20/04/2022	JR	Oystercatcher	4	2 pairs.	OC_11	OC_11 OC_12
20/04/2022	JR	Oystercatcher	1		OC_11	OC_11
20/04/2022	JR	Oystercatcher	4	2 pairs.	OC_15 OC_16	OC_15 OC_16
20/04/2022	JR	Oystercatcher	1		N/A	OC_15
20/04/2022	JR	Oystercatcher	1		OC_8	OC_8
21/04/2022	JR	Oystercatcher	2	Pair.	N/A	OC_20
21/04/2022	JR	Oystercatcher	1		N/A	N/A
02/05/2022	JRM	Oystercatcher	1		OC_9	OC_10
03/05/2022	JRM	Oystercatcher	2	Pair.	OC_22	OC_22

Date	Observer	Species	Number recorded	Notes	Territory ID (minimum)	Territory ID (maximum)
03/05/2022	JRM	Oystercatcher	2	Pair.	N/A	OC_15
04/05/2022	JRM	Oystercatcher	3		OC_18 OC_19	OC_18 OC_19
04/05/2022	JRM	Oystercatcher	2		N/A	N/A
16/05/2022	SK	Oystercatcher	1		OC_8	OC_8
16/05/2022	SK	Oystercatcher	1		OC_8	OC_8
16/05/2022	SK	Oystercatcher	2		OC_5	OC_5
16/05/2022	SK	Oystercatcher	2	Calling.	N/A	OC_6
16/05/2022	SK	Oystercatcher	4	Family.	OC_7	OC_7
16/05/2022	SK	Oystercatcher	2		N/A	N/A
16/05/2022	TH	Oystercatcher	1		OC_9	OC_10
16/05/2022	TH	Oystercatcher	1		N/A	N/A
16/05/2022	TH	Oystercatcher	2		OC_11	OC_11
16/05/2022	TH	Oystercatcher	2		OC_16	OC_16
16/05/2022	TH	Oystercatcher	2		N/A	N/A
16/05/2022	TH	Oystercatcher	2		OC_22	OC_22
17/05/2022	JRM	Oystercatcher	2		OC_11	OC_11
17/05/2022	SK	Oystercatcher	1		OC_11	OC_11
17/05/2022	TH	Oystercatcher	1	Calling.	N/A	OC_2
18/05/2022	JRM	Oystercatcher	3	Family; adult with 2 juveniles.	OC_7	OC_7
19/05/2022	JRM	Oystercatcher	3	Family; adult with juveniles.	OC_7	OC_7
19/05/2022	SK	Oystercatcher	2		N/A	N/A
06/06/2022	MW	Oystercatcher	1		OC_22	OC_22
06/06/2022	MW	Oystercatcher	1		N/A	OC_15
06/06/2022	MW	Oystercatcher	1		N/A	OC_3
07/06/2022	MW	Oystercatcher	1		OC_18	OC_18
07/06/2022	MW	Oystercatcher	1		N/A	OC_15
07/06/2022	MW	Oystercatcher	1		N/A	OC_3
08/06/2022	MW	Oystercatcher	1		N/A	OC_14
08/06/2022	MW	Oystercatcher	1		N/A	OC_3
08/06/2022	MW	Oystercatcher	1		N/A	N/A
09/06/2022	MW	Oystercatcher	1		OC_19	OC_19
09/06/2022	MW	Oystercatcher	1		N/A	OC_14
09/06/2022	MW	Oystercatcher	1		OC_8	OC_8

Date	Observer	Species	Number recorded	Notes	Territory ID (minimum)	Territory ID (maximum)
13/06/2022	JRM	Oystercatcher	3		OC_18 OC_19	OC_18 OC_19
14/06/2022	JRM	Oystercatcher	2	Pair.	OC_11	OC_11
16/06/2022	EB	Oystercatcher	1		N/A	OC_13
16/06/2022	EB	Oystercatcher	1	Calling.	N/A	OC_2
16/06/2022	JRM	Oystercatcher	5	Family; adult pair with 3 juveniles.	OC_7	OC_7
16/06/2022	JRM	Oystercatcher	2	Took off in flight; calling.	OC_7	OC_7
16/06/2022	SK	Oystercatcher	3	Family.	OC_5	OC_5
16/06/2022	SK	Oystercatcher	3	Family.	OC_22	OC_22
16/06/2022	SK	Oystercatcher	3	Family.	OC_16	OC_16
16/06/2022	SK	Oystercatcher	3	Family.	OC_15	OC_15
16/06/2022	SK	Oystercatcher	3	Family; calling.	OC_8	OC_8
16/06/2022	SK	Oystercatcher	1		OC_9	OC_9
16/06/2022	SK	Oystercatcher	1		OC_11	OC_11
16/06/2022	SK	Oystercatcher	3	Family.	OC_11	OC_11
16/06/2022	SK	Oystercatcher	1		N/A	N/A
16/06/2022	SK	Oystercatcher	4	2 pairs.	OC_18 OC_19	OC_18 OC_19
16/06/2022	SK	Oystercatcher	2		N/A	N/A
16/06/2022	SK	Oystercatcher	2		OC_22	OC_22
16/06/2022	SK	Oystercatcher	2		OC_22	OC_22
16/06/2022	SK	Oystercatcher	4	2 pairs.	N/A	N/A
16/06/2022	TH	Oystercatcher	2	Took off in flight.	OC_17	OC_17
16/06/2022	TH	Oystercatcher	1	Took off in flight; alarm calling.	N/A	OC_21
12/07/2022	SK	Oystercatcher	3	Family; adult with 2 juveniles.	OC_17	OC_17
13/07/2022	MW	Oystercatcher	1		N/A	OC_3
13/07/2022	SK	Oystercatcher	3	Family; 2 adults and 1 juvenile.	OC_9	OC_10
01/08/2022	MW	Oystercatcher	1	At Watch Water Reservoir.	N/A	N/A
04/08/2022	MW	Oystercatcher	1		N/A	N/A
16/03/2022	JRM	Redshank	2	Pair.	RK_2	RK_2
20/04/2022	JR	Redshank	1		N/A	N/A
16/05/2022	TH	Redshank	1		RK_1	RK_1
20/05/2022	JRM	Redshank	4	2 pairs.	RK_2	RK_2 RK_3
06/06/2022	MW	Redshank	6	3 pairs; total count within survey area.	N/A	N/A
07/06/2022	MW	Redshank	1		RK_2	RK_2

Date	Observer	Species	Number recorded	Notes	Territory ID (minimum)	Territory ID (maximum)
07/06/2022	MW	Redshank	1		RK_2	RK_2
10/06/2022	MW	Redshank	1		RK_2	RK_2
10/06/2022	MW	Redshank	1		RK_2	RK_2
10/06/2022	MW	Redshank	1		RK_2	RK_2
10/06/2022	MW	Redshank	6	Total count of pairs within whole area surveyed; several with young present.	N/A	N/A
16/06/2022	SK	Redshank	1	Singing.	RK_1	RK_1
12/07/2022	SK	Redshank	2	Family; adult with 1 juvenile.	RK_1	RK_1
04/08/2022	MW	Ringed plover	1		N/A	N/A
16/03/2022	JRM	Snipe	1	Singing.	SN_27	SN_27
16/03/2022	JRM	Snipe	1	Singing.	SN_27	SN_27
16/03/2022	JRM	Snipe	1	Singing.	SN_33	SN_33
16/03/2022	JRM	Snipe	1	Singing.	SN_33	SN_35
16/03/2022	JRM	Snipe	1	Singing.	SN_21	SN_22
16/03/2022	JRM	Snipe	1	Singing.	SN_21	SN_21
16/03/2022	JRM	Snipe	1	Singing.	SN_21	SN_21
16/03/2022	JRM	Snipe	1	Singing.	SN_21	SN_23
17/03/2022	JR	Snipe	1		SN_24	SN_24
17/03/2022	JR	Snipe	1		SN_33	SN_35
12/04/2022	EB	Snipe	1	Singing.	SN_25	SN_26
12/04/2022	EB	Snipe	1		SN_24	SN_24
12/04/2022	EB	Snipe	2		SN_30	SN_31
12/04/2022	EB	Snipe	1		SN_33	SN_33
12/04/2022	SK	Snipe	1	Calling.	SN_29	SN_29
12/04/2022	SK	Snipe	1	Singing.	SN_30	SN_30
12/04/2022	SK	Snipe	2	Calling.	SN_29	SN_29
12/04/2022	SK	Snipe	1	Calling.	SN_29	SN_29
12/04/2022	SK	Snipe	1	Singing; different bird to above.	SN_29	SN_29
12/04/2022	SK	Snipe	1	Calling.	SN_28	SN_28
12/04/2022	SK	Snipe	1	Calling.	SN_11	SN_11
15/04/2022	EB	Snipe	1	Calling.	SN_9	SN_9
15/04/2022	EB	Snipe	1	Calling.	SN_9	SN_9
15/04/2022	EB	Snipe	1	Singing.	SN_9	SN_9

Date	Observer	Species	Number recorded	Notes	Territory ID (minimum)	Territory ID (maximum)
15/04/2022	EB	Snipe	1	Singing.	SN_12	SN_12
15/04/2022	EB	Snipe	1	Calling.	SN_25	SN_25
15/04/2022	SK	Snipe	1	Singing.	SN_6	SN_6
15/04/2022	SK	Snipe	1	Singing.	SN_7	SN_7
15/04/2022	SK	Snipe	1	Calling.	SN_7	SN_7
15/04/2022	SK	Snipe	1	Singing.	N/A	SN_5
18/04/2022	JM	Snipe	1		SN_19	SN_19
19/04/2022	JM	Snipe	1	Calling.	N/A	SN_13
19/04/2022	JM	Snipe	1	Calling.	SN_14	SN_14
19/04/2022	JM	Snipe	1	Calling.	SN_16	SN_16
19/04/2022	JM	Snipe	1		SN_16	SN_16
19/04/2022	JR	Snipe	1		SN_33	SN_33
19/04/2022	JR	Snipe	1		SN_33	SN_35
19/04/2022	JR	Snipe	1		SN_21	SN_21
19/04/2022	JR	Snipe	1		SN_21	SN_21
19/04/2022	JR	Snipe	1		SN_21	SN_23
20/04/2022	JR	Snipe	1	Displaying.	SN_33	SN_35
20/04/2022	JR	Snipe	1	Displaying.	SN_24	SN_24
21/04/2022	JR	Snipe	2	Pair.	SN_15	SN_15
02/05/2022	JRM	Snipe	2	Displaying.	SN_6	SN_6
03/05/2022	JRM	Snipe	1		SN_24	SN_24
03/05/2022	JRM	Snipe	1		SN_24	SN_24
03/05/2022	JRM	Snipe	1		SN_24	SN_24
04/05/2022	JRM	Snipe	1		SN_12	SN_12
04/05/2022	JRM	Snipe	1		SN_21	SN_22
16/05/2022	SK	Snipe	1	Calling.	SN_17	SN_17
16/05/2022	TH	Snipe	1		SN_9	SN_9
16/05/2022	TH	Snipe	5	Calling.	N/A	N/A
17/05/2022	JRM	Snipe	2		SN_9	SN_9
17/05/2022	SK	Snipe	1	Singing.	N/A	SN_8
17/05/2022	SK	Snipe	1		N/A	SN_10
17/05/2022	TH	Snipe	1	Calling; heard only.	SN_31	SN_32
18/05/2022	JRM	Snipe	1	Singing.	SN_25	SN_26

Date	Observer	Species	Number recorded	Notes	Territory ID (minimum)	Territory ID (maximum)
18/05/2022	JRM	Snipe	1	Singing.	SN_24	SN_24
19/05/2022	JRM	Snipe	1	Singing.	SN_19	SN_19
19/05/2022	JRM	Snipe	1	Singing.	SN_19	SN_20
19/05/2022	SK	Snipe	1	Singing.	N/A	SN_18
19/05/2022	SK	Snipe	1	Took off in flight.	SN_19	SN_20
19/05/2022	TH	Snipe	1		SN_9	SN_9
20/05/2022	JRM	Snipe	1	Singing.	SN_21	SN_23
20/05/2022	JRM	Snipe	1	Flushed.	SN_21	SN_23
20/05/2022	JRM	Snipe	1	Flushed.	SN_21	SN_22
20/05/2022	SK	Snipe	1	Calling.	SN_1	SN_1
06/06/2022	MW	Snipe	1		SN_30	SN_31
06/06/2022	MW	Snipe	1		SN_30	SN_30
06/06/2022	MW	Snipe	1		SN_27	SN_27
06/06/2022	MW	Snipe	1		SN_34	SN_34
07/06/2022	MW	Snipe	1		SN_31	SN_32
07/06/2022	MW	Snipe	1		N/A	N/A
07/06/2022	MW	Snipe	1		SN_33	SN_35
10/06/2022	MW	Snipe	1		SN_16	SN_16
10/06/2022	MW	Snipe	1		SN_31	SN_32
10/06/2022	MW	Snipe	1		SN_34	SN_34
10/06/2022	MW	Snipe	1		SN_34	SN_34
10/06/2022	MW	Snipe	15	Minimum count within whole area surveyed.	N/A	N/A
16/06/2022	EB	Snipe	1	Singing.	SN_25	SN_25
16/06/2022	EB	Snipe	1	Flushed; different bird from above.	SN_25	SN_26
16/06/2022	EB	Snipe	1	Calling.	SN_25	SN_26
16/06/2022	EB	Snipe	1	Calling.	SN_29	SN_29
16/06/2022	EB	Snipe	1	Calling.	SN_33	SN_33
16/06/2022	EB	Snipe	1	Calling.	SN_33	SN_33
16/06/2022	EB	Snipe	1	Flushed.	SN_28	SN_28
16/06/2022	EB	Snipe	1	Calling.	SN_34	SN_34
16/06/2022	JRM	Snipe	1	Singing.	SN_17	SN_17
16/06/2022	MW	Snipe	1		SN_30	SN_31
16/06/2022	MW	Snipe	1		SN_30	SN_31

Date	Observer	Species	Number recorded	Notes	Territory ID (minimum)	Territory ID (maximum)
16/06/2022	MW	Snipe	1		SN_33	SN_33
16/06/2022	MW	Snipe	1		SN_33	SN_33
16/06/2022	MW	Snipe	1		SN_34	SN_34
16/06/2022	SK	Snipe	1	Singing.	N/A	SN_3
16/06/2022	SK	Snipe	1	Calling; different bird from above.	N/A	SN_2
16/06/2022	SK	Snipe	1	Singing.	N/A	SN_4
16/06/2022	SK	Snipe	1	Singing; different bird from above.	SN_1	SN_1
16/06/2022	SK	Snipe	1		SN_6	SN_6
16/06/2022	SK	Snipe	1	Calling.	SN_12	SN_12
16/06/2022	TH	Snipe	1	Flushed.	SN_11	SN_11
16/06/2022	TH	Snipe	1		N/A	SN_10
16/06/2022	TH	Snipe	1	Flushed.	SN_11	SN_11
17/06/2022	EB	Snipe	3	Family; adult pair and one juvenile.	SN_6	SN_6
17/06/2022	TH	Snipe	1		N/A	SN_10
11/07/2022	JRM	Snipe	2	Flushed.	SN_14	SN_14
11/07/2022	SK	Snipe	1	Calling.	SN_30	SN_30
12/07/2022	MW	Snipe	3		N/A	N/A
12/07/2022	SK	Snipe	1	Flushed.	SN_7	SN_7
12/07/2022	SK	Snipe	1	Flushed; different bird from above.	SN_7	SN_7
12/07/2022	SK	Snipe	1	Flushed.	N/A	SN_10
13/07/2022	JRM	Snipe	1	Flushed.	SN_1	SN_1
13/07/2022	SK	Snipe	1	Flushed.	SN_7	SN_7
13/07/2022	SK	Snipe	2	Flushed.	SN_7	SN_7
13/07/2022	SK	Snipe	1		SN_7	SN_7
13/07/2022	SK	Snipe	1	Different bird from above.	SN_7	SN_7
02/08/2022	MW	Snipe	1		N/A	N/A
12/04/2022	SK	Snipe	1	Singing; different bird to above.	SN_30	SN_30

D.3 Winter Walkover Records

Table D-4 details all the species recorded. Refer to **Annex B** for survey methodology and **Annex C** for weather data.

Table D-4 Winter walkover survey records: 2021/2022 non-breeding season

Date	Survey visit	Observer	Species	Number recorded	Notes
13/12/2021	1	JM	Golden plover	1	Calling.
13/12/2021	1	JM	Golden plover	3	
13/12/2021	1	JM	Red grouse	1	
13/12/2021	1	JM	Red grouse	1	
13/12/2021	1	JM	Red grouse	1	
13/12/2021	1	JM	Red grouse	2	
13/12/2021	1	JM	Red grouse	2	
13/12/2021	1	JM	Red grouse	1	
13/12/2021	1	JM	Red grouse	3	
13/12/2021	1	JM	Red grouse	1	Calling.
13/12/2021	1	JM	Red grouse	2	
13/12/2021	1	JM	Red grouse	1	
13/12/2021	1	JM	Red grouse	1	
13/12/2021	1	JM	Red grouse	1	Calling.
13/12/2021	1	JM	Red grouse	1	Calling.
13/12/2021	1	JM	Red grouse	2	
15/12/2021	1	JM	Buzzard	1	
15/12/2021	1	JM	Buzzard	1	
15/12/2021	1	JM	Golden plover	16	
15/12/2021	1	JM	Meadow pipit	5	
15/12/2021	1	JM	Raven	3	
15/12/2021	1	JM	Red grouse	1	Calling.
15/12/2021	1	JM	Red grouse	1	
15/12/2021	1	JM	Red grouse	1	
15/12/2021	1	JM	Red grouse	1	Calling.
15/12/2021	1	JM	Red grouse	2	
15/12/2021	1	JM	Red grouse	1	
15/12/2021	1	JM	Red grouse	3	

Date	Survey visit	Observer	Species	Number recorded	Notes
15/12/2021	1	JM	Red grouse	1	
15/12/2021	1	JM	Red grouse	1	
15/12/2021	1	JM	Red grouse	1	
15/12/2021	1	JM	Red grouse	2	
15/12/2021	1	JM	Red grouse	1	
15/12/2021	1	JM	Red grouse	1	
15/12/2021	1	JM	Red grouse	3	
15/12/2021	1	JM	Red grouse	1	Calling.
15/12/2021	1	JM	Red grouse	1	Calling.
15/12/2021	1	JM	Red grouse	1	Calling.
15/12/2021	1	JM	Red grouse	1	Calling.
15/12/2021	1	JM	Snipe	1	
15/12/2021	1	JM	Snipe	1	
15/12/2021	1	JM	Snipe	1	
15/12/2021	1	JM	Snipe	1	
15/12/2021	1	JM	Snipe	1	Calling.
16/12/2021	1	JM	Buzzard	2	
16/12/2021	1	JM	Fieldfare	25	
16/12/2021	1	JM	Raven	3	
16/12/2021	1	JM	Red grouse	1	Calling.
16/12/2021	1	JM	Red grouse	1	Calling.
16/12/2021	1	JM	Red grouse	1	Calling.
16/12/2021	1	JM	Red grouse	3	
16/12/2021	1	JM	Red grouse	1	
16/12/2021	1	JM	Red grouse	1	
16/12/2021	1	JM	Red grouse	2	
16/12/2021	1	JM	Red grouse	1	
16/12/2021	1	JM	Red grouse	1	
16/12/2021	1	JM	Red grouse	1	
16/12/2021	1	JM	Red grouse	1	Calling.
10/01/2022	2	JM	Buzzard	1	
10/01/2022	2	JM	Raven	7	
10/01/2022	2	JM	Red grouse	1	Calling.
10/01/2022	2	JM	Red grouse	1	Calling.

