Lynemore Wind Farm

Environmental Impact Assessment Report

Technical Appendix 7.1: Ornithology Baseline Report

avianecology

CONTENTS

ANNEXES

1 INTRODUCTION

1.1 Background

1.1.1 This Technical Appendix has been prepared to accompany **Chapter 7: Ornithology** of the Environmental Impact Assessment (EIA) Report for Lynemore Wind Farm (the Proposed Development).

1.1.2 The Technical Appendix presents details of data gathering methodologies and results, gathered from ornithological desk studies and field surveys, in order to inform the design and assessment of the Proposed Development.

1.1.3 The Technical Appendix should be read with reference to the following figures, which are included within **EIA Report Volume 2a**:

- **Figure 7.1: Ornithological survey areas;**
- **Figure 7.2a: Vantage point locations and viewsheds (September 2022 to January 2023);**
- **Figure 7.2b: Vantage point locations and viewsheds (February to March 2023);**
- **Figure 7.2c: Vantage point locations and viewsheds (April 2023 to August 2024);**
- **Figure 7.3: Statutory designated sites with ornithological interests;**
- **Figure 7.4a: Flight activity survey results Year 1 - raptors;**
- **Figure 7.4b: Flight activity survey results Year 1 – other species;**
- **Figure 7.4c: Flight activity survey results Year 2 - raptors;**
- **Figure 7.4d: Flight activity survey results Year 2 – other species;**
- **Figure 7.5a: Moorland breeding bird survey results year 1;**
- **Figure 7.5b: Moorland breeding bird survey results year 2;**

1.1.4 In addition, confidential **Figure 7.6** illustrates relevant breeding records of Schedule 1 raptor species (see **Technical Appendix 7.3: Confidential Ornithology**).

1.1.5 Details of the Collision Risk Modelling (CRM) undertaken to inform the impact assessment for ornithological features is provided separately in **Technical Appendix 7.2: Collision Risk Model Analysis**.

1.1.6 Information regarding the locations of sensitive breeding bird species, including a discussion of the Golden Eagle Topography (GET) Model undertaken for the Proposed Development, is provided separately in **Technical Appendix 7.3: Confidential Ornithology**. Such information will not be made publicly available, but will be provided to the Scottish Government, NatureScot, The Highland Council (THC) and the Royal Society for the Protection of Birds (RSPB).

1.1.7 Only common bird species names are referred to within the main body of this Technical Appendix. Annex 1 provides a summary of all bird species referred to herein and within **Chapter 7: Ornithology** of the EIA Report and all other associated appendices and figures. Both common and scientific (Latin) names together with a summary of their conservation status, as relevant, is provided.

1.2 Site Overview

1.2.1 The land identified for the Proposed Development ('the Site') is located on the Lynemore Estate, approximately 2km southwest of Moy and 7km northwest of Tomatin, in the Highland Council area. The Site is illustrated on **Figure 7.1**, alongside the ornithological survey areas.

1.2.2 The Site comprises mostly upland moorland and peatland habitats, with open woodland and extensive plantation to the north. The named hill of Carn na h-Easgainn (616m) is located within the southern edge of the Site. The Farr/ Glen Kyllachy Wind Farm complex lies approximately 2km to the south of the Site.

1.2.3 The Site is located within Natural Heritage Zone (NHZ) 10: Central Highlands.

1.3 Key Guidance

1.3.1 Ornithology survey methodologies and subsequent interpretation of results has made reference to the following key industry standard guidance, including that produced by NatureScot (formerly Scottish Natural Heritage (SNH)):

- SNH (2018). *Assessing significance of impacts from onshore wind farm outwith designated areas*. Guidance. Version 2 – February 2018.
- SNH (2017). *Recommended bird survey methods to inform impact assessment of onshore wind farms*. Version 2. March 2017.
- SNH (2016). *Assessing connectivity with Special Protection Areas (SPAs).* Guidance. Version 3 – June 2016.
- Goodship, N.M. and Furness, R.W. (MacArthur Green) (2022). *Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species*. NatureScot Research Report 1283.
- Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. (2021). The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. *British Birds* 114: 723-747.
- Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. (2013). *Raptors: a field guide to survey and monitoring.* Third Edition. The Stationary Office, Edinburgh.
- Gilbert, G., Gibbons, D.W. & Evans, J. (1998). *Bird monitoring methods.* A manual of techniques for key UK species. RSPB, Sandy, Bedfordshire.
- Brown, A.F. & Shepherd, K.B. (1993). A method for censusing upland breeding waders. *Bird Study* 40, 189-195.

1.4 Target Species

1.4.1 In accordance with NatureScot guidance (SNH, 2017), data gathering focussed on 'target' species. These were identified as being those bird species which are afforded a higher level of legislative protection and are potentially most sensitive to wind farm developments, and were based on the following lists:

- Annex 1 of the EC Birds Directive;

- Schedule 1 of the Wildlife & Countryside Act 1981;
- Red-listed Birds of Conservation Concern (Stanbury, *et al*. (2021)); and
- Annex 1 '*Priority bird species for assessment when considering the development of onshore wind farms in Scotland*' (SNH, 2018).