Date	Survey visit	Observer	Species	Number recorded	Notes
10/01/2022	2	JM	Red grouse	1	
10/01/2022	2	JM	Red grouse	1	
10/01/2022	2	JM	Red grouse	3	
10/01/2022	2	JM	Red grouse	3	
10/01/2022	2	JM	Red grouse	1	
10/01/2022	2	JM	Red grouse	1	
10/01/2022	2	JM	Red grouse	1	Calling.
10/01/2022	2	JM	Red grouse	1	
11/01/2022	2	JP/JM	Golden plover	22	
11/01/2022	2	JP/JM	Golden plover	2	
11/01/2022	2	JP/JM	Golden plover	1	
25/01/2022	2	JP	Stonechat	2	
27/01/2022	2	JP	Golden plover	1	
27/01/2022	2	JP	Golden plover	5	
27/01/2022	2	JP	Peregrine falcon	1	
27/01/2022	2	JP	Peregrine falcon	1	
27/01/2022	2	MW	Fieldfare	220	
27/01/2022	2	MW	Hen harrier	1	
27/01/2022	2	MW	Meadow pipit	-	
27/01/2022	2	MW	Raven	-	
27/01/2022	2	MW	Red grouse	-	
27/01/2022	2	MW	Snipe	1	Landed.
28/01/2022	2	MW	Blue tit	-	
28/01/2022	2	MW	Chaffinch	-	
28/01/2022	2	MW	Dipper	-	
28/01/2022	2	MW	Fieldfare	120	
28/01/2022	2	MW	Goshawk	1	Eating prey on ground then took off.
28/01/2022	2	MW	Kestrel	-	
28/01/2022	2	MW	Linnet	4	
28/01/2022	2	MW	Mistle thrush	-	
28/01/2022	2	MW	Raven	-	
28/01/2022	2	MW	Red grouse	40	
28/01/2022	2	MW	Wren	-	
23/02/2022	3	EB	Carrion crow	-	

Date	Survey visit	Observer	Species	Number recorded	Notes
23/02/2022	3	EB	Golden plover	1	Calling.
23/02/2022	3	EB	Golden plover	3	
23/02/2022	3	EB	Greylag goose	4	
23/02/2022	3	EB	Mallard	15	8 males and 7 females flushed from river.
23/02/2022	3	EB	Raven	-	
23/02/2022	3	EB	Red grouse	-	Abundant across site.
23/02/2022	3	EB	Skylark	-	
23/02/2022	3	EB	Snipe	1	Flushed.
23/02/2022	3	JRM	Common gull	6	In flight, Watch Water.
23/02/2022	3	JRM	Golden plover	8	Flushed.
23/02/2022	3	JRM	Golden plover	20	Flushed.
23/02/2022	3	JRM	Greylag goose	2	
23/02/2022	3	JRM	Lapwing	3	Flushed by gamekeeper driving past on quadbike. Circled and returned to land.
23/02/2022	3	JRM	Lesser black-backed gull	1	In flight, Dunside Hill.
23/02/2022	3	JRM	Meadow pipit	-	
23/02/2022	3	JRM	Merlin	1	Hunting.
23/02/2022	3	JRM	Red grouse	-	Abundant across site.
23/02/2022	3	JRM	Red-legged partridge	-	
23/02/2022	3	JRM	Skylark	-	
23/02/2022	3	SK	Carrion crow	4	
23/02/2022	3	SK	Golden plover	1	Fleeing peregrine falcon.
23/02/2022	3	SK	Golden plover	4	Landed.
23/02/2022	3	SK	Herring gull	2	
23/02/2022	3	SK	Mallard	16	8 pairs along river.
23/02/2022	3	SK	Peregrine falcon	1	Hunting; chasing golden plover.
23/02/2022	3	SK	Peregrine falcon	1	Same bird as above.
23/02/2022	3	SK	Raven	2	
23/02/2022	3	SK	Red grouse	-	
23/02/2022	3	SK	Skylark	2	

D.4 Scarce Breeding Bird Records

Table D-5 details all records of raptors and owls recorded during surveys, however only Annex 1¹ or Schedule 1² species are considered to be scarce breeding birds (i.e., target species). Refer to **Annex B** for survey methodology, **Annex C** for weather data and **Confidential Technical Appendix 7.2** for confidential data relating to barn owl and short-eared owl.

Table D-5 Raptor and owl records: 2022 breeding season

Date	Observer	Species	Number recorded	Sex	Age	Notes
16/03/2022	JRM	Kestrel	1	-	-	Male.
17/03/2022	JR	Buzzard	2	-	-	In flight; Nun's Bank; pair; displaying.
17/03/2022	JR	Goshawk	1	-	Adult	
17/03/2022	JR	Red kite	1	-	Adult	
17/03/2022	JRM	Buzzard	1	-	-	In flight, Black Hill.
17/03/2022	JRM	Buzzard	2	-	-	In flight, Trottingshaw.
24/03/2022	SK	Buzzard	1	-	-	In flight, Byreclough Burn; calling.
25/03/2022	MW	Kestrel	1	-	-	In flight; Dunside Hill; hunting.
25/03/2022	SK	Buzzard	1	-	-	In flight, Meikle Law.
12/04/2022	SK	Buzzard	2	-	-	In flight; Hall Burn; hunting.
12/04/2022	SK	Buzzard	1	-	-	In flight, Bell Burn.
12/04/2022	TH	Buzzard	1	-	-	
13/04/2022	TH	Buzzard	1	-	-	In flight, Wood Cleugh.
13/04/2022	SK	Kestrel	1	-	-	In flight; Greencleugh Ridge; male; hunting.
13/04/2022	SK	Kestrel	1	-	-	In flight; Greencleugh Ridge; male; hunting.
15/04/2022	EB	Buzzard	2	-	-	
15/04/2022	EB	Buzzard	3	-	-	
15/04/2022	EB	Kestrel	1	-	-	
15/04/2022	EB	Kestrel	1	-	-	
15/04/2022	SK	Buzzard	1	-	-	
15/04/2022	SK	Buzzard	2	-	-	
15/04/2022	SK	Buzzard	1	-	-	
15/04/2022	SK	Golden eagle	1	-	Adult	

¹ Annex 1 of the EU Bird Directive

² Schedule 1 of the Wildlife and Countryside Act 1981, as amended by the Nature Conservation Act (Scotland) 2004

Date	Observer	Species	Number recorded	Sex	Age	Notes
15/04/2022	TH	Buzzard	1	-	-	
18/04/2022	JR	Buzzard	3	-	-	
19/04/2022	JR	Buzzard	2	-	-	Pair.
19/04/2022	JR	Buzzard	2	-	-	Pair.
19/04/2022	JR	Buzzard	1	-	-	
19/04/2022	JR	Buzzard	1	-	-	
19/04/2022	JR	Kestrel	1	-	-	Pair; hunting.
19/04/2022	JR	Sparrowhawk	-	-	-	
20/04/2022	JR	Buzzard	-	-	-	
20/04/2022	JR	Golden eagle	1	-	Adult	
21/04/2022	JR	Buzzard	-	-	-	
21/04/2022	JRM	Buzzard	-	-	-	
21/04/2022	JRM	Kestrel	-	-	-	
02/05/2022	JRM	Buzzard	-	-	-	
02/05/2022	JRM	Golden eagle	1	Female	Juvenile	Satellite-tagged bird. Flushed near Green Cleugh, remained nearby in flight and mobbed by buzzards and ravens.
02/05/2022	JRM	Kestrel	-	-	-	
02/05/2022	TH	Buzzard	1	-	-	Mobbing golden eagle.
02/05/2022	TH	Buzzard	3	-	-	In flight.
02/05/2022	TH	Buzzard	1	-	-	In flight; Kersons Cleugh; mobbed by ravens.
02/05/2022	TH	Golden eagle	1	-	Juvenile	Mobbed by two ravens and a buzzard; not mapped as outside estate boundary.
03/05/2022	JRM	Buzzard	-	-	-	
03/05/2022	JRM	Kestrel	-	-	-	
04/05/2022	JRM	Buzzard	-	-	-	
04/05/2022	JRM	Kestrel	-	-	-	
04/05/2022	JRM	Merlin	1	Male	Immature	
04/05/2022	TH	Buzzard	1	-	-	Hunting.
05/05/2022	JRM	Buzzard	-	-	-	
16/05/2022	SK	Buzzard	5	-	-	In flight, ByreCleugh.
16/05/2022	SK	Buzzard	1	-	-	In flight, Dunside wood.
16/05/2022	JRM	Buzzard	4	-	-	In flight, ByreCleugh farm.
17/05/2022	SK	Buzzard	1	-	-	In flight, Wood Cleugh.
17/05/2022	SK	Buzzard	1	-	-	In flight, Blythe Edge.

Date	Observer	Species	Number recorded	Sex	Age	Notes
17/05/2022	JRM	Buzzard	-	-	-	
18/05/2022	JRM	Buzzard	-	-	-	
19/05/2022	SK	Buzzard	2	-	-	At Black Hill.
19/05/2022	SK	Marsh harrier	1	Female	Adult	Hunting; mobbed by corvids.
19/05/2022	TH	Buzzard	1	-	-	In flight, Kersons Cleugh; several feathers missing.
19/05/2022	TH	Buzzard	1	-	-	In flight, ByreCleugh Burn; mobbed by curlew.
19/05/2022	TH	Buzzard	1	-	-	In flight, Pyatshaw Knowe.
19/05/2022	TH	Hen harrier	1	Male	Adult	
19/05/2022	JRM	Buzzard	-	-	-	
19/05/2022	JRM	Hen harrier	1	Female	Adult	
19/05/2022	JRM	Kestrel	-	-	-	
06/06/2022	MW	Buzzard	-	-	-	
06/06/2022	MW	Kestrel	-	-	-	
06/06/2022	MW	Merlin	1	-	Adult	
06/06/2022	MW	Red kite	1	-	Adult	
07/06/2022	MW	Buzzard	-	-	-	
07/06/2022	MW	Kestrel	-	-	-	
07/06/2022	MW	Red kite	1	-	Adult	
08/06/2022	MW	Kestrel	-	-	-	
09/06/2022	MW	Buzzard	-	-	-	
09/06/2022	MW	Kestrel	-	-	-	
09/06/2022	MW	Red kite	1	-	Adult	
10/06/2022	MW	Buzzard		-	-	
10/06/2022	MW	Kestrel		-	-	
13/06/2022	JRM	Buzzard	1	-	-	In flight, ByreCleugh Ridge.
13/06/2022	JRM	Peregrine falcon	1	-	Juvenile	
14/06/2022	SK	Buzzard	1	-	-	In flight; Meikle Law; hunting.
14/06/2022	SK	Kestrel	1	-	-	In flight; Kersons Cleugh; hunting.
14/06/2022	JRM	Buzzard	1	-	-	In flight, Greencleugh Ridge.
14/06/2022	JRM	Buzzard	4	-	-	In flight, Upper Knowe.
14/06/2022	JRM	Kestrel	1	-	-	In flight; Greencleugh Ridge; hunting; stooped on prey.
15/06/2022	SK	Buzzard	1	-	-	In flight, Philips Knowe.
16/06/2022	EB	Buzzard	1	-	-	In flight, Dunside Hill.
16/06/2022	JRM	Buzzard	1	-	-	In flight, Black Hill; mobbed by lapwing.

Date	Observer	Species	Number recorded	Sex	Age	Notes
16/06/2022	JRM	Kestrel	-	-	-	
16/06/2022	SK	Buzzard	2	-	-	In flight, ByreCleugh Ridge.
16/06/2022	SK	Kestrel	1	-	-	In flight, ByreCleugh Ridge.
16/06/2022	SK	Red kite	1	-	Adult	
16/06/2022	TH	Buzzard	1	-	-	In flight, Nether Knowe.
16/06/2022	MW	Buzzard	-	-	-	
16/06/2022	MW	Kestrel	-	-	-	
16/06/2022	MW	Merlin	1	Male	Adult	Caught and ate meadow pipit.
16/06/2022	MW	Red kite	1	-	Adult	
11/07/2022	JRM	Buzzard	2	-	-	In flight, Duddy Bank.
11/07/2022	JRM	Kestrel	4	-	-	Family south of Wether Law; juveniles interacting and 'playing'.
11/07/2022	SK	Buzzard	1	-	-	In flight, Hall Burn.
11/07/2022	SK	Buzzard	1	-	-	In flight, Bell Burn.
11/07/2022	SK	Kestrel	1	-	-	In flight; Dunside Hill; male; hunting.
12/07/2022	JRM	Buzzard	2	-	-	In flight, Pyatshaw Ridge.
12/07/2022	JRM	Kestrel	2	-	-	In flight, ByreCleugh.
12/07/2022	JRM	Red kite	1	-	Adult	
12/07/2022	SK	Buzzard	1	-	-	In flight, ByreCleugh Ridge.
12/07/2022	SK	Buzzard	2	-	-	In flight, Wood Cleugh.
12/07/2022	SK	Kestrel	1	-	-	In flight; Upper Knowe; male.
12/07/2022	SK	Kestrel	1	-	-	In flight; Green Cleugh; female.
12/07/2022	MW	Buzzard	-	-	-	
12/07/2022	MW	Kestrel	1	-	-	Perched near Nuns' Bank.
13/07/2022	JRM	Buzzard	1	-	-	In flight; ByreCleugh Ridge; mobbing golden eagle.
13/07/2022	JRM	Golden eagle	1	-	Adult	Mobbed by buzzard.
13/07/2022	JRM	Kestrel	1	-	-	In flight, Meikle Law.
13/07/2022	JRM	Peregrine falcon	1	-	Adult	
13/07/2022	SK	Buzzard	1	-	-	Perched at Green Cleugh.
13/07/2022	SK	Kestrel	1	-	-	In flight; Wedder Lairs; male.
13/07/2022	MW	Buzzard	-	-	-	
13/07/2022	MW	Kestrel	4	-	-	At Horseupcleugh.
14/07/2022	SK	Buzzard	1	-	-	In flight, Blackhag Burn.
14/07/2022	MW	Buzzard	-	-	-	
14/07/2022	MW	Kestrel	-	-	-	

Date	Observer	Species	Number recorded	Sex	Age	Notes
20/07/2022	TH	Kestrel	1	-	-	In flight; Dunside Hill; hunting.
20/07/2022	TH	Kestrel	1	-	-	In flight; Dunside Hill; hunting.
21/07/2022	SK	Buzzard	1	-	-	In flight; Byrecleugh; hunting.
21/07/2022	TH	Buzzard	1	-	-	In flight, Byrecleugh Burn.
01/08/2022	MW	Buzzard	-	-	-	
01/08/2022	MW	Kestrel	-	-	-	
01/08/2022	JRM	Buzzard	1	-	-	In flight, Lamb Hill.
01/08/2022	JRM	Kestrel	1	-	-	In flight; Dunside Hill; hunting.
02/08/2022	MW	Buzzard	-	-	-	
02/08/2022	MW	Hen harrier	1	Ringtail	-	
02/08/2022	MW	Kestrel	-	-	-	
02/08/2022	MW	Sparrowhawk	-	-	-	
02/08/2022	JRM	Kestrel	-	-	-	In flight; Byrecleugh Ridge; hunting.
03/08/2022	JRM	Kestrel	1	-	-	In flight; Dunside Hill; juvenile; hunting.
03/08/2022	JRM	Osprey	1	-	Adult	Fishing at Watch Water Reservoir. Observed whilst leaving site, not mapped.
04/08/2022	MW	Buzzard	-	-	-	
04/08/2022	MW	Kestrel	-	-	-	
04/08/2022	MW	Osprey	1	-	Adult	
05/08/2022	MW	Buzzard	-	-	-	
05/08/2022	MW	Kestrel	-	-	-	
22/08/2022	MW	Kestrel	1	-	-	In flight, Byrecleugh Ridge.

D.5 Black Grouse Records

No black grouse or evidence of black grouse was recorded during targeted surveys or during any other surveys during the baseline survey period. Refer to **Annex B** for survey methodology and **Annex C** for weather data.

D.6 Bird Species Index

A total of 96 bird species or signs was recorded at, or adjacent, to the Site during the ornithological surveys. **Table D-6** comprises a list of all these species along with their conservation status.

Table D-6 All bird species recorded at Dunside (November 2021 to November 2022)

Species	Conservation status	Species	Conservation status
Barn owl	Schedule 1, BoCC ³ Green	Linnet	BoCC Red
Barnacle goose	Annex 1, BoCC Amber	Magpie	BoCC Green
Blackbird	BoCC Green	Mallard	BoCC Amber
Blackcap	BoCC Green	Marsh harrier	Annex 1, Schedule 1, BoCC Amber
Black-headed gull	BoCC Amber	Meadow pipit	BoCC Amber
Blue tit	BoCC Green	Merlin	Annex 1, Schedule 1, BoCC Red
Brambling	Schedule 1, BoCC Green	Mistle thrush	BoCC Red
Bullfinch	BoCC Amber	Moorhen	BoCC Amber
Buzzard	BoCC Green	Osprey	Annex 1, Schedule 1, BoCC Amber
Canada goose	No status	Oystercatcher	BoCC Amber
Carrion crow	BoCC Green	Peregrine falcon	Annex 1, Schedule 1, BoCC Green
Chaffinch	BoCC Green	Pheasant	No status
Chiffchaff	BoCC Green	Pied wagtail	BoCC Green
Coal tit	BoCC Green	Pink-footed goose	BoCC Amber
Collared dove	BoCC Green	Raven	BoCC Green
Common crossbill	Schedule 1, BoCC Green	Red grouse	BoCC Green
Common gull	BoCC Amber	Red kite	Annex 1, Schedule 1, BoCC Green
Common sandpiper	BoCC Amber	Red-legged partridge	No status
Common whitethroat	BoCC Amber	Redshank	BoCC Amber
Cormorant	BoCC Green	Redwing	Schedule 1, BoCC Amber
Cuckoo	BoCC Red	Reed bunting	BoCC Amber
Curlew	BoCC Red	Ring ouzel	BoCC Red
Dipper	BoCC Amber	Ringed plover	BoCC Red
Dunnock	BoCC Amber	Robin	BoCC Green
Fieldfare	Schedule 1, BoCC Red	Rook	BoCC Amber

³ BoCC – Birds of Conservation Concern (Stanbury *et al.* 2020)

Species	Conservation status	Species	Conservation status
Goldcrest	BoCC Green	Sand martin	BoCC Green
Golden eagle	Annex 1, Schedule 1, BoCC Green	Sedge warbler	BoCC Amber
Golden plover	Annex 1, BoCC Green	Short-eared owl	Annex 1, BoCC Amber
Goldfinch	BoCC Green	Siskin	BoCC Green
Goosander	BoCC Green	Skylark	BoCC Red
Goshawk	Schedule 1, BoCC Green	Snipe	BoCC Amber
Great black-backed gull	BoCC Amber	Snow bunting	Schedule 1, BoCC Amber
Great spotted woodpecker	BoCC Green	Song thrush	BoCC Amber
Great tit	BoCC Green	Sparrowhawk	BoCC Amber
Grey heron	BoCC Green	Starling	BoCC Red
Grey wagtail	BoCC Amber	Stonechat	BoCC Green
Greylag goose	BoCC Amber	Swallow	BoCC Green
Hen harrier	Annex 1, Schedule 1, BoCC Red	Swift	BoCC Red
Herring gull	BoCC Red	Teal	BoCC Amber
Hooded crow	BoCC Green	Tufted duck	BoCC Green
House martin	BoCC Red	Twite	BoCC Red
House sparrow	BoCC Red	Wheatear	BoCC Amber
Jackdaw	BoCC Green	Whinchat	BoCC Red
Jay	BoCC Green	Whooper swan	Annex 1, Schedule 1, BoCC Amber
Kestrel	BoCC Amber	Willow warbler	BoCC Amber
Lapwing	BoCC Red	Wood sandpiper	Annex 1, Schedule 1, BoCC Amber
Lesser black-backed gull	BoCC Amber	Woodpigeon	BoCC Green
Lesser redpoll	BoCC Red	Wren	BoCC Green

ANNEX E. COLLISION RISK ASSESSMENTS

Delaunay Triangulation¹ from the proposed turbine locations was used to create a wind farm area² and from this the Collision Risk Analysis Area (CRAA) was created using a 500 metre (m) buffer (**Figure 7.2**). Using the larger 500 m area around the turbines accounts for possible inaccuracies in the recording of flightlines and ensures the assessment is precautionary.

The ultimate aim is to have 100 % coverage of the turbines and associated CRAA by the viewsheds, however in practice this is often unachievable as a result of the topography of the Site and limited to no access outwith the Site boundary. For the Proposed Development, although some small areas of the CRAA remain ‘invisible’ at 20 m above ground level (**Figure 7.2**), the habitat within these areas is of sufficient similarity such that the survey data collected and subsequently assessed are considered to be representative of the whole CRAA. In addition, there were no records made during any of the surveys which would suggest that this area was of any particular importance to target species. Furthermore, the flying time at risk height (secsHahr¹) for each species is calculated as a single mean activity rate within the entirety of the CRAA.

Table E-1, Table E-2 and Table E-3 present the parameters which apply to each Collision Risk Model (CRM). Flight activity surveys were not undertaken in September and October 2021. To ensure that two autumn migration periods were covered, surveys were undertaken between September and November 2022 as a replacement. For the purposes of the collision modelling, the 2021/2022 and 2022/2023 non-breeding seasons have been combined and are all classed as the 2021/2022 non-breeding season in the collision modelling outputs.

Table E-1 Wind farm parameters

Size of wind farm envelope	1030	hectares (ha)
Number of turbines	15	turbines
Rotor diameter	172	metres (m)
Hub height	134	m
Max. rotor depth	1.2834	m (at 15° pitch angle)
Max. chord	4.2	m
Pitch	15	degrees (°)
Rotation period	4.9587	seconds (secs)
Turbine operation time	85	percent (%)
Risk height: highest	220	m
Risk height: lowest	48	m
Flight risk volume	1771134760	m ³

¹ Delaunay triangulation is a form of mathematical/computational geometry where a given set of points (in this case the turbine locations) are all joined to create discrete triangles. Further information is available here:

<https://uk.mathworks.com/help/matlab/math/delaunay-triangulation.html>

² This was adjusted where appropriate depending on the spatial location of the turbines in relation to other turbines.

Table E-2 CRM parameters per species

Species	Length (m)	Wingspan (m)	Assumed flight speed, v (ms^{-1})	Avoidance rate	Probability of collision	Bird transit time (secs)
Curlew	0.6	1	13	0.98	0.0642	0.1449
Golden eagle	0.815	2.12	15	0.99	0.0692	0.1399
Golden plover	0.28	0.72	17.9	0.98	0.0418	0.0873
Goshawk	0.62	1.65	9.7	0.98	0.0831	0.1962
Greylag goose	0.825	1.635	17.1	0.998	0.0627	0.1233
Hen harrier	0.48	1.1	12	0.99	0.0626	0.1470
Herring gull	0.64	4.5	12.8	0.98	0.0677	0.1503
Lapwing	0.31	0.87	11.9	0.98	0.0544	0.1339
Marsh harrier	0.56	1.3	10.1	0.98	0.0763	0.1825
Peregrine falcon	0.48	1.1	12.1	0.98	0.0622	0.1457
Pink-footed goose	0.675	1.525	17.3	0.998	0.0572	0.1132
Red kite	0.66	1.95	12	0.99	0.0731	0.1620
White-tailed eagle	0.9	2.4	13.6	0.95	0.0780	0.1605

Table E-3 Visible area within the CRAA per vantage point

VP	Area (ha)	VP	Area (ha)
1	104.05	7	171.92
3	224.45	8	177.30
4	43.09	9	405.54
5	261.14	10	62.66
6	275.44	11	200.88

Birds are assumed to be active during all the daylight hours and this is estimated by calculating the number of hours per day between sunrise and sunset (adjusting for correct latitude) for the survey seasons as defined in **Table E-4** below.

Table E-4 Season definitions per species/species group

Species	Breeding season			Non-breeding season		
	Start date	End date	Hours presumed present	Start date	End date	Hours presumed present
Golden eagle	1 st February	31 st August	2777	1 st September	31 st January	1720
White-tailed eagle	1 st February	31 st August	2777	1 st September	31 st January	1720
Geese and swans	15 th May	31 st August	1800	1 st September	14 th May	2697
Golden plover	14 th April	31 st July	1801	1 st August	13 th April	2696
Raptors	15 th March	31 st August	2654	1 st September	14 th March	1843
Waders	1 st April	31 st July	1976	1 st August	31 st March	2521
Other	15 th March	31 st August	2654	1 st September	14 th March	1843

Outputs for the CRM for the following species are presented in the following order below:

- Curlew;
- Golden eagle;
- Golden plover;
- Goshawk;
- Greylag goose;
- Hen harrier;
- Herring gull;
- Lapwing;
- Marsh harrier;
- Peregrine falcon;
- Pink-footed goose; and
- White-tailed eagle.

E.1 Curlew

Non-Breeding Season 2021/2022

Table E-5 Curlew flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	0.00	3537.67	0.00
2	0.00	6845.84	0.00
3	0.00	1292.60	0.00
4	0.00	8617.73	0.00
5	0.00	9364.93	0.00
6	0.00	2406.87	0.00
7	14.34	3900.69	0.00000008
8	0.00	8921.84	0.00
9	0.00	1378.57	0.00
10	27.55	5022.00	0.00000015
11	0.00	3537.67	0.00

Table E-6 Curlew mortality estimates

Mean activity in wind farm at rotor height	0.0002	hr ⁻¹
Total Combined rotor swept volume	656418	m ³
Bird occupancy	0.5889	hrs/season
Bird occupancy of rotor swept volume	0.7857	bird-sec
No. of transits through rotors	5.4232	per season
Estimated collisions	0.3482	per season
Estimated collisions after correction for operation	0.2960	per season
Estimated collisions after avoidance factor	0.0059	per season
Equivalent to 1 bird every	168.94	seasons

Breeding Season 2022

Table E-7 Curlew flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
7	0.00	4126.05	0.00
8	0.00	3546.08	0.00
9	288.64	11760.61	288.64
10	0.04	1378.57	0.04
11	254.95	4770.90	254.95

Table E-8 Curlew mortality estimates

Mean activity in wind farm at rotor height	0.0061	hr ⁻¹
Total Combined rotor swept volume	656418	m ³
Bird occupancy	12.0131	hrs/season
Bird occupancy of rotor swept volume	16.0282	bird-sec
No. of transits through rotors	110.6334	per season
Estimated collisions	7.1030	per season
Estimated collisions after correction for operation	6.0376	per season
Estimated collisions after avoidance factor	0.1208	per season
Equivalent to 1 bird every	8.28	seasons

E.2 Golden Eagle

Breeding Season 2022

Table E-9 Golden eagle flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
7	62.95	6189.08	0.0000003
8	0.00	6382.94	0.00
9	0.00	14599.38	0.00
10	0.00	2255.85	0.00
11	105.07	7231.68	0.000001

Table E-10 Golden eagle mortality estimates

Mean activity in wind farm at rotor height	0.0009	hr ⁻¹
Total Combined rotor swept volume	731352	m ³
Bird occupancy	2.6323	hrs/season
Bird occupancy of rotor swept volume	3.9130	bird-sec
No. of transits through rotors	27.9716	per season
Estimated collisions	1.9345	per season
Estimated collisions after correction for operation	1.6443	per season
Estimated collisions after avoidance factor	0.0164	per season
Equivalent to 1 bird every	60.81	seasons

E.3 Golden Plover

Non-Breeding Season 2020/2021

Table E-11 Golden plover flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	2124.98	5254.49	0.000013
3	21754.59	10324.87	0.000135
4	24813.22	1982.85	0.000153
5	626.34	13318.31	0.000004
6	5755.34	14047.40	0.000036

Table E-12 Golden plover mortality estimates

Mean activity in wind farm at rotor height	0.3506	hr ¹
Total Combined rotor swept volume	544889	m ³
Bird occupancy	945.3274	hrs/season
Bird occupancy of rotor swept volume	1046.9872	bird-sec
No. of transits through rotors	11987.3784	per season
Estimated collisions	501.4720	per season
Estimated collisions after correction for operation	426.2512	per season
Estimated collisions after avoidance factor	8.5250	per season
Equivalent to 1 bird every	0.12	seasons

Breeding Season 2021

Table E-13 Golden plover flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	2.12	2809.33	0.00000002
3	553.76	8080.33	0.00000570
4	31.80	1604.98	0.00000033
5	0.00	7050.87	0.00
6	37.44	7436.86	0.00000039

Table E-14 Golden plover mortality estimates

Mean activity in wind farm at rotor height	0.0066	hr ¹
Total Combined rotor swept volume	544889	m ³
Bird occupancy	11.9346	hrs/season
Bird occupancy of rotor swept volume	13.2180	bird-sec
No. of transits through rotors	151.3381	per season
Estimated collisions	6.3310	per season
Estimated collisions after correction for operation	5.3813	per season
Estimated collisions after avoidance factor	0.1076	per season
Equivalent to 1 bird every	9.29	seasons

Non-Breeding Season 2021/2022

Table E-15 Golden plover flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	0.00	3537.67	0.00
2	26739.14	6845.84	0.0001347
3	883.65	1292.60	0.0000045
4	280.80	8617.73	0.0000014
5	0.00	9364.93	0.00
6	17.32	2406.87	0.0000001
7	179.84	3900.69	0.0000009
8	398699.96	11355.07	0.0020090
9	58.38	1629.22	0.0000003
10	1119.40	6177.06	0.0000056
11	0.00	3537.67	0.00

Table E-16 Golden plover mortality estimates

Mean activity in wind farm at rotor height	2.2206	hr ⁻¹
Total Combined rotor swept volume	544889	m ³
Bird occupancy	5986.8791	hrs/season
Bird occupancy of rotor swept volume	6630.7032	bird-sec
No. of transits through rotors	75917.5961	per season
Estimated collisions	3175.8863	per season
Estimated collisions after correction for operation	2699.5034	per season
Estimated collisions after avoidance factor	53.9901	per season
Equivalent to 1 bird every	0.02	seasons

Breeding Season 2022

Table E-17 Golden plover flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
7	0.00	4126.05	0.00
8	34.76	3546.08	0.0000004
9	0.00	9327.38	0.00
10	13.15	1127.92	0.0000002
11	135.52	3615.84	0.0000017

Table E-18 Golden plover mortality estimates

Mean activity in wind farm at rotor height	0.0024	hr ⁻¹
Total Combined rotor swept volume	544889	m ³
Bird occupancy	4.3458	hrs/season
Bird occupancy of rotor swept volume	4.8131	bird-sec
No. of transits through rotors	55.1070	per season
Estimated collisions	2.3053	per season
Estimated collisions after correction for operation	1.9595	per season
Estimated collisions after avoidance factor	0.0392	per season
Equivalent to 1 bird every	25.52	seasons

E.4 Goshawk

Non-Breeding Season 2020/2021

Table E-19 Goshawk flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	0	4318.04	0
3	13.86	9651.51	0.0000001
4	0	1853.59	0
5	0	10968.02	0
6	0	11568.44	0

Table E-20 Goshawk mortality estimates

Mean activity in wind farm at rotor height	0.0001	hr ⁻¹
Total Combined rotor swept volume	663389	m ³
Bird occupancy	0.1905	hrs/season
Bird occupancy of rotor swept volume	0.2568	bird-sec
No. of transits through rotors	1.3087	per season
Estimated collisions	0.1087	per season
Estimated collisions after correction for operation	0.0924	per season
Estimated collisions after avoidance factor	0.0018	per season
Equivalent to 1 bird every	541.21	seasons

E.5 Greylag Goose

Non-Breeding Season 2020/2021

Table E-21 Greylag goose flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	315.41	5254.49	0.000002
3	1007.22	11671.59	0.00001
4	15.78	2241.38	0.0000001
5	824.06	13318.31	0.000005
6	3832.90	14047.40	0.00002

Table E-22 Greylag goose mortality estimates

Mean activity in wind farm at rotor height	0.0369	hr ⁻¹
Total Combined rotor swept volume	734837	m ³
Bird occupancy	99.4101	hrs/season
Bird occupancy of rotor swept volume	148.4816	bird-sec
No. of transits through rotors	1204.2474	per season
Estimated collisions	75.4572	per season
Estimated collisions after correction for operation	64.1386	per season
Estimated collisions after avoidance factor	0.1283	per season
Equivalent to 1 bird every	7.80	seasons

Breeding Season 2021

Table E-23 Greylag goose flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	13.85	3433.63	0.0000001
3	36.06	7406.97	0.0000003
4	0.00	1475.72	0.00
5	339.05	8617.73	0.0000003
6	274.30	9089.49	0.0000003

Table E-24 Greylag goose mortality estimates

Mean activity in wind farm at rotor height	0.0063	hr ⁻¹
Total Combined rotor swept volume	734837	m ³
Bird occupancy	11.3709	hrs/season
Bird occupancy of rotor swept volume	16.9839	bird-sec
No. of transits through rotors	137.7467	per season
Estimated collisions	8.6311	per season
Estimated collisions after correction for operation	7.3364	per season
Estimated collisions after avoidance factor	0.0147	per season
Equivalent to 1 bird every	68.15	seasons

Non-Breeding Season 2021/2022

Table E-25 Greylag goose flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	0.00	3537.67	0.00
2	0.00	6845.84	0.00
3	0.52	1292.60	0.000000002
4	0.00	8617.73	0.00
5	0.00	9364.93	0.00
6	13.58	4469.89	0.000000006
7	28.91	4964.51	0.000000012
8	118.63	15815.99	0.00000005
9	0.00	2381.17	0.00
10	144.31	7382.34	0.00000006
11	0.00	3537.67	0.00

Table E-26 Greylag goose mortality estimates

Mean activity in wind farm at rotor height	0.0014	hr ⁻¹
Total Combined rotor swept volume	734837	m ³
Bird occupancy	3.6500	hrs/season
Bird occupancy of rotor swept volume	5.4517	bird-sec
No. of transits through rotors	44.2158	per season
Estimated collisions	2.7705	per season
Estimated collisions after correction for operation	2.3549	per season
Estimated collisions after avoidance factor	0.0047	per season
Equivalent to 1 bird every	212.32	seasons

E.6 Hen Harrier

Non-Breeding Season 2020/2021

Table E-27 Hen harrier flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	15.82	4318.04	0.0000001
3	0.00	9651.51	0.00
4	0.00	1853.59	0.00
5	15.37	10968.02	0.0000001
6	80.91	11568.44	0.000001

Table E-28 Hen harrier mortality estimates

Mean activity in wind farm at rotor height	0.0008	hr ⁻¹
Total Combined rotor swept volume	614595	m ³
Bird occupancy	1.5410	hrs/season
Bird occupancy of rotor swept volume	1.9250	bird-sec
No. of transits through rotors	13.0999	per season
Estimated collisions	0.8194	per season
Estimated collisions after correction for operation	0.6965	per season
Estimated collisions after avoidance factor	0.0070	per season
Equivalent to 1 bird every	143.57	seasons

E.7 Herring Gull

Non-Breeding Season 2021/2022

Table E-29 Herring gull flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	0.00	3537.67	0.00
2	0.00	5499.12	0.00
3	1.53	1034.08	0.000000010
4	1.73	8617.73	0.000000011
5	0.00	9364.93	0.00
6	0.00	1891.11	0.00
7	0.00	2836.86	0.00
8	0.00	6488.61	0.00
9	0.00	1002.60	0.00
10	0.00	3214.08	0.00
11	0.00	3537.67	0.00

Table E-30 Herring gull mortality estimates

Mean activity in wind farm at rotor height	0.00002	hr ⁻¹
Total Combined rotor swept volume	670359	m ³
Bird occupancy	0.0395	hrs/season
Bird occupancy of rotor swept volume	0.0539	bird-sec
No. of transits through rotors	0.3585	per season
Estimated collisions	0.0243	per season
Estimated collisions after correction for operation	0.0206	per season
Estimated collisions after avoidance factor	0.0004	per season
Equivalent to 1 bird every	2422.88	seasons

Breeding Season 2022

Table E-31 Herring gull flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
7	0.00	6189.08	0.00
8	42.83	6382.94	0.0000003
9	0.00	14599.38	0.00
10	3.21	2255.85	0.00000002
11	0.00	7231.68	0.00

Table E-32 Herring gull mortality estimates

Mean activity in wind farm at rotor height	0.0003	hr ⁻¹
Total Combined rotor swept volume	670359	m ³
Bird occupancy	0.9133	hrs/season
Bird occupancy of rotor swept volume	1.2444	bird-sec
No. of transits through rotors	8.2814	per season
Estimated collisions	0.5609	per season
Estimated collisions after correction for operation	0.4768	per season
Estimated collisions after avoidance factor	0.0095	per season
Equivalent to 1 bird every	104.88	seasons

E.8 Lapwing

Non-Breeding Season 2021/2022

Table E-33 Lapwing flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	0.00	3537.67	0.00
2	29.11	6845.84	0.0000002
3	0.00	1292.60	0.00
4	0.00	8617.73	0.00
5	0.00	9364.93	0.00
6	0.00	2406.87	0.00
7	0.00	3900.69	0.00
8	0.00	8921.84	0.00
9	0.00	1378.57	0.00
10	0.00	5022.00	0.00
11	0.00	3537.67	0.00

Table E-34 Lapwing mortality estimates

Mean activity in wind farm at rotor height	0.0002	hr ⁻¹
Total Combined rotor swept volume	555345	m ³
Bird occupancy	0.4093	hrs/season
Bird occupancy of rotor swept volume	0.4620	bird-sec
No. of transits through rotors	3.4501	per season
Estimated collisions	0.1876	per season
Estimated collisions after correction for operation	0.1595	per season
Estimated collisions after avoidance factor	0.0032	per season
Equivalent to 1 bird every	313.58	seasons

E.9 Marsh Harrier

Breeding Season 2021

Table E-35 Marsh harrier flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	0.00	4370.07	0.00
3	5.25	9427.06	0.00000004
4	0.00	1863.50	0.00
5	0.00	10968.02	0.00
6	0.00	11568.44	0.00

Table E-36 Marsh harrier mortality estimates

Mean activity in wind farm at rotor height	0.00004	hr ⁻¹
Total Combined rotor swept volume	642477	m ³
Bird occupancy	0.1042	hrs/season
Bird occupancy of rotor swept volume	0.1361	bird-sec
No. of transits through rotors	0.7459	per season
Estimated collisions	0.0569	per season
Estimated collisions after correction for operation	0.0484	per season
Estimated collisions after avoidance factor	0.0010	per season
Equivalent to 1 bird every	1033.79	seasons

E.10 Peregrine Falcon

Non-Breeding Season 2020/2021

Table E-37 Peregrine falcon flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	48.14	4318.04	0.0000003
3	119.65	9651.51	0.000001
4	0.00	1853.59	0.00
5	132.74	10968.02	0.000001
6	37.67	11568.44	0.0000003

Table E-38 Peregrine falcon mortality estimates

Mean activity in wind farm at rotor height	0.0025	hr ⁻¹
Total Combined rotor swept volume	614595	m ³
Bird occupancy	4.6488	hrs/season
Bird occupancy of rotor swept volume	5.8074	bird-sec
No. of transits through rotors	39.8490	per season
Estimated collisions	2.4776	per season
Estimated collisions after correction for operation	2.1059	per season
Estimated collisions after avoidance factor	0.0421	per season
Equivalent to 1 bird every	23.74	seasons

Breeding Season 2021

Table E-39 Peregrine falcon flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	75.43	4370.07	0.000001
3	43.71	9427.06	0.0000003
4	0.00	1863.50	0.00
5	22.71	10968.02	0.0000002
6	8.85	11568.44	0.0000001

Table E-40 Peregrine falcon mortality estimates

Mean activity in wind farm at rotor height	0.0011	hr ⁻¹
Total Combined rotor swept volume	614595	m ³
Bird occupancy	2.9944	hrs/season
Bird occupancy of rotor swept volume	3.7407	bird-sec
No. of transits through rotors	25.6677	per season
Estimated collisions	1.5959	per season
Estimated collisions after correction for operation	1.3565	per season
Estimated collisions after avoidance factor	0.0271	per season
Equivalent to 1 bird every	36.86	seasons

Non-Breeding Season 2021/2022

Table E-41 Peregrine falcon flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	3.68	3537.67	0.00000002
2	19.76	5499.12	0.0000001
3	0.00	1034.08	0.00
4	0.00	8617.73	0.00
5	0.00	9364.93	0.00
6	0.00	1891.11	0.00
7	140.66	2836.86	0.0000009
8	0.00	6488.61	0.00
9	0.00	1002.60	0.00
10	0.00	3214.08	0.00
11	3.68	3537.67	0.00000002

Table E-42 Peregrine falcon mortality estimates

Mean activity in wind farm at rotor height	0.0011	hr ⁻¹
Total Combined rotor swept volume	614595	m ³
Bird occupancy	1.9897	hrs/season
Bird occupancy of rotor swept volume	2.4856	bird-sec
No. of transits through rotors	17.0556	per season
Estimated collisions	1.0604	per season
Estimated collisions after correction for operation	0.9014	per season
Estimated collisions after avoidance factor	0.0180	per season
Equivalent to 1 bird every	55.47	seasons

Breeding Season 2022

Table E-43 Peregrine falcon flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
7	0.00	6189.08	0.00
8	115.74	6382.94	0.000001
9	0.00	14599.38	0.00
10	0.00	2255.85	0.00
11	0.00	7231.68	0.00

Table E-44 Peregrine falcon mortality estimates

Mean activity in wind farm at rotor height	0.0009	hr ⁻¹
Total Combined rotor swept volume	614595	m ³
Bird occupancy	2.2958	hrs/season
Bird occupancy of rotor swept volume	2.8679	bird-sec
No. of transits through rotors	19.6789	per season
Estimated collisions	1.2235	per season
Estimated collisions after correction for operation	1.0400	per season
Estimated collisions after avoidance factor	0.0208	per season
Equivalent to 1 bird every	48.08	seasons

E.11 Pink-Footed Goose

Non-Breeding Season 2020/2021

Table E-45 Pink-footed goose flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	3618.68	5254.49	0.00002
3	959.06	11671.59	0.00001
4	0.00	2241.38	0.00
5	0.00	13318.31	0.00
6	801.09	14047.40	0.000005

Table E-46 Pink-footed goose mortality estimates

Mean activity in wind farm at rotor height	0.0331	hr ⁻¹
Total Combined rotor swept volume	682558	m ³
Bird occupancy	89.1872	hrs/season
Bird occupancy of rotor swept volume	123.7351	bird-sec
No. of transits through rotors	1093.0439	per season
Estimated collisions	62.5552	per season
Estimated collisions after correction for operation	53.1719	per season
Estimated collisions after avoidance factor	0.1063	per season
Equivalent to 1 bird every	9.40	seasons

Non-Breeding Season 2021/2022

Table E-47 Pink-footed goose flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	0.00	3537.67	0.00
2	0.00	6845.84	0.00
3	0.00	1292.60	0.00
4	0.00	8617.73	0.00
5	0.00	9364.93	0.00
6	4382.26	4469.89	0.000019
7	0.00	4964.51	0.00
8	6565.83	15815.99	0.000028
9	0.00	2381.17	0.00
10	0.00	7382.34	0.00
11	0.00	3537.67	0.00

Table E-48 Pink-footed goose mortality estimates

Mean activity in wind farm at rotor height	0.0484	hr ⁻¹
Total Combined rotor swept volume	682558	m ³
Bird occupancy	130.6156	hrs/season
Bird occupancy of rotor swept volume	181.2113	bird-sec
No. of transits through rotors	1600.7737	per season
Estimated collisions	91.6127	per season
Estimated collisions after correction for operation	77.8708	per season
Estimated collisions after avoidance factor	0.1557	per season
Equivalent to 1 bird every	6.42	seasons

E.12 Red Kite

Breeding Season 2021

Table E-49 Red kite flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	0.00	4370.07	0.00
3	247.45	9427.06	0.000002
4	77.63	1863.50	0.000001
5	0.00	10968.02	0.00
6	393.30	11568.44	0.000003

Table E-50 Red kite mortality estimates

Mean activity in wind farm at rotor height	0.0054	hr ⁻¹
Total Combined rotor swept volume	677330	m ³
Bird occupancy	14.2749	hrs/season
Bird occupancy of rotor swept volume	19.6528	bird-sec
No. of transits through rotors	121.3512	per season
Estimated collisions	8.8728	per season
Estimated collisions after correction for operation	7.5418	per season
Estimated collisions after avoidance factor	0.0754	per season
Equivalent to 1 bird every	13.26	seasons

Breeding Season 2022

Table E-51 Red kite flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
7	33.34	6189.08	0.0000002
8	0.00	6382.94	0.00
9	158.83	14599.38	0.0000012
10	0.00	2255.85	0.00
11	0.00	7231.68	0.00

Table E-52 Red kite mortality estimates

Mean activity in wind farm at rotor height	0.0014	hr ⁻¹
Total Combined rotor swept volume	677330	m ³
Bird occupancy	3.8118	hrs/season
Bird occupancy of rotor swept volume	5.2479	bird-sec
No. of transits through rotors	32.4042	per season
Estimated collisions	2.3693	per season
Estimated collisions after correction for operation	2.0139	per season
Estimated collisions after avoidance factor	0.0201	per season
Equivalent to 1 bird every	49.66	seasons

E.13 White-Tailed Eagle

Breeding Season 2021

Table E-53 White-tailed eagle flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	0.00	5566.64	0.00
3	0.00	12344.95	0.00
4	0.00	2424.49	0.00
5	0.00	14885.17	0.00
6	16.13	15700.03	0.0000001

Table E-54 White-tailed eagle mortality estimates

Mean activity in wind farm at rotor height	0.0001	hr ⁻¹
Total Combined rotor swept volume	760977	m ³
Bird occupancy	0.2517	hrs/season
Bird occupancy of rotor swept volume	0.3893	bird-sec
No. of transits through rotors	2.4248	per season
Estimated collisions	0.1891	per season
Estimated collisions after correction for operation	0.1608	per season
Estimated collisions after avoidance factor	0.0080	per season
Equivalent to 1 bird every	124.41	seasons

ANNEX F. ORNITHOLOGICAL BASELINE DATA AND METHODOLOGY (WOOD GROUP UK LIMITED REPORT)

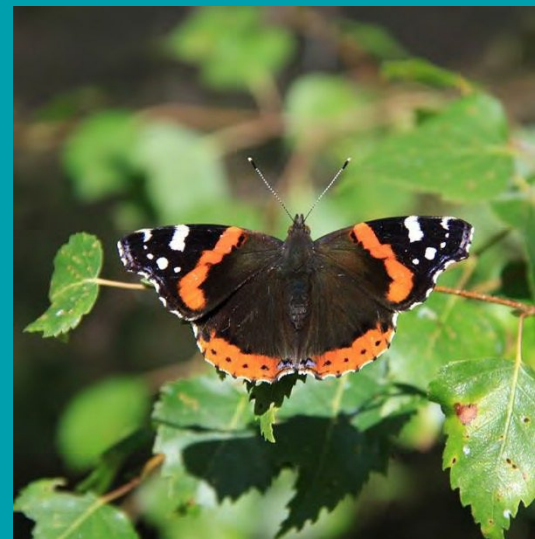
Detailed on the pages below is the baseline report written by Wood Group UK Limited in September 2021 for the Proposed Development and details the results of baseline surveys undertaken between September 2020 and August 2021. It should be noted that any preliminary assessment contained in this report has been superseded by the assessment undertaken in **Chapter 7: Ornithology**. The figures that accompany this report have not been provided as the data is shown on the figure suite that accompanies **Chapter 7: Ornithology**.

wood.

EDF Renewables

Fallago Rig 3 Wind Farm

Baseline Ornithology Report –
Breeding Season 2021



Report for

Sarah Dooley
Development Manager
EDF Renewables
By email

Main contributors

Duncan Priddle

Issued by

[REDACTED]
Sue Birnie

Approved by

[REDACTED]
Pete Clark

Wood Group UK Limited

Partnership House
Regent Farm Road
Gosforth
Newcastle upon Tyne NE3 3AF
United Kingdom
[REDACTED]

Doc Ref. 42188-WOOD-XX-XX-RP-OE-0006_S0_P01.1

\\gos-fs14\shared\gwm\data\project\42188 fallago rig 2
variation\deliver stage\d design_technical\ornithology\2021
breeding season\baseline report\42188-wood-xx-xx-rp-oe-
0006_s0_p01.1 - baseline ornithology report – breeding season
2021.docx

Copyright and non-disclosure notice

The contents and layout of this report are subject to copyright owned by Wood (© Wood Group UK Limited 2021) save to the extent that copyright has been legally assigned by us to another party or is used by Wood under licence. To the extent that we own the copyright in this report, it may not be copied or used without our prior written agreement for any purpose other than the purpose indicated in this report. The methodology (if any) contained in this report is provided to you in confidence and must not be disclosed or copied to third parties without the prior written agreement of Wood. Disclosure of that information may constitute an actionable breach of confidence or may otherwise prejudice our commercial interests. Any third party who obtains access to this report by any means will, in any event, be subject to the Third Party Disclaimer set out below.

Third party disclaimer

Any disclosure of this report to a third party is subject to this disclaimer. The report was prepared by Wood at the instruction of, and for use by, our client named on the front of the report. It does not in any way constitute advice to any third party who is able to access it by any means. Wood excludes to the fullest extent lawfully permitted all liability whatsoever for any loss or damage howsoever arising from reliance on the contents of this report. We do not however exclude our liability (if any) for personal injury or death resulting from our negligence, for fraud or any other matter in relation to which we cannot legally exclude liability.

Management systems

This document has been produced by Wood Group UK Limited in full compliance with our management systems, which have been certified to ISO 9001, ISO 14001 and ISO 45001 by Lloyd's Register.

Document revisions

No.	Details	Date
01	First draft	September 2021
02	Final	September 2021

Executive summary

Purpose of this report

This report documents the methods and results of breeding bird surveys undertaken between April and August 2021 inclusive at the site of the proposed Fallago Rig 3 wind farm development in the Scottish Borders. Bird surveys were carried out to inform an impact assessment for a future planning application.

The Developable Area is located on the Roxburghe Estate in the Lammermuir Hills, to the east of the 48-turbine operational Fallago Rig Wind Farm and to the west of Watch Water Reservoir.

Four internationally designated sites for birds are located within 20 km of the Developable Area and one nationally designated site for birds is located within 10 km of the Developable Area, comprising:

- Greenlaw Moor Special Protection Area (SPA) and Ramsar Site, approximately 9 km to the southeast, is designated for non-breeding pink-footed goose;
- Fala Flow SPA and Ramsar Site, approximately 14 km to the west, is designated for non-breeding pink-footed goose;
- Firth of Forth SPA and Ramsar Site, approximately 18 km to the north, is designated for a range of species, including non-breeding pink-footed goose;
- Outer Firth of Forth and St Andrews Bay Complex SPA, approximately 19 km to the northeast, is designated for a range of waterbird species; and
- Greenlaw Moor Site of Special Scientific Interest (SSSI), approximately 7 km southeast, is notified for its breeding bird assemblage and non-breeding pink-footed goose.

Survey work during the 2021 breeding season comprised of vantage point (VP) surveys, from six VP locations, with 42 hours observation per VP (252 hours total); four raptor surveys of the Developable Area plus 2 km buffer (where access was available); and four moorland bird surveys of the Developable Area plus 500 m buffer (where access was available).

During the VP surveys, eight target species were recorded, comprising: greylag goose, red kite, Western marsh harrier, Northern goshawk, European golden plover, short-eared owl, merlin, and peregrine falcon. Only four species were regularly recorded during the VP surveys, which comprised greylag goose (39 flights of 122 individuals at 10-150m height), red kite (ten flights at 10-150m height), European golden plover (28 flights of 77 individuals at 10-150m height) and peregrine falcon (ten flights at 10-150m height).

A single Schedule 1 listed raptor species (merlin) and single Annex I listed owl species (short-eared owl) were confirmed breeding within the raptor survey area.

A total of seven wader species were recorded during the moorland bird surveys, with six confirmed breeding within the survey area (territories in parentheses), comprising: Eurasian oystercatcher (five), European golden plover (15), Northern lapwing (18), Eurasian curlew (16), common sandpiper (three) and common snipe (17).

In addition, there were incidental records of seven target species: greylag goose, red kite, hen harrier, European golden plover, short-eared owl, merlin and peregrine falcon.

The majority of greylag goose activity related to pairs or small flocks moving from moorland nesting sites to feeding areas throughout the Developable Area. The peak count recorded during the VP surveys was 11 birds in early April.

Red kite flight activity was limited to the month of June and centred around high ground in the south of the Developable Area.

European golden plover flight activity was recorded regularly throughout the breeding season, with a peak count of 19 birds recorded on 16 April. Flight activity was concentrated in the south of the Developable Area and mainly related to breeding birds moving from nest sites on higher ground to in-bye pasture feeding areas to the south and east of the Developable Area.

Details pertaining to short-eared owl and merlin flight activity and nest site locations can be found the **Confidential Appendix**.

Peregrine falcon flight activity was recorded throughout the breeding season, with at least four different individuals noted. VP surveys did not identify any concentrated areas of activity.

Contents

1.	Introduction	7
1.1	About this document	7
1.2	Site description	7
1.3	Background and scope	7
1.4	Desk study	8
1.5	Target species	8
2.	Survey methods	10
2.1	Surveyors	10
2.2	Vantage point surveys	10
2.3	Distribution and abundance surveys	11
	Moorland bird survey (MBS)	11
	Raptor survey	11
2.4	Incidental records	12
2.5	Limitations	12
3.	Survey results	13
3.1	Vantage point surveys	13
	Secondary species	13
3.2	Distribution and abundance surveys	16
	Moorland bird survey (MBS)	16
	Raptor survey	17
3.3	Incidental records	17
4.	Key species summary	18
	Greylag goose	18
	Red kite	18
	European golden plover	18
	Peregrine falcon	18
	Breeding wader assemblage	19

Table 3.1	Summary of target species flight activity	14
Table 3.2	Summary of MBS results	16

Figure 1.1	The Developable Area	After Page 9
Figure 2.1	VP locations and viewsheds	After Page 12
Figure 2.2	Distribution and abundance survey areas	After Page 12

Figure 3.1a	Flight activity map: greylag goose	After Page 17
Figure 3.1b	Flight activity map: red kite, Western marsh harrier and Northern goshawk	After Page 17
Figure 3.1c	Flight activity map: European golden plover	After Page 17
Figure 3.1d	Flight activity map: peregrine falcon	After Page 17
Figure 3.2a	MBS results: Eurasian oystercatcher	After Page 17
Figure 3.2b	MBS results: European golden plover	After Page 17
Figure 3.2c	MBS results: Northern lapwing	After Page 17
Figure 3.2d	MBS results: Eurasian curlew	After Page 17
Figure 3.2e	MBS results: common sandpiper	After Page 17
Figure 3.2f	MBS results: common snipe	After Page 17
Figure 3.3	Raptor survey results	After Page 17
Figure 3.4	Incidental records	After Page 17

References

20

Appendix	Survey conditions
A	Survey results
Appendix B	Species names

1. Introduction

1.1 About this document

Wood Group UK Ltd (Wood) was commissioned by EDF Renewables to undertake bird surveys during the 2021 breeding season (April to August 2021 inclusive) at the proposed Fallago Rig 3 Wind Farm in the Scottish Borders, hereafter referred to as 'the Site'. This report supplements non-breeding survey work carried out in 2020/21, and describes the methods and results of the surveys, which were designed to be suitable to support an Ecological Impact Assessment for the Site.

1.2 Site description

The Developable Area is located in the Lammermuir Hills in the Scottish Borders, to the east of the operational 48-turbine Fallago Rig Wind Farm and is illustrated in **Figure 1.1**. The Developable Area consists of the slopes and valleys to the north and south of the Dye Water, encompassing the hills of Wedder Lairs, Blythe Edge and Dunside Hill to the south and Meikle Law, Byreclough Ridge and Pyatshaw Ridge to the north. An access road for the operational wind farm bisects the Site from west to east. The area largely consists of upland moorland, most of which is intensively managed for red grouse but also for sheep grazing.

1.3 Background and scope

The key issues relating to birds and wind farms are as follows:

- The effects of direct habitat loss due to land take by wind turbine bases, tracks and ancillary structures;
- The effects of disturbance and displacement of birds from the proximity of the wind turbines. Such disturbance may occur as a consequence of construction work, or due to the presence of the wind farm close to nest sites, feeding areas or on habitual flight routes; and
- The effects of collision with rotating turbine blades (i.e., killing or injuring of birds), which is of particular relevance for sites located in areas with high raptor activity or which support large concentrations of waterfowl.

With regards to the first issue, total land take by wind farm infrastructure generally represents a small proportion of a site. Therefore, the permanent loss of nesting and foraging habitat for birds tends to be small and will generally have little effect on bird populations. At most wind farm sites, it is the latter two issues, collision risk and displacement, which may potentially be more significant. A range of guidance documents have been produced relating to the assessment of bird/wind farm interactions and the following publications and guidelines in particular have been influential in determining the scope of the works at the Site:

- NatureScot (formerly Scottish Natural Heritage [SNH]) (2017). Recommended bird survey methods to inform impact assessment of onshore wind farms. SNH, Battleby; and

- NatureScot (2018). Assessing significance of impacts from onshore wind farms on birds out with designated areas. SNH, Battleby.

NatureScot (2017) guidance recommends that field surveys should be focussed on 'target species' which will generally be limited to those which are afforded a higher level of legislative protection; though some species may also be considered as such, as a result of their behaviour, which makes them more likely to be subject to impact from wind farms. There are three overarching species lists from which target species are generally derived¹:

- Species for which Special Protection Areas (SPA) are designated and those listed under Annex I of the Directive 2009/147/EC on the conservation of wild birds (commonly referred to as the Birds Directive);
- Species listed under Schedule 1 of the Wildlife & Countryside Act 1981 (as amended); and
- Red listed birds of conservation concern (BoCC) (with reference to Eaton *et al.*, 2015).

In addition, consideration should be given to species identified within the Scottish Biodiversity List (SBL) and Local Biodiversity Action Plans (LBAP), though target species should be limited to those likely to be affected by wind farms. As research indicates that most passerine species are not significantly affected by wind farms, many species included on the LBAPs and BoCC are not included as target species. Two LBAPs were considered when selecting target species: the Scottish Borders LBAP and the East Lothian LBAP (the Developable Area falls within the Scottish Borders, although East Lothian abuts to the north, hence the inclusion of this LBAP). Target species were selected following a further data and literature review, and with regard to the results of previous survey work undertaken at Fallago Rig (Entec, 2005) and the various proposed extensions (Amec Foster Wheeler Environment and Infrastructure UK Ltd, 2015; Wood, 2021a and 2021b).

For the purposes of this report, nomenclature follows that of the International Ornithological Congress (Gill *et al.*, 2021). Scientific names for all species mentioned in the text and tables are included in **Appendix C**.

1.4 Desk study

A literature search and desk-based review were carried out previously and this is fully documented within the *Fallago Rig 3 Wind Farm Baseline Ornithology Report – Non-breeding Season 2020/21* (Wood 2021b). An updated data search with the Lothian and Borders Raptor Study Group was undertaken and is detailed within the **Confidential Appendix**.

1.5 Target species

The following key species of conservation concern (i.e., 'target species') were identified:

- Relevant SPA qualifying interests: pink-footed goose;
- Relevant SSSI notified features, comprising European golden plover;

¹ It may also be appropriate to collect information on non-target species during surveys and desk studies, particularly those of regional conservation concern. However, recording of such species is subsidiary to the recording of target species.

- Annex I and/or Schedule 1 listed raptors and owls including those known to be present in the surrounding area e.g., western osprey, golden eagle, northern goshawk, hen harrier, red kite, Western barn owl, short-eared owl, merlin and peregrine falcon: and
- Waterfowl and waders on spring and early autumn passage including whooper swan, barnacle goose, greylag goose, European golden plover and dunlin but excluding feral and introduced breeding species (e.g., Canada goose).

Although black grouse are a species of conservation concern, it was considered that given the type of habitats on-Site and the absence of black grouse records from recent surveys, that the species was unlikely to be encountered, and is therefore not listed above.

Additionally, the following secondary species were identified to potentially occur on-Site: Eurasian sparrowhawk, common buzzard, Eurasian oystercatcher, Northern lapwing, Eurasian curlew, common snipe, common sandpiper, common kestrel and Northern raven.

2. Survey methods

2.1 Surveyors

Surveys were undertaken by experienced Wood Ornithologists, all of whom have extensive field experience and a detailed understanding of the key methodologies recommended within NatureScot guidance and experience of monitoring bird activity and distribution at proposed wind farm sites. Surveys were undertaken by Damian Bubb, Pete Clark MCIEEM, Duncan Priddle MCIEEM, Hannah Rowding ACIEEM, Neil Rowntree MCIEEM, Paul Rowntree MCIEEM and Jenny Sneddon.

2.2 Vantage point surveys

Vantage-point (VP) watches were conducted in accordance with NatureScot (2017) guidance and undertaken throughout the survey period. This method focuses on identifying flightpaths of target species and allows any regularly used flight lines to be identified, enabling turbine locations to be altered where necessary to reduce collision risk to birds. The data generated can also be used to estimate the theoretical risk of collision with turbines by incorporation into a suitable model.

The NatureScot guidance is that VPs should be chosen parsimoniously to achieve maximum visibility from the minimum number of locations such that all parts of the survey area are within two kilometres of a VP. Six VPs were selected (VP locations and viewsheds are shown in **Figure 2.1**) as being sufficient to survey the Developable Area, the locations of which were:

- VP1 NT 62997 58658, view bearing 315°;
- VP2 NT 65054 57056, view bearing 225°;
- VP3 NT 61294 56560, view bearing 000°;
- VP4 NT 62496 56541, view bearing 180°;
- VP5 NT 60114 59338, view bearing 015°; and
- VP6 NT 60104 59191, view bearing 195°.

The viewshed analysis in **Figure 2.1** shows the approximate area visible at a height of 15m and 30m. As a result of the complex topography within the Site, it is considered that the chosen six VP locations provided the fullest coverage of the Developable Area.

Flights were classified using the following four height bands:

- Band A: <10m;
- Band B: 10-150m;
- Band C: 150-200m; and
- Band D: >200m.

A total of 252 hours of VP observation was undertaken between April and August 2021: 42 hours from each VP. The methodology, to minimise observer disturbance, was to allow ten minutes settling in time before starting each watch and to remain as inconspicuous as possible (a bivvy bag

and camouflaged clothing was used). A 180° arc was scanned alternately by eye and with binoculars until a target species was detected. Flight times of a target species were then recorded with a stopwatch with an audible timer (times were synchronised with other surveyors on-site when undertaking simultaneous watches from separate VPs). VP surveys were spread across the full range of daylight hours targeting diurnal raptors such as hen harrier, merlin and peregrine, as well as crepuscular species such as golden plover and short-eared owl. Only flights within the 2 km viewshed were recorded, with all other target species flights outside this zone noted as incidental records.

NatureScot (2017) guidance advises that VP surveys should be undertaken in good visibility and can be carried out on showery days providing the showers are not too frequent or prolonged. The cloud base should be high enough to allow observation of the collision risk height. Ideally observations should be undertaken in a range of wind conditions. Watches should be aimed to target heightened activity periods for the target species likely to be present and the survey programme adhered to this with surveys planned for periods of suitable weather. The dates, times and weather conditions of the VP watches are provided in **Appendix A, Table A.1**.

2.3 Distribution and abundance surveys

The distribution and abundance survey areas are illustrated in **Figure 2.2**.

Moorland bird survey (MBS)

The moorland bird assemblage was surveyed using an adapted version of the Brown and Shepherd (1993) methodology. NatureScot (2017) recommends four visits, each at least seven days apart, covering the whole breeding season, each completed between 08:30 and 18:00. Surveys covered the Developable Area plus a 500m buffer where access was available between mid-April and early July.

Surveys were undertaken in baseline wind speeds of Beaufort force 5 or less and dry weather. The method involved a search effort of approximately 20-25 minutes within each 500 x 500m quadrat of open land and one minute per hectare for enclosed fields. Habitats within the survey area were assessed for their suitability to host breeding waders and areas with unsuitable land use such as plantations or with extreme gradients were scoped out. All suitable parts of each quadrat were approached to within 100m. Survey routes were varied between visits. Stops were made at regular intervals to scan and listen for birds and the identities and activities of birds were recorded using standard British Trust for Ornithology (BTO) notation. The focus of the surveys was breeding waders, but all raptors, owls and waterbirds were also mapped.

Dates, times and weather conditions during the MBS visits are provided in **Appendix A, Table A.2**.

Raptor survey

Raptor survey visits were undertaken in April, May, June and July 2021 and followed guidance detailed within Hardey *et al.*, (2013), focussing on those species identified in the desk-based review and through survey work previously undertaken within the local area.

On the basis of the habitats present within the survey area and previous survey work undertaken at the Site and in the local area, it was considered that there was potential for six species of Schedule

1 / Annex I raptors / owls to breed within the Site and associated survey buffer zones (1 km for Northern goshawk and 2 km for all other species): hen harrier, Northern goshawk, Western barn owl, short-eared owl, merlin and peregrine falcon. Surveys were therefore tailored to these species and were focussed on potentially suitable habitat within the survey area.

All surveys were undertaken under an appropriate Schedule 1 licence (Licence Number 116429) and required liaising with the local Raptor Study Group (RSG) throughout the breeding season.

Dates, times and weather conditions during the raptor surveys are provided in **Appendix A, Table A.3**.

2.4 Incidental records

Target species seen outside of formal survey periods were also recorded (i.e., those observed during walks to and from VP locations, during other breaks in survey work and target species recorded during species-specific surveys). Detailed notes of activity of highly protected or 'target' species were made, and all flights mapped.

2.5 Limitations

Access was available to land within the land ownership area only as shown in **Figure 1.1**. Contextual data for land where access was unavailable was sought from: the RSPB for black grouse and other sensitive bird species; and the Lothian and Borders Raptor Study Group for Schedule 1 raptors and owls. Although Coronavirus restrictions were in force throughout the survey period, all surveys were completed over the standard breeding season.

3. Survey results

3.1 Vantage point surveys

The following target species were recorded during VP surveys: greylag goose, red kite, Western marsh harrier, Northern goshawk, European golden plover, short-eared owl, merlin and peregrine falcon. Details of target species flights are provided in **Appendix B, Table B.1** and **Table 3.1** below presents a summary of flight activity, including reference to the duration of flight time between 10-150 m and 150-200 m height. The flight lines are illustrated in **Figures 3.1a-d**, with confidential VP survey results (i.e., those potentially relating to breeding / roosting activity or nest sites for species vulnerable to disturbance or persecution) presented within the **Confidential Appendix**.

Secondary species

The following 16 secondary species were recorded during the VP surveys (the number of VP watches on which each species was seen is denoted in brackets): Canada goose (one), mallard (four), grey heron (two), Eurasian sparrowhawk (four), common buzzard (58), Eurasian oystercatcher (three), Northern lapwing (27), Eurasian curlew (48), common snipe (18), black-headed gull (three), mew (common) gull (one), lesser black-backed gull (20), herring gull (38), great black-backed gull (17), common kestrel (41) and Northern raven (75).

Table 3.1 Summary of target species flight activity

Species	Status	Population	No. of observations	Month(s) of observation	Total flight duration at 10-150m height within VP viewshed (seconds) *	Total flight duration at 150-200m height within VP viewshed (seconds) *
Greylag goose	Amber listed	UK breeding: 47,000 pairs UK wintering: 230,000 individuals (Woodward et al., 2020)	55 (179 individual flights)	April and June	N/A 39 observations (122 individual flights)	N/A 2 observations (16 individual flights)
Red kite	Annex I, Schedule 1, SBL, Green listed	UK breeding: 4,400 pairs (Woodward et al., 2020) Scottish breeding: 273 pairs in 2016 (Challis et al., 2020) NHZ breeding: zero pairs (Wilson et al., 2015) One pair in Lothian & Borders in 2019 (Challis et al., 2020)	12	June	2,055	300
Western marsh harrier	Annex I, Schedule 1, SBL, Amber listed	UK breeding: 398 pairs Scottish breeding: 16 pairs (Eaton et al., 2020) Zero pairs in Lothian & Borders in 2019 (Challis et al., 2020)	5	August	55	0
Northern goshawk	Schedule 1, SBL, Green listed	UK breeding: >735 pairs Scottish breeding: 182 pairs (Eaton et al., 2020) NHZ breeding: 13 pairs (Wilson et al., 2015) 41 pairs in Scottish Borders in 2019 (Challis et al., 2020)	1	April	214	0
European golden plover	Annex I, SBL, Green listed	UK breeding: 32,500-50,500 pairs (Woodward et al., 2020) NHZ breeding: 1,058 pairs (Wilson et al., 2015)	48 (110 individual flights)	April-July	2,560	212

Species	Status	Population	No. of observations	Month(s) of observation	Total flight duration at 10-150m height within VP viewshed (seconds) *	Total flight duration at 150-200m height within VP viewshed (seconds) *
Peregrine falcon	Schedule 1, Annex I, SBL, Green listed	UK breeding: 1,769 pairs in 2014 Scottish breeding: 523 pairs (Wilson et al., 2018) NHZ breeding: 27 pairs (Wilson et al., 2015) 40 pairs in Scottish Borders in 2019 (Challis et al., 2020)	19	April-August	608	55

* Summed for each individual flight.

3.2 Distribution and abundance surveys

Moorland bird survey (MBS)

A total of five wader species were recorded breeding within the Developable Area comprising: Eurasian oystercatcher, European golden plover, Northern lapwing, Eurasian curlew and common snipe. A further species, common sandpiper, was recorded breeding within the MBS area (i.e., a 500m buffer of the Developable Area). Common redshank was also recorded during the April MBS visit, although it is considered that the lack of records thereafter suggests the species did not breed within the MBS area.

The MBS results are detailed within **Table 3.2** and illustrated within **Figures 3.2a-f**.

Table 3.2 Summary of MBS results

Species	Status	Population	No. of territories within Developable Area	No. of territories within 500m buffer of Developable Area	Notes
Eurasian oystercatcher	Amber listed	UK breeding: 92,500 pairs (Woodward et al., 2020)	1	4	
European golden plover	Annex I, Green listed	UK breeding: 32,500-50,500 pairs (Woodward et al., 2020) NHZ breeding: 1,058 pairs (Wilson et al., 2015)	10	5	
Northern lapwing	Red listed, SBL	UK breeding: 96,500 pairs (Woodward et al., 2020)	4	14	
Eurasian curlew	Red listed, SBL	UK breeding: 58,000 pairs (Woodward et al., 2020) NHZ breeding: 1,400 pairs (Wilson et al., 2015)	8	8	
Common sandpiper	Amber listed	UK breeding: 13,000 pairs (Woodward et al., 2020)	0	3	
Common redshank	Amber listed	UK breeding: 22,000 pairs (Woodward et al., 2020)	0	0	No evidence of breeding recorded. A pair and single bird recorded on Visit 1.
Common snipe	Amber listed	UK breeding: 64,500 pairs (Woodward et al., 2020) NHZ breeding: 908 pairs (Wilson et al., 2015)	9	8	

Raptor survey

Five Annex I / Schedule 1 species were recorded during the raptor surveys: Northern goshawk, Western barn owl, short-eared owl, merlin and peregrine. Only short-eared owl and merlin were recorded breeding within the raptor survey area.

There were two Northern goshawk records during the raptor surveys. On 20 April, a male flew northeast over Philip's Knowe; and on 22 April, an immature male unsuccessfully pursued a red grouse at Edfast, before it gained height and flew southeast.

A single Western barn owl was recorded hunting around Scarlaw Wood on 15 June.

There were two records of peregrine falcon during the raptor surveys. An immature female was flushed on 21 April near Burn betwixt the Laws and an unaged bird was seen flying over the Mutiny Stones in a southerly direction on 20 July.

The raptor survey results are provided in **Appendix B, Table B.2** and are illustrated in **Figure 3.3**, with confidential activity detailed within the **Confidential Appendix**.

Secondary species

Three other non-target raptor species were also recorded during the raptor surveys, comprising: Eurasian sparrowhawk, common buzzard and common kestrel, the latter believed to have bred within the survey area. Raven was also recorded but did not breed within the accessible area.

3.3 Incidental records

There were 46 incidental records of seven target species, comprising:

- greylag goose (four records, totalling nine birds);
- red kite (three records of single birds in April and July);
- hen harrier (one record of a single bird);
- European golden plover (13 records, totalling 15 individuals)
- short-eared owl (15 records, totalling 16 individuals);
- merlin (eight records, totalling 11 individuals); and
- peregrine falcon (two records, totalling two individuals).

All incidental records are presented in **Appendix B, Table B.3** and illustrated in **Figure 3.4**. Confidential incidental records are presented within the **Confidential Appendix**.

4. Key species summary

A summary of target species activity and a review of their status is presented herein². Information relating to short-eared owl and merlin records are detailed in the **Confidential Appendix**.

Greylag goose

The majority of greylag goose flight activity related to breeding birds moving from nest sites to feeding areas to the south and east of the Developable Area. Breeding birds were regularly recorded moving throughout the area in pairs or small flocks, with a peak flock count of 13 birds in early April.

Red kite

All red kite flight activity was recorded during June VP surveys only and centred around high ground in the south of the Developable Area. Additionally, there were three further incidental records of single birds in April and July, recorded during MBS visits. Given the level of flight activity recorded during the breeding season it is considered that red kite did not breed within the raptor survey area.

European golden plover

European golden plover flight activity was recorded regularly throughout the breeding season, with a peak count of 19 birds recorded on 16 April. Flight activity was concentrated in the south of the Developable Area and mainly related to breeding birds moving from nest sites on higher ground to in-bye pasture feeding areas to the south and east of the Developable Area.

A total of ten pairs of European golden plover are considered to have bred within the Developable Area, with a further five pairs within the 500m buffer zone. Breeding was recorded primarily above the 375 m contour and was widely distributed. The main breeding area was in the south of the Developable Area between Wedder Lairs and Dunside Hill, although there were breeding pairs noted on Meikle Law and Pyatshaw Ridge in the north of the Developable Area. All incidental records of this species also relate to breeding birds, with one record of an incubating bird flushed off a clutch of three eggs on Dunside Hill.

Peregrine falcon

Peregrine falcon flight activity was recorded throughout the breeding season, with at least four different individuals noted although VP surveys did not identify any concentrated areas of activity. There were two records of peregrine falcon from the raptor surveys of an immature female in late April and another individual recorded in mid-July. There were two incidental records of a single bird recorded during an MBS visit in early June and an adult male recorded on 05 August. It is considered that this species did not breed within the raptor survey area.

² Target species where activity was considered to be minor (e.g., restricted to incidental records or less than ten flights recorded during VP surveys) are not considered within this Section.

Breeding wader assemblage

The wider breeding wader assemblage comprised Eurasian oystercatcher, European golden plover (see earlier), Northern lapwing, Eurasian curlew, common sandpiper and common snipe.

Both Eurasian oystercatcher and Northern lapwing territories were strongly associated with in-bye land, the ecotone between sheep-grazed pasture and heather moorland, particularly around Heron Scar, Byreclough and the southeast flank of Dunside Hill; and in the case of Eurasian oystercatcher, along the Dye Water valley. Eurasian curlew territories were distributed widely across the MBS area on areas of heather moorland situated on hill tops, flanks and shoulder slopes, with the highest densities around Dunside Hill, Upper Knowe and Greencleugh Ridge. European golden plover were largely restricted to breeding within boggy habitats or recently burnt areas above the 375m contour line, with the majority of pairs in the south of the Developable Area around Dunside Hill, Blythe Edge and Wedder Lairs. Common sandpipers were restricted to breeding along the Dye Water valley. Common snipe territories were widely distributed but strongly associated with areas of rushes and boggy white moor.

References

- Amec Foster Wheeler Environment & Infrastructure UK Limited. 2015. *Fallago Rig ES Chapter 10: Ornithology*. Doc ref: 35949CGos072R.
- Brown, A. & Shepherd, K. 1993. A method for censusing upland breeding waders. In: *Bird Study* 40:3, pp 189-195.
- Challis, A., Wilson, M., Schönberg, N., Eaton, M., Stevenson, A. & Stirling-Aird, P. 2020. Scottish Raptor Monitoring Scheme Report 2019. BTO Scotland, Stirling. Available from: <http://raptormonitoring.org/annual-report> (accessed on 13 September 2021).
- Eaton, M., Holling, M. & the Rare Breeding Birds Panel. 2020. Rare breeding birds in the UK in 2018. In: *British Birds* 113, pp 737-791.
- Eaton, M., Aebischer, N., Brown, A., Hearn, R., Lock, L., Musgrove, A., Noble, D., Stroud, D. & Gregory R. 2015. Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man. In: *British Birds* 108, pp 708-746.
- Entec. 2005. *Fallago Rig Windfarm Environmental Statement*. North British Wind Power Ltd.
- Gill, F., Donsker D., & Rasmussen P. 2021. *IOC World Bird List (v11.2)*. doi: 10.14344/IOC.ML.11.2.. Available from: <https://www.worldbirdnames.org/new/> (accessed on 19 August 2021).
- Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. 2013. *Raptors: A field guide to survey and monitoring*. SNH.
- NatureScot 2017. *Recommended bird survey methods to inform impact assessment of onshore wind farms*. SNH, Battleby.
- NatureScot. 2018. *Assessing significance of impacts from onshore wind farms on birds outwith designated areas*. SNH, Battleby.
- Wilson, M., Balmer, D., Jones, K., King, V., Raw, D., Rollie, C., Rooney, E., Ruddock, M., Smith, G., Stevenson, A., Stirling-Aird, P., Wernham, C., Weston, J. & Noble, D. 2018: The breeding population of Peregrine Falcon *Falco peregrinus* in the United Kingdom, Isle of Man and Channel Islands in 2014. In: *Bird Study*. DOI: 10.1080/00063657.2017.1421610.
- Wood Group UK Ltd. 2021a. *Fallago Rig 2 Wind Farm Baseline Ornithology Report – Breeding Season 2020*. Doc Ref. 42188-WOOD-XX-XX-RP-OE-0004_S0_P01.1.
- Wood Group UK Ltd. 2021b. *Fallago Rig 3 Wind Farm Baseline Ornithology Report – Non-Breeding Season 2020/21*. Doc Ref. 42188-WOOD-XX-XX-RP-OE-0004_S0_P01.1.
- Wilson, M., Austin, G., Gillings, S. & Wernham, C. 2015. *Natural Heritage Zone Bird Population Estimates*. SWBSG Commissioned report number SWBSG_1504. pp72 Available from: www.swbsg.org.
- Woodward, I., Aebischer, N., Burnell, D., Eaton, M., Frost, T., Hall, C., Stroud, D. and Noble, D. 2020. Population estimates of birds in Great Britain and the United Kingdom. In: *British Birds* 113, pp 69-104.

Appendix A

Survey conditions

Table A.1 Dates, times and weather conditions during VP watches

Date	Start	Finish	Length of VP watch (hours)	Weather conditions
VP1				
08/04/21	08:20	11:20	3	Light rain showers, Wind F6-7 W, Cloud Cover 3-8/8, Visibility >3km, Temp 5-6c
08/04/21	11:50	14:50	3	Light to heavy rain showers, Wind F7 SW-W, Cloud Cover 7-8/8, Visibility >3km, Temp 6-7c
12/04/21	12:55	15:55	3	Dry, Wind F1-3 SW, Cloud Cover 1/8, Visibility >3km, Temp 6c
17/05/21	14:00	17:00	3	Light rain showers, Wind F3-4 SW, Cloud Cover 6-8/8, Visibility >3km, Temp 10c
19/05/21	14:45	17:45	3	Dry, Wind F3 NE-E, Cloud Cover 5-6/8, Visibility >3km, Temp 8-10c
03/06/21	13:00	16:00	3	Dry, Wind 4-5 SE-S, Cloud Cover 6-7/8, Visibility >3km, Temp 17-16c
03/06/21	16:30	19:30	3	Dry, Wind 4-5 SW-S, Cloud Cover 6-8/8, Visibility >3km, Temp 15c
16/06/21	18:45	21:45	3	Dry, Wind F1-3 S, Cloud Cover 5-6/8, Visibility >3km, Temp 12c
18/06/21	10:35	13:35	3	Dry, Wind F3 NE, Cloud Cover 5-7/8, Visibility >3km, Temp 14-16c
28/06/21	13:20	16:20	3	Dry, Still to Wind F1 Variable, Cloud Cover 7-8/8, Visibility >3km, Temp 15c
28/06/21	16:50	19:50	3	Dry, Still, Cloud Cover 6-8/8, Visibility >3km, Temp 12-15c
23/07/21	07:15	10:15	3	Dry, Wind F1-2 SE, Cloud Cover 8/8, Visibility <1km to >3km, Temp 15-18c
04/08/21	08:15	11:15	3	Dry, Wind F2-3 SSE-SSW, Cloud cover 1-4/8, Visibility >3km, Temp 15-16c
04/08/21	11:45	14:45	3	Dry, Wind F3-4 SSW-SW, Cloud cover 4-3/8, Visibility >3km, Temp 16-17c
Total			42	
VP2				
08/04/21	08:15	11:15	3	Light rain showers, Wind F6 W, Cloud Cover 4-8/8, Visibility >3km, Temp 5c
08/04/21	11:45	14:45	3	Heavy rain showers, Wind F6 W-SW, Cloud Cover 8/8, Visibility 1-3km to >3km, Temp 5c
12/04/21	12:40	15:40	3	Dry, Wind F2-3 NW, Cloud Cover 1-2/8, Visibility >3km, Temp 8c

Date	Start	Finish	Length of VP watch (hours)	Weather conditions
17/05/21	13:45	16:45	3	Light rain showers, Wind F3 SW, Cloud Cover 7-8/8, Visibility >3km, Temp 8-10c
19/05/21	14:35	17:35	3	Light rain showers, Wind F2 SW, Cloud Cover 6/8, Visibility >3km, Temp 10-12c
03/06/21	13:00	16:00	3	Dry, Wind 6-5 SE-S, Cloud Cover 5/8, Visibility >3km, Temp 16c
03/06/21	16:30	19:30	3	Dry, Wind 4 SE-SW, Cloud Cover 7-8/8, Visibility >3km, Temp 17-15c
16/06/21	18:55	21:55	3	Dry, Wind F2-4 W, Cloud Cover 6-7/8, Visibility >3km, Temp 8-12c
18/06/21	10:30	13:30	3	Dry, Wind F3 NE, Cloud Cover 5-7/8, Visibility >3km, Temp 10-12c
28/06/21	13:05	16:05	3	Dry, Wind F1-2 NE, Cloud Cover 7-8/8, Visibility >3km, Temp 14-17c
28/06/21	16:35	19:35	3	Dry, Wind F1-2 NE, Cloud Cover 8/8, Visibility >3km, Temp 14-15c
23/07/21	07:05	10:05	3	Dry, Wind F1 SE, Cloud Cover 8/8, Visibility >3km, Temp 15c
04/08/21	08:16	11:16	3	Dry Wind SW 1-3, Cloud Cover 1-3/8, Visibility >3km, Temp 15-18c
04/08/21	11:46	14:46	3	Dry, Wind SW3, Cloud Cover 3-4/8, Visibility >3km, Temp 15c
Total			42	
VP3				
07/04/21	09:00	12:00	3	Dry, Wind F3-4 NW, Cloud Cover 5-6/8, Visibility >3km, Temp 0c
16/04/21	08:10	11:10	3	Dry, Wind F1-2 S, Cloud Cover 0/8, Visibility >3km, Temp 0-5c
16/04/21	11:20	14:20	3	Dry, Wind F2 W, Cloud Cover 1/8, Visibility >3km, Temp 10c
17/05/21	18:00	21:00	3	Light rain showers, Wind F2-3 SW, Cloud Cover 4-8/8, Visibility >3km, Temp 8c
01/06/21	14:00	17:00	3	Dry, Wind F4-5 SE, Cloud Cover 3-5/8, Visibility >3km, Temp 22-20c
01/06/21	17:30	20:30	3	Dry, Wind F5-6 SE, Cloud Cover 4/8, Visibility >3km, Temp 19-15c
14/06/21	15:55	18:55	3	Dry, Wind F5 W, Cloud Cover 8/8, Visibility >2km, Temp 10-14c
14/06/21	19:05	22:05	3	Dry, Wind F3-5 W, Cloud Cover 2-6/8, Visibility >3km, Temp 8-12c
30/06/21	07:40	10:40	3	Light rain showers, Wind F2 Variable, Cloud Cover 8/8, Visibility <1km to 1-3km, Temp 8c
30/06/21	11:05	14:05	3	Light rain showers, Wind F2-3 N, Cloud Cover 8/8, Visibility 1-3km to >3km, Temp 9-12c
19/07/21	13:45	16:45	3	Dry, Wind F1-2 E, Cloud Cover 3-4/8, Visibility >3km, Temp 18c

Date	Start	Finish	Length of VP watch (hours)	Weather conditions
21/07/21	08:45	11:45	3	Dry, Still to Wind F1 W, Cloud Cover 5-8/8, Visibility <1km to >3km, Temp 15-18c
21/07/21	12:00	15:00	3	Dry, Wind F1-2 E, Cloud Cover 5-7/8, Visibility >3km, Temp 18-20c
05/08/21	08:08	11:08	3	Dry, Wind F3-4 SW, Cloud cover 5-6/8, Visibility >3km, Temp 13-15c
Total			42	
VP4				
07/04/21	08:45	11:45	3	Light snow showers, Wind F4-5 W, Cloud Cover 4-8/8, Visibility >3km, Temp -2c to 1c
16/04/21	07:50	10:50	3	Dry, Wind F1 W, Cloud Cover 0/8, Visibility >3km, Temp 5-10c
16/04/21	11:40	14:40	3	Dry, Wind F1-2 S, Cloud Cover 1/8, Visibility >3km, Temp 10c
17/05/21	18:00	21:00	3	Light rain showers, Wind F1-2 SW, Cloud Cover 4-8/8, Visibility >3km, Temp 8c
01/06/21	14:00	17:00	3	Dry, Wind F6 SE, Cloud Cover 3/8, Visibility >3km, Temp 21-18c
01/06/21	17:30	20:30	3	Dry, Wind F4 SE, Cloud Cover 3/8, Visibility >3km, Temp 19-15c
14/06/21	15:35	18:35	3	Dry, Wind F4-5 W-NW, Cloud Cover 7/8, Visibility >3km, Temp 12c
14/06/21	19:25	22:25	3	Dry, Wind F3-5 SW-W, Cloud Cover 3-7/8, Visibility >3km, Temp 8-10c
30/06/21	07:20	10:35	3	Light rain, Wind F1-2 N-NE, Cloud Cover 8/8, Visibility 1-3km, Temp 9c
30/06/21	11:10	14:10	3	Dry, Wind F2 E, Cloud Cover 6-8/8, Visibility 1-3km to >3km, Temp 10c
19/07/21	13:40	16:40	3	Dry, Still to Wind F1-2 E-NE, Cloud Cover 3-4/8, Visibility >3km, Temp 20c
21/07/21	07:30	11:30	3	Dry, Wind F1 E, Cloud Cover 8/8, Visibility <1km to >3km, Temp 14c
21/07/21	12:15	15:15	3	Dry, Wind F1 E, Cloud Cover 4-5/8, Visibility >3km, Temp 18-20c
05/08/21	07:51	10:51	3	Dry Wind SW3-4, Cloud cover 5-7/8, Visibility >3km, Temp 12-15c
Total			42	
VP5				
06/04/21	12:04	15:04	3	Light snow showers, Wind F5-7 NW, Cloud Cover 6-7/8, Visibility >3km, Temp 0c
07/04/21	13:15	16:15	3	Light snow showers, Wind F3-4 W-NW, Cloud Cover 7-8/8, Visibility >3km, Temp 3c
12/04/21	16:40	19:40	3	Dry, Wind F1-3 NW, Cloud Cover 1-2/8, Visibility >3km, Temp 5-6c

Date	Start	Finish	Length of VP watch (hours)	Weather conditions
20/05/21	07:45	10:45	3	Dry, Wind F2-4 SE, Cloud Cover 3-7/8, Visibility >3km, Temp 8-10c
20/05/21	11:07	14:07	3	Heavy rain showers, Wind F4 S, Cloud Cover 8/8, Visibility >3km, Temp 10c
02/06/21	12:45	15:45	3	Dry, Wind F6 SE, Cloud Cover 4/8, Visibility >3km, Temp 17-16c
02/06/21	16:15	19:15	3	Dry, Wind 4 E-NE, Cloud Cover 1-2/8, Visibility >3km, Temp 16-14c
16/06/21	15:10	18:10	3	Dry, Wind F3-4 W, Cloud Cover 6-8/8, Visibility >3km, Temp 14c
18/06/21	06:58	09:58	3	Dry, Wind F2-3 NW, Cloud Cover 2-6/8, Visibility >3km, Temp 10c
01/07/21	06:55	09:55	3	Dry, Wind F2-3 NE, Cloud Cover 0-3/8, Visibility >3km, Temp 12c
01/07/21	10:20	13:20	3	Dry, Wind F1-2 NE, Cloud Cover 0-3/8, Visibility >3km, Temp 14-16c
19/07/21	17:45	20:45	3	Dry, Still to Wind F2 E, Cloud Cover 1-2/8, Visibility >3km, Temp 15-18c
03/08/21	11:45	14:45	3	Dry, Wind calm - F2NE, Cloud Cover 4-6/8, Visibility >3km, Temp 14-16c
03/08/21	15:10	18:10	3	Dry, Wind N1-3, Cloud Cover 3-8/8, Visibility >3km, Temp 18-15c.
Total			42	
VP6				
06/04/21	12:05	15:05	3	Light snow showers, Wind F5-6 NW, Cloud Cover 5-7/8, Visibility >3km, Temp 0c
07/04/21	13:17	16:17	3	Light snow showers, Wind F3-4 NW-N, Cloud Cover 6-7/8, Visibility >3km, Temp 0-5c
12/04/21	16:30	19:30	3	Dry, Wind F1-2 W, Cloud Cover 2/8, Visibility >3km, Temp 3-8c
20/05/21	07:37	10:37	3	Dry, Wind F2-4 S, Cloud Cover 4-7/8, Visibility >3km, Temp 8-10c
20/05/21	11:15	14:15	3	Heavy rain showers, Wind F4-5 SE-S, Cloud Cover 8/8, Visibility >3km, Temp 5c
02/06/21	12:45	15:45	3	Dry, Wind 3-4 E, Cloud Cover 3-5/8, Visibility >3km, Temp 15-17c
02/06/21	16:15	19:15	3	Dry, Wind 5-6 SE-NE, Cloud Cover 4/8, Visibility >3km, Temp 16-15c
16/06/21	15:05	18:05	3	Dry, Wind F3 W, Cloud Cover 8/8, Visibility >3km, Temp 10-15c
18/06/21	06:55	09:55	3	Dry, Wind F2 N-NW, Cloud Cover 2-6/8, Visibility >3km, Temp 12-14c
01/07/21	06:50	09:50	3	Dry, Wind F2-3 NE, Cloud Cover 1-2/8, Visibility >3km, Temp 13-14c
01/07/21	10:25	13:25	3	Dry, Wind F2 NE, Cloud Cover 1-2/8, Visibility >3km, Temp 15-18c
19/07/21	17:45	20:45	3	Dry, Still to Wind F2 E, Cloud Cover 1-2/8, Visibility >3km, Temp 15-18c

Date	Start	Finish	Length of VP watch (hours)	Weather conditions
03/08/21	15:15	18:15	3	Rain shower, Wind F2-3 NE-NW, Cloud Cover 4-7/8, Visibility >3km Temp 15-11c
03/08/21	11:40	14:40	3	Dry, Wind F2-1N, Cloud Cover 6-7/8, Visibility >3km, Temp 18c
Total			42	

Table A.2 Dates, times and weather conditions during MBS

Date	Start	Finish	Weather conditions
Visit 1			
13/04/21	09:15	16:05	Dry, Wind F2-3 NW, Cloud Cover 1-7/8, Visibility >3km, Temp 3-10c
14/04/21	08:58	15:48	Dry, Still to Wind F1-2 N-NW, Cloud Cover 0-6/8, Visibility >3km, Temp 5-11c
15/04/21	09:30	17:30	Dry, Wind F1-2 Variable, Cloud Cover 0-2/8, Visibility >3km, Temp 5-12c
Visit 2			
25/05/21	11:25	17:00	Drizzle then dry, Wind F2-4 N, Cloud Cover 7-8/8, Visibility 1-3km to >3km, Temp 9-10c
26/05/21	08:30	14:40	Light rain showers, Wind F3-4 Variable, Cloud Cover 7-8/8, Visibility >3km, Temp 10-12c
27/05/21	08:30	14:15	Dry, Wind F1-2 Variable, Cloud Cover 6-8/8, Visibility >3km, Temp 10-14c
Visit 3			
08/06/21	10:30	15:40	Dry, Wind F3-5 Variable, Cloud Cover 6-8/8, Visibility >3km, Temp 13-20c
09/06/21	10:00	16:00	Dry, Wind F4-6 Variable, Cloud Cover 7-8/8, Visibility >3km, Temp 14-15c
10/06/21	09:50	15:50	Light rain showers, Wind F4-6 Variable, Cloud Cover 6-8/8, Visibility 1-3km to >3km, Temp 10-15c
Visit 4			
07/07/21	10:00	16:00	Dry, Wind F3 W-NW, Cloud Cover 5-7/8, Visibility >3km, Temp 15-17c
08/07/21	09:00	15:30	Dry, Still to Wind F2 Variable, Cloud Cover 4-7/8, Visibility >3km, Temp 10-20c
09/07/21	08:45	15:45	Heavy rain showers, Wind F1-3 E-SE, Cloud Cover 8/8, Visibility >3km to <1km, Temp 15-18c

Two surveyors operating each visit.

Table A.3 Dates, times and weather conditions during raptor surveys

Date	Start	Finish	Weather conditions
Visit 1			
06/04/21	15:20	17:30	Light snow showers, Wind F5-6 NW, Cloud Cover 4-6/8, Visibility >3km, Temp 3-4c
20/04/21	11:00	18:00	Light rain showers, Wind F2-4 W, Cloud Cover 6-8/8, Visibility >3km, Temp 10-13c
21/04/21	08:00	15:00	Dry, Wind F1-3 NE-E, Cloud Cover 1-5/8, Visibility >3km, Temp 6-9c
22/04/21	08:00	15:15	Dry, Wind F1-3 SW, Cloud Cover 1-3/8, Visibility >3km, Temp 2-15c
Visit 2			
11/05/21	12:00	20:00	Light rain showers, Wind F1-4 Variable, Cloud Cover 4-8/8, Visibility >3km, Temp 8-15c
12/05/21	13:00	21:15	Heavy rain showers, Still to Wind F3 N-E, Cloud Cover 2-8/8, Visibility 1-3km to >3km, Temp 7-14c
13/05/21	07:15	12:30	Dry, Wind F1-3 N-E, Cloud Cover 8/8, Visibility <1km to 1-3km, Temp 6-11c
Visit 3			
15/06/21	17:45	22:00	Dry, Wind F4 Variable, Cloud Cover 6/8, Visibility >3km, Temp 15c
17/06/21	18:30	21:50	Dry, Wind F1-2 W, Cloud Cover 3-5/8, Visibility >3km, Temp 10-15c
29/06/21	14:00	17:00	Dry, Wind F2 SE, Cloud Cover 2-4/8, Visibility >3km, Temp 18c
Visit 4			
20/07/21	17:30	20:30	Not recorded
22/07/21	18:30	20:45	Dry, Wind F2 Variable, Cloud Cover 8/8, Visibility >3km, Temp 18c

Two surveyors operating each visit.

Appendix B

Survey results

Table B.4 VP survey results

GISID	Date	VP	Time	Count	Height Band	Time at risk height (10-150m) for flight in secs	Total time at risk height*	Notes
Greylag goose								
42188_VP_380_a	07/04/21	4	09:11	2	B	N/A	N/A	Calling. Lost from view in cleugh.
42188_VP_380_b	07/04/21	4	09:11	2	A	N/A	N/A	
42188_VP_384	07/04/21	4	09:43	2	B	N/A	N/A	Left viewshed.
42188_VP_385	07/04/21	4	09:46	2	B	N/A	N/A	Calling. Lost from view in dip.
42188_VP_386	07/04/21	4	09:57	2	A	N/A	N/A	Lost from view in dip.
42188_VP_388_a	07/04/21	4	10:30	2	A	N/A	N/A	Lost from view in valley.
42188_VP_388_b	07/04/21	4	10:30	2	B	N/A	N/A	
42188_VP_392	07/04/21	3	09:43	2	A	N/A	N/A	
42188_VP_393	07/04/21	3	09:50	3	B	N/A	N/A	
42188_VP_394	07/04/21	3	10:49	2	A	N/A	N/A	Landed.
42188_VP_398_a	08/04/21	1	08:56	1	A	N/A	N/A	Left viewshed.
42188_VP_398_b	08/04/21	1	08:56	1	B	N/A	N/A	
42188_VP_399	08/04/21	1	09:00	1	B	N/A	N/A	Left viewshed.
42188_VP_400_a	08/04/21	1	09:13	2	A	N/A	N/A	Left viewshed.
42188_VP_400_b	08/04/21	1	09:13	2	B	N/A	N/A	
42188_VP_401_a	08/04/21	1	09:28	2	A	N/A	N/A	Calling. Landed.
42188_VP_401_b	08/04/21	1	09:28	2	B	N/A	N/A	
42188_VP_401_c	08/04/21	1	09:28	2	A	N/A	N/A	
42188_VP_403	08/04/21	1	10:10	2	B	N/A	N/A	Left viewshed.
42188_VP_404	08/04/21	1	10:25	3	B	N/A	N/A	Left viewshed.

GISID	Date	VP	Time	Count	Height Band	Time at risk height (10-150m) for flight in secs	Total time at risk height*	Notes
42188_VP_406	08/04/21	1	11:53	2	B	N/A	N/A	Calling. Lost from view in valley.
42188_VP_407	08/04/21	1	12:14	1	B	N/A	N/A	Left viewshed.
42188_VP_408_a	08/04/21	1	12:32	3	B	N/A	N/A	Landed next to another three greylag geese.
42188_VP_408_b	08/04/21	1	12:32	3	A	N/A	N/A	
42188_VP_409_a	08/04/21	1	13:43	2	B	N/A	N/A	Landed.
42188_VP_409_b	08/04/21	1	13:43	2	A	N/A	N/A	
42188_VP_410	08/04/21	1	13:57	2	A	N/A	N/A	Landed.
42188_VP_411	08/04/21	1	13:59	2	B	N/A	N/A	Left viewshed.
42188_VP_412	08/04/21	1	14:09	13	A	N/A	N/A	Landed.
42188_VP_413	08/04/1	1	14:11	4	A	N/A	N/A	Landed.
42188_VP_414	08/04/21	1	14:15	11	B	N/A	N/A	Left viewshed / lost from view behind ridge.
42188_VP_415	08/04/21	1	14:18	11	C	N/A	N/A	Left viewshed.
42188_VP_417	08/04/21	2	08:30	2	A	N/A	N/A	
42188_VP_419_a	08/04/21	2	10:30	2	B	N/A	N/A	
42188_VP_419_b	08/04/21	2	10:30	2	A	N/A	N/A	
42188_VP_420	12/04/21	2	13:12	1	B	N/A	N/A	
42188_VP_421	12/04/21	2	13:42	1	A	N/A	N/A	
42188_VP_422	12/04/21	2	15:07	2	B	N/A	N/A	
42188_VP_423	12/04/21	1	13:12	3	A	N/A	N/A	
42188_VP_424	12/04/21	1	13:38	3	A	N/A	N/A	Same birds as _423.
42188_VP_425	12/04/21	1	14:06	2	A	N/A	N/A	Different to _423 and _424.
42188_VP_428	12/04/21	1	15:28	5	A	N/A	N/A	Landed.
42188_VP_429	12/04/21	6	17:15	2	A	N/A	N/A	Landed.
42188_VP_434	16/04/21	4	08:14	4	B	N/A	N/A	

GISID	Date	VP	Time	Count	Height Band	Time at risk height (10-150m) for flight in secs	Total time at risk height*	Notes
42188_VP_435	16/04/21	4	08:59	1	B	N/A	N/A	
42188_VP_437	16/04/21	4	10:02	2	A	N/A	N/A	
42188_VP_438	16/04/21	4	10:03	1	A	N/A	N/A	
42188_VP_440	16/04/21	4	10:38	2	B	N/A	N/A	
42188_VP_464	01/06/21	3	20:13	5	B	N/A	N/A	
42188_VP_465	01/06/21	3	20:13	3	B	N/A	N/A	
42188_VP_466	01/06/21	3	20:29	5	B	N/A	N/A	
42188_VP_469	01/06/21	4	20:12	5	B	N/A	N/A	
42188_VP_470	01/06/21	4	20:28	5	B	N/A	N/A	
42188_VP_471	02/06/21	5	12:47	4	B	N/A	N/A	
42188_VP_473	02/06/21	6	12:46	2	B	N/A	N/A	
42188_VP_474	02/06/21	5	17:34	5	B	N/A	N/A	
42188_VP_475_a	02/06/21	6	17:36	5	B	N/A	N/A	Flew into wind.
42188_VP_475_b	02/06/21	6	17:36	5	C	N/A	N/A	
42188_VP_475_c	02/06/21	6	17:36	5	B	N/A	N/A	
42188_VP_478	03/06/21	1	15:32	2	B	N/A	N/A	
42188_VP_480	03/06/21	2	13:11	2	B	N/A	N/A	
42188_VP_481	03/06/21	1	16:31	2	B	N/A	N/A	
42188_VP_482	03/06/21	1	17:45	9	B	N/A	N/A	
42188_VP_487	03/06/21	1	18:23	2	B	N/A	N/A	
42188_VP_489	03/06/21	2	17:37	9	B	N/A	N/A	Left viewshed.
42188_VP_545	28/06/21	2	17:45	2	B	N/A	N/A	Left viewshed and probably landed on Water reservoir.
Red kite								
42188_VP_456_a	01/06/21	4	14:10	1	A	25	0	Took off from behind VP, lost from view in haze.
42188_VP_456_b	01/06/21	4	14:10	1	B	610	610	

GISID	Date	VP	Time	Count	Height Band	Time at risk height (10-150m) for flight in secs	Total time at risk height*	Notes
42188_VP_458_a	01/06/21	3	14:03	1	A	20	0	
42188_VP_458_b	01/06/21	3	14:03	1	B	360	360	
42188_VP_458_c	01/06/21	3	14:03	1	A	30	0	
42188_VP_479_a	03/06/21	2	13:01	1	B	135	135	
42188_VP_479_b	03/06/21	2	13:01	1	A	50	0	
42188_VP_519	18/06/21	6	08:08	1	B	89	89	Lost from view.
42188_VP_520	18/06/21	6	08:31	1	B	106	106	Landed.
42188_VP_521	18/06/21	6	08:34	1	A	14	14	Interacting with Northern raven and common buzzard.
42188_VP_522	18/06/21	6	08:38	1	A	5	0	Landed with Northern raven and common buzzard near possible carcass.
42188_VP_523_a	18/06/21	6	09:15	1	B	120	120	Hunting red grouse.
42188_VP_523_b	18/06/21	6	09:15	1	A	55	0	
42188_VP_524	18/06/21	6	09:35	1	B	255	255	
42188_VP_542_a	28/06/21	2	14:31	1	B	120	120	Mobbed by Northern raven. Left viewshed.
42188_VP_542_b	28/06/21	2	14:31	1	C	300	300	
42188_VP_542_c	28/06/21	2	14:31	1	D	30	0	
42188_VP_552	30/06/21	3	13:21	1	B	20	20	Left viewshed.
42188_VP_553	30/06/21	3	13:44	1	B	240	240	Probably same bird as _552. Hunting. Lost from view in valley.
Western marsh harrier								
42188_VP_567_a	04/08/21	1	10:48	1	B	20	20	Juvenile. Hunting briefly then landed and preened for five minutes.
42188_VP_567_b	04/08/21	1	10:48	1	A	40	0	

GISID	Date	VP	Time	Count	Height Band	Time at risk height (10-150m) for flight in secs	Total time at risk height*	Notes
42188_VP_568_a	04/08/21	1	10:53	1	A	75	0	Same bird as _567. Lost from view along Stot Cleugh.
42188_VP_568_b	04/08/21	1	10:53	1	B	25	25	
42188_VP_569	04/08/21	1	11:04	1	A	180	0	Same bird as _567. Hunting. Lost from view.
42188_VP_570	04/08/21	1	13:22	1	A	225	0	Presumed same bird as _567. Hunting. Lost from view.
42188_VP_573_a	05/08/21	3	10:02	1	A	40	0	Presumed same bird as _567. Hunting. Lost from view.
42188_VP_573_b	05/08/21	3	10:02	1	B	10	10	
42188_VP_573_c	05/08/21	3	10:02	1	A	130	0	
Northern goshawk								
42188_VP_387	07/04/21	4	10:16	1	B	214	214	Immature (2CY), probable male. Lost from view behind hill.
European golden plover								
42188_VP_379_a	07/04/21	4	08:57	2	A	11	0	Left viewshed.
42188_VP_379_b	07/04/21	4	08:57	2	B	59	118	
42188_VP_381_a	07/04/21	4	09:26	2	A	5	0	Left viewshed.
42188_VP_381_b	07/04/21	4	09:26	2	B	30	60	
42188_VP_381_c	07/04/21	4	09:26	2	C	20	0	
42188_VP_382	07/04/21	4	09:35	2	A	12	0	Landed.
42188_VP_383	07/04/21	4	09:40	2	C	30	0	Left viewshed.
42188_VP_389	07/04/21	3	09:14	5	A	5	0	
42188_VP_390_a	07/04/21	3	09:16	1	B	5	5	Landed.
42188_VP_390_b	07/04/21	3	09:16	1	A	3	0	
42188_VP_391	07/04/21	3	09:36	1	B	5	5	
42188_VP_418	08/04/21	2	10:07	2	B	60	120	

GISID	Date	VP	Time	Count	Height Band	Time at risk height (10-150m) for flight in secs	Total time at risk height*	Notes
42188_VP_426_a	12/04/21	1	14:32	1	B	3	3	Landed.
42188_VP_426_b	12/04/21	1	14:32	1	A	3	0	
42188_VP_431	16/04/21	3	09:00	2	A	3	0	Landed.
42188_VP_433	16/04/21	4	08:00	1	B	15	15	
42188_VP_436	16/04/21	4	09:43	19	B	36	684	
42188_VP_439_a	16/04/21	4	10:11	14	B	12	168	
42188_VP_439_b	16/04/21	4	10:11	14	C	8	0	
42188_VP_439_c	16/04/21	4	10:11	14	D	10	0	
42188_VP_441	16/04/21	3	12:26	1	B	18	18	
42188_VP_442	17/05/21	2	14:34	2	A	5	0	Pair. Landed.
42188_VP_449	19/05/21	2	15:47	2	A	23	0	
42188_VP_452	19/05/21	2	16:43	2	A	10	0	
42188_VP_454	19/05/21	2	17:18	1	A	3	0	
42188_VP_457	01/06/21	4	14:31	1	A	10	0	Took off from hidden spot.
42188_VP_459	01/06/21	3	17:41	1	B	65	65	Lost from view in valley.
42188_VP_460_a	01/06/21	3	17:57	1	A	30	0	Lost from view high to northwest.
42188_VP_460_b	01/06/21	3	17:57	1	B	55	55	
42188_VP_461_a	01/06/21	3	18:01	2	B	165	330	Displaying then landed out of sight.
42188_VP_461_b	01/06/21	3	18:01	2	A	10	0	
42188_VP_462_a	01/06/21	3	18:55	1	B	175	175	Displaying then landed.
42188_VP_462_b	01/06/21	3	18:55	1	A	5	0	
42188_VP_463_a	01/06/21	3	19:40	1	B	115	115	Displaying then landed.
42188_VP_463_b	01/06/21	3	19:40	1	A	15	0	
42188_VP_467_a	01/06/21	4	18:40	1	A	2	0	

GISID	Date	VP	Time	Count	Height Band	Time at risk height (10-150m) for flight in secs	Total time at risk height*	Notes
42188_VP_467_b	01/06/21	4	18:40	1	B	25	25	
42188_VP_467_c	01/06/21	4	18:40	1	A	5	0	
42188_VP_468	01/06/21	4	19:44	1	A	20	0	
42188_VP_472	02/06/21	6	12:45	1	A	10	0	
42188_VP_476_a	02/06/21	6	18:21	2	A	10	0	Flushed by common buzzard.
42188_VP_476_b	02/06/21	6	18:21	2	B	20	40	
42188_VP_477_a	02/06/21	6	18:23	1	B	15	15	Landed.
42188_VP_477_b	02/06/21	6	18:23	1	A	10	0	
42188_VP_486	03/06/21	1	18:21	1	B	25	25	
42188_VP_490	03/06/21	2	17:54	1	B	15	15	
42188_VP_491	14/06/21	4	16:11	1	B	62	62	
42188_VP_492_a	14/06/21	4	16:42	3	B	37	111	
42188_VP_492_b	14/06/21	4	16:42	3	A	8	0	
42188_VP_493_a	14/06/21	4	17:27	1	B	83	83	
42188_VP_493_b	14/06/21	4	17:27	1	A	12	0	
42188_VP_501_a	14/06/21	4	20:51	1	B	50	50	Landed.
42188_VP_501_b	14/06/21	4	20:51	1	A	3	0	
42188_VP_502	14/06/21	4	21:33	2	A	5	0	Calling.
42188_VP_535	30/06/21	4	11:32	3	A	5	0	
42188_VP_536	30/06/21	4	11:39	1	A	10	0	
42188_VP_537	30/06/21	4	11:57	1	B	10	10	
42188_VP_538	30/06/21	4	12:06	11	B	10	110	
42188_VP_540	30/06/21	4	14:01	2	B	20	40	Calling.
42188_VP_554	30/06/21	4	07:20	1	A	45	0	Left viewshed.
42188_VP_555	30/06/21	4	07:58	1	A	20	0	Left viewshed.
42188_VP_556	30/06/21	4	09:41	1	A	30	0	Lost from view.
42188_VP_557_a	19/07/21	3	16:04	1	A	5	0	

GISID	Date	VP	Time	Count	Height Band	Time at risk height (10-150m) for flight in secs	Total time at risk height*	Notes
42188_VP_557_b	19/07/21	3	16:04	1	B	38	38	
42188_VP_561	23/07/21	1	07:52	1	A	5	0	
42188_VP_562	23/07/21	1	08:23	1	A	2	0	
42188_VP_563	23/07/21	1	09:56	1	A	3	0	
Peregrine falcon								
42188_VP_395	07/04/21	3	11:48	1	B	30	30	Female.
42188_VP_396_a	07/04/21	5	14:32	1	D	150	0	Immature male. Left viewshed.
42188_VP_396_b	07/04/21	5	14:32	1	C	50	0	
42188_VP_397	07/04/21	6	14:36	1	B	60	0	Probably same bird as _396.
42188_VP_402	08/04/21	1	10:10	1	A	10	0	Lost from view over ridge.
42188_VP_405	08/04/21	1	10:36	1	B	157	157	Male interacting with two common buzzards. Lost from view behind ridge,
42188_VP_416	08/04/21	1	14:49	1	A	20	0	Male. Lost from view over ridge.
42188_VP_427_a	12/04/21	1	14:47	1	B	5	5	Probably landed.
42188_VP_427_b	12/04/21	1	14:47	1	A	50	0	
42188_VP_430	12/04/21	5	17:48	1	A	22	0	
42188_VP_432	16/04/21	4	14:18	1	A	10	0	
42188_VP_455	20/05/21	6	10:18	1	B	56	56	Immature female chasing racing pigeons.
42188_VP_518	16/06/21	6	16:34	1	B	40	40	Aggressive interaction with a common buzzard.
42188_VP_529	30/06/21	3	09:40	1	A	15	0	
42188_VP_539_a	30/06/21	4	12:54	1	B	10	10	
42188_VP_539_b	30/06/21	4	12:54	1	C	5	5	

GISID	Date	VP	Time	Count	Height Band	Time at risk height (10-150m) for flight in secs	Total time at risk height*	Notes
42188_VP_541_a	01/07/21	5	11:08	1	A	10	0	Male. Left viewshed.
42188_VP_541_b	01/07/21	5	11:08	1	B	10	10	
42188_VP_541_c	01/07/21	5	11:08	1	A	5	0	
42188_VP_559	21/07/21	3	12:40	1	A	180	0	Successfully pursued lapwing.
42188_VP_566	04/08/21	1	10:27	1	B	180	180	Juvenile. Circled, gaining height, then stooped and lost from view.
42188_VP_571	05/08/21	3	08:49	1	A	10	0	Adult male. Flew from post and then lost from view.
42188_VP_572	05/08/21	3	09:36	1	B	60	60	Successfully pursued feral pigeon. Lost from view carrying prey to northwest.
42188_VP_574	05/08/21	4	08:44	1	A	30	0	Perched on grouse butt for two minutes, then flew low and out of view.

* Multiplied where more than one bird involved in the flight.

Table B.2 Raptor survey results

GISID	Date	Notes
Northern goshawk		
42188_FI_101	20/04/21	Male flew over Phillips Knowe at 15:30.
42188_FI_102	22/04/21	Immature male unsuccessfully pursued a red grouse before it gained height whilst mobbed by a female common kestrel and then flew out of sight at 12:25.
Western barn owl		
42188_FI_116	15/06/21	Hunting.
42188_FI_117	15/06/21	Hunting. Same bird as _116.
42188_FI_118	15/06/21	Hunting. Same bird as _116 and _117.
Peregrine falcon		

GISID	Date	Notes
42188_FI_138	21/04/21	Immature female flushed from near Burn betwixt the Laws.
42188_FI_133	20/07/21	Flushed from red grouse kill at 20:42.

Table B.3 Incidental records

GISID	Date	Count	Notes
Greylag goose			
42188_FI_079	06/04/21	4	13:00 seen from VP6. Outwith viewshed mobbing two ravens around Upper Knowe.
42188_FI_080	06/04/21	2	13:45 seen from VP6. Outwith viewshed. Flew northeast over Upper Knowe.
42188_FI_081	07/04/21	2	13:49 seen from VP5. Outwith viewshed. Landed on Kilpallet Rig.
42188_Pt_102	08/04/21	1	08:30, Seen during VP1, on sentry duty by rush bed.
Red kite			
42188_FI_090	14/04/21	1	Seen during MBS.
42188_FI_131	08/07/21	1	10:11, Circling during MBS (same bird as Pt_509).
42188_Pt_509	08/07/21	1	09:52, flushed during MBS.
Hen harrier			
42188_FI_112	08/06/21	1	Female, hunting, seen during MBS.
European golden plover			
42188_Pt_101	07/04/21	4	Seen from VP3. Three males and a female loafing on moor at 09:30
42188_Pt_194	13/05/21	1	Found during raptor survey. 12:00 - incubating bird flushed off three eggs at NT 62723 56740.
42188_Pt_195	01/06/21	1	From VP4. 19:41 - single bird alarm calling as sparrowhawk flew over.
42188_Pt_196	01/06/21	2	From VP4. 20:03 - pair on ground during VP, calling.
N/A	30/06/21	1	From VP3. 08:02 - heard but not seen.
N/A	01/07/21	2	From VP5. 07:51 - heard but not seen.
N/A	14/06/21	1	From VP3. 16:43 - heard but not seen.
N/A	14/06/21	1	From VP3. Heard but not seen.
42188_Pt_422	28/06/21	1	From VP2. 16:04
42188_Pt_424	28/06/21	1	From VP2. 17:18 - heard not seen.

GISID	Date	Count	Notes
42188_Pt_426	30/06/21	1	From VP3. 11:31 - calling infrequently throughout watch (heard not seen).
N/A	21/07/21	1	From VP4. 11:00 – heard not seen.
42188_Pt_543	21/07/21	1	From VP3. 14:10, heard not seen.
Peregrine falcon			
42188_Pt_441	08/06/21	1	14:50 - flushed and flew west and out of sight over Meikle Law.
42188_Pt_547	05/08/21	1	08:27-08:49 - adult male preening on post.

Appendix C

Species names

Table C.1 Species names

IOC Species Name (2021)	Scientific Name	IOC Species Name (2021)	Scientific Name
Greylag goose	<i>Anser anser</i>	European golden plover	<i>Pluvialis apricaria</i>
Pink-footed goose	<i>Anser brachyrhynchus</i>	Eurasian curlew	<i>Numenius arquata</i>
Black grouse	<i>Lyrurus tetrix</i>	Common sandpiper	<i>Actitis hypoleucos</i>
Willow ptarmigan (red grouse)	<i>Lagopus lagopus scotica</i>	Common redshank	<i>Tringa totanus</i>
Grey heron	<i>Ardea cinerea</i>	Common snipe	<i>Gallinago gallinago</i>
European honey buzzard	<i>Pernis apivorus</i>	Black-headed gull	<i>Chroicocephalus ridibundus</i>
Red kite	<i>Milvus milvus</i>	Mew gull (common gull)	<i>Larus canus</i>
White-tailed eagle	<i>Haliaeetus albicilla</i>	Lesser black-backed gull	<i>Larus fuscus</i>
Western marsh harrier	<i>Circus aeruginosus</i>	European herring gull	<i>Larus argentatus</i>
Hen harrier	<i>Circus cyaneus</i>	Great back-backed gill	<i>Larus marinus</i>
Northern goshawk	<i>Accipiter gentilis</i>	Western barn owl	<i>Tyto alba</i>
Eurasian sparrowhawk	<i>Accipiter nisus</i>	Short-eared owl	<i>Asio flammeus</i>
Rough-legged buzzard	<i>Buteo lagopus</i>	Common kestrel	<i>Falco tinnunculus</i>
Common buzzard	<i>Buteo buteo</i>	Merlin	<i>Falco columbarius</i>
Golden eagle	<i>Aquila chrysaetos</i>	Eurasian hobby	<i>Falco Subbuteo</i>
Eurasian oystercatcher	<i>Haematopus ostralegus</i>	Peregrine falcon	<i>Falco peregrinus</i>
Northern lapwing	<i>Vanellus vanellus</i>	Northern raven	<i>Corvus corax</i>

wood.

ANNEX G. REVIEW OF THE EFFECTS OF ARTIFICIAL LIGHT ON BIRDS IN RELATION TO DEPLOYMENT OF OBSTRUCTION LIGHTING ON WIND TURBINES

Introduction

With the increase in height of wind turbines, it is now a requirement for obstruction lighting to be added to tall turbines (>150 m) to make the structures more visible to pilots of aircraft. This review summarises the impacts of artificial light on birds and considers whether any of the known impacts might arise in birds as a consequence of deployment of obstruction lighting on wind turbines. This review was undertaken by Professor Bob Furness in September 2017.

Methods

A literature search was carried out, using tools such as Web of Knowledge and Google scholar, to identify relevant published work. Identified publications were obtained and read, in order to prepare this review paper.

Results Obtained from Literature Search

There is a large literature identifying a wide range of impacts of artificial lights on birds. The identified impacts all relate to effects occurring at night. These include:

- Disruption of photoperiod physiology of birds due to artificial light;
- Extension of daytime activity (earlier start at dawn, later end at dusk);
- Phototaxis of seabirds (birds attracted to light sources and grounded on land);
- Phototaxis of nocturnal migrants (birds attracted to light sources and grounded or killed);
- Ability of some birds to use nocturnal feeding assisted by artificial light;
- Increased predation risk for nocturnal birds resulting from artificial lighting;
- Birds better able to avoid collision when structures are illuminated; and
- Displacement of birds due to avoidance of lights.

These impacts are considered in turn below.

Disruption of photoperiod physiology of birds due to artificial light

In theory, low levels of artificial light have the potential to affect the physiological photoperiod experienced by birds, and thereby to affect the timing of their onset of activity in the morning and end of activity in the evening, as well as potentially affecting the seasonal triggers for activities such as deposition or shedding of fat stores, moult, breeding and migration (Titulaer *et al.* 2012ⁱ, Gaston *et al.* 2013ⁱⁱ, 2015ⁱⁱⁱ, De Jong *et al.* 2017^{iv}, Da Silva *et al.* 2017^v). However, there are no published studies or observations reporting clear examples of any seasonal activities of birds being affected by exposure to artificial light. There are a few anecdotal examples of urban birds starting to nest in winter, and this could possibly be interpreted as birds coming into breeding condition early because their photoperiod had been affected by artificial light. However, such early breeding is generally seen only in a few bird species that are often able to breed successfully in winter if weather conditions permit. That suggests that such cases represent opportunistic breeding in urban environments rather than disruption of natural photoperiod responses. De Jong *et al.*

(2017)^{iv} experimented with birds in captivity, exposing them to different colours of light at night. Birds advanced their onset of activity in the morning when exposed to light at night, and advanced timing more in response to red and white light than to green light. Birds advanced timing more in response to higher intensity of artificial light. However, there have not been similar experiments with free-living wild birds, so it is uncertain if such effects occur in wild birds. Since such effects have not been reported, it seems more likely that there is very little, if any, effect of artificial light on photoperiod responses of wild birds.

Extension of daytime activity

Da Silva *et al.* (2017)^{vi} used an experimental approach with wild birds, exposing the area around an automated feeding station in a forest to artificial light at night. They found a small response in some bird species, with blue tit and great tit starting to forage earlier during experimentally lighted mornings. However, no response was shown by willow/marsh tit, nuthatch, jay or blackbird, and the response of great tits was weak. The authors concluded that *'our results suggest that artificial light during winter has only small effects on timing of foraging'*. Da Silva *et al.* (2017)^{vi} used an experimental approach to test whether birds start singing earlier in the morning when their forest habitat was illuminated with artificial light. They found no effect of artificial light (testing a variety of different light colours) on the timing of the dawn chorus. These results suggest that artificial light has very little, if any, impact on the available daylength for day-active birds, possibly because the natural variation in light levels is so large that artificial light makes very little difference to the natural diurnal cycle of light levels.

Phototaxis of seabirds

Most burrow-nesting shearwaters and petrels are nocturnally active. Adults rear a single chick, and 'desert' the fully-grown chick to leave it to fledge independently. Chicks fledge at night, usually just after dark, and show strong positive phototaxis; they are attracted to light. This allows them to navigate from the dark burrows at the colony to the sea, as light intensity is naturally higher over the sea than onshore. This phototactic response is therefore important to allow fledglings to find the sea when they first leave their burrow (especially important for those petrel species that breed at colonies some distance inland from the sea). This phototaxis behavioural response is also seen, for example, in hatchling sea turtles and has the same function. Puffins also show the same response as petrels. There are numerous examples of shearwater, petrel, and puffin chicks being attracted to artificial lights at fledging, and being grounded (Wilhelm *et al.* 2013^{vii}, Rodriguez *et al.* 2014^{viii}, Gineste *et al.* 2017^{ix}). This is well known, for example, at colonies in Hawaii, the Balearic Islands, the Canary Islands and the Azores where fledglings will collide with street lights and car headlights (Fontaine *et al.* 2011^x, Troy *et al.* 2011^{xi}, 2013^{xii}, Rodriguez *et al.* 2012a^{xiii}, b^{xiv}, c^{xv}, 2015a^{xvi}, b^{xvii}). It also occurs in Scotland, for example at the islands of Rum and St Kilda (Miles *et al.* 2010^{xviii}) where Manx shearwaters, European storm-petrels, Leach's storm-petrels and Atlantic puffin fledglings are grounded at street lights and illuminated windows. In virtually all of these examples, only fledglings are attracted and grounded, during the short period in late summer when chicks are departing from nesting burrows. Adults appear to be unaffected by artificial lights. Although for most colonies the numbers of fledglings distracted by artificial lights is trivial, the impact on survival of fledglings can be significant in a few cases where large colonies are close to extensive artificial lighting. In Reunion Island, 13,200 tropical shearwater fledglings were found grounded due to artificial lights, with numbers increasing from 1996 to 2015 (Gineste *et al.* 2017^{ix}). At Phillip Island, Australia, 8,871 short-tailed shearwater fledglings were found grounded by lights

along the roadsides, with at least 40% of these dead or dying (Rodriguez *et al.* 2014^{viii}). Turning off the street lights mitigated this mortality (Rodriguez *et al.* 2014^{viii}). In Kauai, Hawaii, more than 30,000 grounded fledglings of the federally threatened Newell's shearwater have been collected under lights, an impact that may be contributing to the decline of this population (Troy *et al.* 2011^{xi}).

Lights on wind farm turbines in Scotland are unlikely to affect fledging puffins, shearwaters or petrels from Scottish colonies, as most of those colonies are on offshore islands immediately overlooking the sea. Fledglings are likely to disperse over the sea without seeing lights on wind turbines. Exceptions to this might be puffins from Isle of May fledging past offshore wind farms in the Forth and Tay area, Manx shearwaters and European storm petrels fledging from Sanda Islands, Kintyre, past terrestrial wind farms on the Kintyre peninsula, puffins fledging from the Shiant Islands passing terrestrial wind farms in the Western Isles, Manx shearwaters fledging from the small isles (especially Rum) and the Treshnish Isles passing terrestrial wind farms on Skye or Mull. However, the lights involved on wind turbines would be likely to represent a trivial amount of lighting relative to the street lights and house lights of local towns, villages, lighthouses, ships and fishing vessels. These fledglings are also thought to tend to fly low rather than at high altitudes, and so would not be likely to be particularly close to lights at the tops of turbines. Phototaxis of fledging seabirds in Scotland is, therefore, very unlikely to be a problem in relation to obstruction lighting on wind turbines.

Phototaxis of nocturnal migrants

It has been recognised for a very long time that nocturnal migrant birds are attracted to artificial light while migrating (Harvie Brown *et al.* 1881^{xix}, Horring 1926^{xx}, Mehlum 1977^{xxi}, Jones and Francis 2003^{xxii}). This topic has recently received considerable attention specifically in relation to lighting at communication towers (Longcore *et al.* 2008^{xxiii}, Gehring *et al.* 2009^{xxiv}), wind farms (Kerlinger *et al.* 2010^{xxv}, Hüppop and Hilgerloh 2012^{xxvi}), oil and gas production platforms (Day *et al.* 2015^{xxvii}, Ronconi *et al.* 2015^{xxviii}), cruise ships (Bocetti 2011)^{xxix}, and in general in relation to bird ecology (Zhao *et al.* 2014^{xxx}, Watson *et al.* 2016^{xxxi}).

The strongest and most dramatic examples of phototaxis in nocturnal migration birds are the 'falls' of migrants that can occur at lighthouses and lightships, especially during foggy weather in autumn. These were studied in detail in the 1880s to 1920s. For example, Harvie Brown and Alfred Newton established a committee of the British Association for the Advancement of Science in the 1870s and sent questionnaires to lighthouse keepers throughout the British Isles to obtain data on nocturnal bird migration and the numbers of birds killed by collision with lights. As long ago as 1881, they reported that '*the brightest, whitest, fixed lights attract the most birds*', that most collisions occurred during autumn migration rather than during spring migration, and that most collisions occurred when the weather was foggy and windy (as also concluded over 100 years later by Mehlum 1977^{xxi}). These same factors were identified as affecting collision rates in a study by Zhao *et al.* (2014)^{xxx}. The British association annual reports show the large numbers of birds that can be killed; for example, 600 thrushes killed by collision with Skerryvore lighthouse in October 1877. A high proportion of the birds killed were juveniles, which probably at least in part explains why numbers killed tended to be much higher in autumn than in spring. Similar surveys were conducted around the same period in many different European countries. For example, the 41st annual report on birds at Danish lighthouses, for the year 1923, was published in 1926 (Horring 1926^{xx}). That report mentions that at least 4,600 birds, mostly thrushes and starlings, were killed by collision at Danish lighthouses and lightships in 1923. Study of birds at lighthouses fell out of

favour around the 1930s, and there is very little literature on this topic after that period, although it was recognised that large numbers of migrating birds were still being killed by collision at lighthouses (e.g. Mehlum 1977^{xxi}, Jones and Francis 2003^{xxii}). Jones and Francis (2003)^{xxii} reported that from 1960-1989 there were kills of up to 2,000 birds in a single night in autumn at Long Point lighthouse (Ontario, Canada). However, this light was fitted with a new beam in 1989, which was narrower and less powerful, and this resulted in a huge decrease in numbers of migrant birds killed. From 1990 to 2002 the mean numbers known to be killed were reduced to only about 30 birds per year. The authors point out that this highlights the ‘effectiveness of simple changes in light signatures in reducing avian light attraction and mortality during migration’.

Ronconi *et al.* (2015)^{xxviii} and Day *et al.* (2015)^{xxvii} both report that poor weather (e.g. fog, rain, low cloud cover) exacerbate nocturnal attraction of bird migrants to lights at oil and gas production platforms, with on occasions thousands of birds being killed in a night, especially where gas is being flared. Kerlinger *et al.* (2010) report that bright artificial lighting may have caused ‘multi-bird fatality events’ at wind farms in North America, but that obstruction lighting at turbines as recommended by the Federal Aviation Administration (FAA) (flashing red lights) had no influence on bird collisions compared with turbines at the same wind farm, where there was no obstruction lighting (see also this same conclusion in Manville 2009^{xxix}). Gehring *et al.* (2009)^{xxiv} reported that communication towers equipped with non-flashing/steady-burning lights in addition to red or white flashing obstruction lights were responsible for much higher numbers of bird collisions; towers with fixed lights and flashing lights were responsible for 13 bird fatalities per season, whereas towers with only flashing obstruction lights were responsible for 3.7 bird fatalities per season. They concluded that having only flashing obstruction lights reduced bird collisions significantly, a conclusion supported by Patterson (2012)^{xxxiii}. Longcore *et al.* (2008)^{xxxiii} reported that steady-burning lights increased the numbers of birds colliding with communication towers.

Watson *et al.* (2016)^{xxxi} report that more nocturnal flight calls can be detected over artificially lit areas than over dark areas. They conclude that artificial lighting changes behaviour of nocturnal migrant birds, either by changing their flight paths to pass over lit areas, by flying at lower altitudes over lit areas, by increasing their call rates over lit areas, or by remaining longer over lit areas. Hüppop and Hilgerloh (2012)^{xxvi} suggest that nocturnal migrants are more vocal when conditions are adverse, so that vocalisations do not indicate bird numbers but rather the stress levels of the birds. Bocetti (2011)^{xxix} identified that cruise ships, which often have bright external lighting during the night, also represent a collision hazard for nocturnal migrant birds, although it seems likely that the numbers of birds killed at cruise ships are rather small compared to numbers killed at lighthouses.

The evidence indicates that lights on wind turbines are likely to increase numbers of nocturnal migrant birds that collide. However, that increase is mainly seen if lights are steady-burning, whereas there is very little increase in collisions when lights are flashing. Obstruction lighting on wind turbines appears to be several orders of magnitude less effective than the light from lighthouses and lightships in attracting nocturnal migrant birds. Survival rates of small birds are low, and it is recognised that many birds die during migration, especially juvenile birds during autumn migration (Newton 2008)^{xxxiv}. Birds that are attracted by artificial light are likely to be birds that are already at high risk of mortality because they are facing adverse weather conditions and are lost or exhausted (Newton 2008)^{xxxiv}. Furthermore, Welcker *et al.* (2017)^{xxxv} reported that, despite the apparent attraction of nocturnal migrating birds to lights, nocturnal migrants

represented only 8.6% of all fatalities at a sample of German wind farms. They concluded that ‘nocturnal migrants do not have a higher risk of collision with wind energy facilities than do diurnally active species, but rather appear to circumvent collision more effectively’.

Phototaxis of other birds

Attraction of fledgling shearwaters, petrels and puffins, and attraction of nocturnal migrating birds to lights is well established and has been studied in detail. In contrast, there is no clear evidence from research studies or observations to suggest that other kinds of birds show attraction to lights. There seems to be little or no phototaxis shown by adult shearwaters, petrels or puffins around the British Isles, despite the strong response seen in fledglings. There is some evidence of adult petrels being attracted to bright artificial lights at night at colonies in the sub-Antarctic (e.g. Furness, pers. obs.), but that may simply be a disorientation and grounding of birds that fly into strong beams of light such that they are unable to see where they are going. There is little evidence to suggest that those birds are attracted towards artificial light. There is little or no evidence to suggest that birds that are not undertaking migration are attracted to artificial light. While nocturnal migrants are found as collision casualties at lighthouses during the migration seasons, resident birds in summer or winter, wintering birds in winter or breeding birds in summer are not found as collision casualties in summer or winter. Seabirds breeding close to lighthouses are not found as collision casualties at lighthouses. The evidence strongly indicates that resident, breeding and wintering birds do not show phototaxis. Therefore, there is no risk due to phototaxis for resident birds, breeding or wintering birds in the vicinity of wind farms as a direct consequence of deployment of obstruction lighting on wind turbines.

Ability of some birds to use nocturnal feeding assisted by artificial light

Birds that are visual feeders and feed only during the day may benefit from artificial light that allows them to feed visually at night. This has been reported, for example, in intertidal waders. Santos *et al.* (2010)^{xxxvi} found that visual feeding shorebirds fed at night in areas of the Tagus Estuary (Portugal) where artificial light allowed them to see prey. Tactile-feeding waders did not show any change in distribution attributable to the distribution of artificial light. Similarly, Da Silva *et al.* (2017)^y found that blue tits and great tits started foraging earlier in the morning when artificial light was available. The availability of artificial light did not alter feeding times of willow/marsh tits, nuthatches, jays or blackbirds, and the effect on great tits was weak and only evident during nights when weather was poor. There are anecdotal observations of birds such as robins feeding under street lights during winter darkness in urban environments.

In the context of obstruction lighting on wind turbines, it is highly unlikely that the amount of light provided would allow birds to feed at times when natural light levels were low, so this effect is very unlikely to be seen at wind farms.

Increased predation risk for nocturnal birds resulting from artificial lighting

Canario *et al.* (2012)^{xxxvii} observed short-eared owls and long-eared owls catching migrating songbirds that had been attracted to artificial lights. Oro *et al.* (2005)^{xxxviii} found significantly lower survival rates of breeding adult European storm-petrels at a colony in Benidorm Island (Spain) that was illuminated by artificial lighting shining across the sea from Benidorm city compared to a control colony on the dark side of Benidorm Island. The low survival of the population exposed to artificial light was due to yellow-legged gull predation on the storm petrels which was facilitated by the artificial light allowing gulls to see, and catch, storm petrels attending the colony at night.

Amounts of light produced by obstruction lighting at the top of wind turbines will be far less than produced by the lights in the studies reported above. It is, therefore, extremely unlikely that the lighting on wind turbines would affect predation risk for nocturnal birds in the vicinity of wind farms.

Ability to avoid collision when structures are illuminated

Blackwell *et al.* (2012)^{xxxix} showed that artificial lights on aircraft reduced the risk of bird strike because lights made the aircraft more detectable to birds so allowed earlier avoidance behaviour. A study of bat collisions at wind farms in Texas found that bat fatalities were more frequent at turbines without aviation lights compared with turbines with synchronised red flashing aviation lights. The lower mortality at turbines with lights applied for only one species of bat, the other species showing no difference in mortality between turbines with or without aviation lights. However, the study suggests that at least one of the bat species avoided turbines more successfully when the turbine was equipped with obstruction lighting.

Displacement of birds due to avoidance of lights

Day *et al.* (2017)^{xl} reported that migrating eiders showed higher avoidance at night of an oil-production facility in Alaska when it was illuminated with a hazing light system. However, this seems to be a rare example of birds being displaced by artificial lights, and there seem to be more examples of birds using artificial lights to their benefit, such as the use by shorebirds of artificial lights to allow them to feed visually at night.

Cumulative assessment

Loss *et al.* (2015)^{xli} assessed the scale of anthropogenic mortality of birds in the United States and concluded that cause-specific annual mortality was billions due to predation by domestic cats, hundreds of millions due to collisions with buildings (mainly windows) and vehicles, tens of millions due to collisions with power lines, millions due to collisions with communication towers and electrocution at power lines, and hundreds of thousands due to collisions with wind turbines. These relative impacts are likely to be in a similar ranking in Scotland, and indeed throughout most of Europe.

ⁱTitulaer, M., Spoelstra, K., Lange, C.Y.M.J.G. and Visser, M.E. 2012. Activity patterns during food provisioning are affected by artificial light in free living great tits (*Parus major*). *PLoS ONE*, 7, e37377.

ⁱⁱGaston, K.J., Bennie, J., Davies, T.W. and Hopkins, J. 2013. The ecological impacts of nighttime light pollution: a mechanistic appraisal. *Biological Reviews*, 88, 912-927.

ⁱⁱⁱGaston, K.J., Visser, M.E. and Hölker, F. 2015. The biological impacts of artificial light at night: the research challenge. *Philosophical Transactions of the Royal Society B*, 370, 20140133.

^{iv}De Jong, M., Caro, S.P., Gienapp, P., Spoelstra, K. and Visser, M.E. 2017. Early birds by light at night: Effects of light color and intensity on daily activity patterns in blue tits. *Journal of Biological Rhythms*, 32, 323-333.

^vDa Silva, A., Diez-Mendez, D. and Kempenaers, B. 2017. Effects of experimental night lighting on the daily timing of winter foraging in common European songbirds. *Journal of Avian Biology*, 48, 862-871.

^{vi}Da Silva, A., de Jong, M., van Grunsven, R.H.A., Visser, M.E., Kempenaers, B. and Spoelstra, K. 2017. Experimental illumination of a forest: no effects of lights of different colours on the onset of the dawn chorus in songbirds. *Royal Society Open Science*, 4, 160638.

^{vii}Wilhelm, S.I., Schau, J.J., Schau, E., Dooley, S.M., Wiseman, D.L. and Hogan, H.A. 2013. Atlantic puffins are attracted to coastal communities in eastern Newfoundland. *Northeastern Naturalist*, 20, 624-630

- ^{viii}Rodriguez, A., Burgan, G., Dann, P., Jessop, R., Negro, J.J. and Chiaradia, A. 2014. Fatal attraction of short-tailed shearwaters to artificial lights. *PLoS ONE*, 9, e110114.
- ^{ix}Gineste, B., Souquet, M., Couzi, F.X., Giloux, Y., Philippe, J.S., Hoarau, C., Tourmetz, J., Potin, G. and le Corré, M. 2017. Tropical shearwater population stability at Reunion Island, despite light pollution. *Journal of Ornithology*, 158, 385-394.
- ^xFontaine, R., Gimenez, O. and Bried, J. 2011. The impact of introduced predators, light-induced mortality of fledglings and poaching on the dynamics of the Cory's shearwater (*Calonectris diomedea*) population from the Azores, northeastern subtropical Atlantic. *Biological Conservation*, 144, 1998-2011.
- ^{xi}Troy, J.R., Holmes, N.D. and Green, M.C. 2011. Modeling artificial light viewed by fledgling seabirds. *Ecosphere*, 2 (10), 109.
- ^{xii}Troy, J.R., Holmes, N.D., Veech, J.A. and Green, M.C. 2013. Using observed seabird fallout records to infer patterns of attraction to artificial light. *Endangered Species Research*, 22, 225-234
- ^{xiii}Rodrigues, P., Aubrecht, C., Gil, A., Longcore, T. and Elvidge, C. 2012a. Remote sensing to map influence of light pollution on Cory's shearwater in Saõ Miguel Island, Azores Archipelago. *European Journal of Wildlife Research*, 58, 147-155
- ^{xiv}Rodriguez, A., Rodriguez, B. and Lucas, M.P. 2012b. Trends in numbers of petrels attracted to artificial lights suggest population declines in Tenerife, Canary Islands. *Ibis*, 154, 167-172.
- ^{xv}Rodriguez, A., Rodriguez, B., Curbelo, A.J., Perez, A., Marrero, S. and Negro, J.J. 2012c. Factors affecting mortality of shearwaters stranded by light pollution. *Animal Conservation*, 15, 519-526.
- ^{xvi}Rodriguez, A., Rodriguez, B. and Negro, J.J. 2015a. GPS tracking for mapping seabird mortality induced by light pollution. *Scientific Reports*, 5, 10670.
- ^{xvii}Rodriguez, A., Garcia, D., Rodriguez, B., Cardona, E., Parpal, L. and Pons, P. 2015b. Artificial lights and seabirds: is light pollution a threat for the threatened Balearic petrels? *Journal of Ornithology*, 156, 893-902.
- ^{xviii}Miles, W., Money, S., Luxmoore, R. and Furness, R.W. 2010. Effects of artificial lights and moonlight on petrels at St Kilda. *Bird Study*, 57, 244-251.
- ^{xix}Harvie Brown, J.A., Cordeaux, J. and Newton, A. 1881. Report of the Committee for obtaining observations on the migrations of birds at lighthouses and lightships. Report of the British Association for the Advancement of Science, 51, 189-194.
- ^{xx}Horring, R. 1926. The birds at the Danish lighthouses in 1923; 41st yearly report on Danish birds. *Vidensk Meddel Dansk Naturhist for Kobenhavn*, 80, 453-516.
- ^{xxi}Mehlum, F. 1977. Birds killed at the lighthouse Faerder Fyr Outer Oslo Fjord and some possible explanations of bird kills by illuminating constructions. *Fauna (Oslo)*, 30, 191-194.
- ^{xxii}Jones, J. and Francis, C.M. 2003. The effects of light characteristics on avian mortality at lighthouses. *Journal of Avian Biology*, 34, 328-333.
- ^{xxiii}Longcore, T., Rich, C. and Gauthreaux, S.A. 2008. Height, guy wires, and steady-burning lights increase hazard of communication towers to nocturnal migrants: A review and meta-analysis. *Auk*, 125, 485-492.
- ^{xxiv}Gehring, J., Kerlinger, P. and Manville, A.M. 2009. Communication towers, lights, and birds: successful methods of reducing the frequency of avian collisions. *Ecological Applications*, 19, 505-514.
- ^{xxv}Kerlinger, P., Gehring, J.L., Erikson, W.P., Curry, R., Jain, A. and Guarnaccia, J. 2010. Night migrant fatalities and obstruction lighting at wind turbines in North America. *Wilson Journal of Ornithology*, 122, 744-754.
- ^{xxvi}Hüppop, O. and Hilgerloh, G. 2012. Flight call rates of migrating thrushes: effects of wind conditions, humidity and time of day at an illuminated offshore platform. *Journal of Avian Biology*, 43, 85-90.
- ^{xxvii}Day, R.H., Rose, J.R., Prichard, A.K. and Streever, B. 2015. Effects of gas flaring on the behaviour of night-migrating birds at an artificial oil-production island, Arctic Alaska. *Arctic*, 68, 367-379.
- ^{xxviii}Ronconi, R.A., Allard, K.A. and Taylor, P.D. 2015. Bird interactions with offshore oil and gas platforms: Review of impacts and monitoring techniques. *Journal of Environmental Management*, 147, 34-45.
- ^{xxix}Bocetti, C.I. 2011. Cruise ships as a source of avian mortality during fall migration. *Wilson Journal of Ornithology*, 123, 176-178.
- ^{xxx}Zhao, X.B., Chen, M.Y., Wu, Z.L. and Wang, Z.J. 2014. Factors influencing phototaxis in nocturnal migrating birds. *Zoological Science*, 31, 781-788.
- ^{xxxi}Watson, M.J., Wilson, D.R. and Mennill, D.J. 2016. Anthropogenic light is associated with increased vocal activity by nocturnally migrating birds. *Condor*, 118, 338-344.
- ^{xxxii}Manville, A.M. 2009. Towers, turbines, power lines, and buildings – steps being taken by the U.S. Fish and Wildlife Service to avoid or minimize take of migratory birds at these structures. In C.J. Ralph and T.D. Rich (editors). *Proceedings 4th International Partners in Flight Conference*, February 2008, McAllen, Texas.
- ^{xxxiii}Patterson, J.W. 2012. Evaluation of new obstruction lighting techniques to reduce avian fatalities. National Technical Information services (NTIS) Springfield, Virginia. US Department of Transportation Document DOT/FAA/TC-TN 12/9.

-
- ^{xxxiv}Newton, I. 2008. *The Migration Ecology of Birds*. Academic Press, London.
- ^{xxxv}Welcker, J., Liesenjohann, M., Blew, J., Nehls, G. and Grünkorn, T. 2017. Nocturnal migrants do not incur higher collision risk at wind turbines than diurnally active species. *Ibis*, 159, 366-373.
- ^{xxxvi}Santos, C.D., Miranda, A.C., Granadeiro, J.P., Lourenço, P.M., Saraiva, S. and Palmeirim, J.M. 2010. Effects of artificial illumination on the nocturnal foraging of waders. *Acta Oecologica*, 36, 166-172.
- ^{xxxvii}Canario, F., Leitão, A.H. and Tomé, R. 2012. Predation attempts by short-eared and long-eared owls on migrating songbirds attracted to artificial lights. *Journal of Raptor Research*, 46, 232-234.
- ^{xxxviii}Oro, D., de Leon, A., Minguez, E. and Furness, R.W. 2005. Estimating predation on breeding European storm-petrels (*Hydrobates pelagicus*) by yellow-legged gulls (*Larus michahellis*). *Journal of Zoology*, 265, 421-429.
- ^{xxxix}Blackwell, B.F., DeVault, T.L., Seamans, T.W., Lima, S.L., Baumhardt, P. and Fernandez-Juricic, E. 2012. Exploiting avian vision with aircraft lighting to reduce bird strikes. *Journal of Applied Ecology*, 49, 758-766.
- ^{xl}Day, R.H., Prichard, A.K., Rose, J.R., Streever, B. and Swem, T. 2017. Effects of a hazing-light system on migration and collision avoidance of eiders at an artificial oil-production island, Arctic Alaska. *Arctic*, 70, 13-24.
- ^{xli}Loss, S.R., Will, T. and Marra, P. 2015. Direct mortality of birds from anthropogenic causes. *Annual Review of Ecology, Evolution, and Systematics*, 46, 99-120.