1.4.2 Appropriate target species for the Proposed Development were identified through desk study and an initial reconnaissance visit, on the basis of known species distributions or likely presence within the vicinity of the Site, and the likely sensitivity of such species to the Proposed Development. The species for survey were agreed with NatureScot through informal consultation.

1.4.3 Based on the above, target species during vantage point (VP) surveys comprised all Schedule 1 and Annex 1 listed raptors and owls, all wader species, all waterfowl (swans, geese and ducks but excluding feral species and mallard), divers, grebes and black grouse, as observed during survey.

1.4.4 During the VP surveys, 'secondary' species were also recorded. Secondary species were defined as commoner raptors (common buzzard, kestrel and sparrowhawk), all gulls, feral waterfowl (e.g. Canada goose), mallard, red grouse and raven, along with any large concentrations of Schedule 1 or red-listed passerines (Stanbury *et al*., 2021), as recorded during survey.

1.4.5 The species recorded during the other baseline survey types are discussed under the methods described in Section 3.

2 DESK STUDY

2.1 Methodology

2.1.1 In accordance with guidance (SNH, 2017), a desk study was undertaken with the aim of obtaining relevant supplementary information, to provide context to the field survey data and to inform the EIA Report.

2.1.2 A search for designated statutory sites with ornithological qualifying features was made using NatureScot *Sitelink*[1]. The search area used was within 10km of the Site. This was extended to 20km for internationally designated sites with migratory geese as a qualifying interest, due to the large foraging ranges of non-breeding grey goose species. The desk study also included a search for non-statutory sites within 2km (see **Table 2.1**).

2.1.3 **Table 2.1** summarises the data requests made to third party data providers and other relevant organisations.

2.1.4 In addition, publicly available information was retrieved for the nearest wind farms to the Proposed Development, and a high-level review undertaken to identify records of target species considered of relevance.

2.1.5 See also the GET Model Report in **Technical Appendix 7.3: Confidential Ornithology**, which contains details of golden eagle territories relevant to the Proposed Development.

[1] Available at: https://sitelink.nature.scot/map (Accessed January 2025).

Table 2.1: Third party information sought as part of desk study.

Key Source	Information Sought	Search Area	Date of Request
Highland Raptor Study Group (RSG)	Schedule 1 raptor and owl species: breeding and roosting records.	Within 2km; extended to 10km for eagle species.	May 2023
RSPB Scotland	All species records within last 10 years.	Within 2km; extended to 10km for eagle species.	May 2023
The Highland Biological Recording Group (HBRG)	Notable and protected species records and non-statutory sites.	Within 2km.	July 2023
Forestry and Land Scotland (FLS)	Capercaillie records.	FLS owned forests in the Moy, Tomatin and Daviot areas.	August 2024

2.2 Results

Statutory Designated Sites for Nature Conservation

2.2.1 **Table 2.2** summarises the statutory designated sites located within the search area. Only ornithological qualifying features are included. Additionally, where a designated area lies more than 10km from the Site and has been identified due to its migratory goose interest, only the goose interest is listed, as the other ornithological designated features[2] are considered not to have connectivity with the Site (with reference to core ranges stated in NatureScot guidance (SNH, 2016)).

2.2.2 The locations of the identified statutory designated areas are illustrated on **Figure 7.3**.

Table 2.2: Designated sites for nature conservation with ornithological interests.
SPA – Special Protection Area; SSSI – Site of Special Scientific Interest.

Name of Designated Area	Designation(s)	Distance from Site	Ornithological Qualifying Interests
Loch Ashie	SPA	8.7km to northwest	Slavonian grebe (passage (post-breeding))
	SSSI		Slavonian grebe (passage (post-breeding))
Loch Ruthven	SPA	9.4km to southwest	Slavonian grebe (breeding)
	Ramsar		Slavonian grebe (breeding)
	SSSI		Slavonian grebe (breeding) Breeding bird assemblage (15 species of aquatic bird including little grebe, wigeon, tufted duck, red-breasted merganser, oystercatcher, snipe and curlew).
Inner Moray Firth	SPA	11.9km north	Greylag goose (non-breeding)
	Ramsar		Greylag goose (non-breeding)

[2] For both the SPA and Ramsar these are: breeding – common tern and osprey; and non-breeding - bar-tailed godwit, cormorant, curlew, goldeneye, goosander, oystercatcher, red-breasted merganser, redshank, scaup, teal, wigeon and waterfowl assemblage.

2.2.3 The results show that the Site does not form part of any statutory designated site for nature conservation with qualifying ornithological interests. The nearest such site is Loch Ashie SPA and SSSI, which is 9.3km from the Site and is designated for its non-breeding (passage) population of Slavonian grebe.

2.2.4 Regarding the greylag geese associated with the Inner Moray Firth, further desk study indicated that the large majority of foraging areas used by the geese that roost in the SPA are found on low-lying farmland adjacent to the coast (Mitchell (2012)). However, there are records of small numbers of greylag geese utilising fields in the strath around Loch Moy, to the northeast of the Site. Habitat within the Site itself comprises upland moorland on mostly steeply sloping ground, which is unsuitable foraging habitat for wintering geese.

Existing Ornithological Records

2.2.5 This section presents a summary of relevant ornithological records returned from the organisations listed in **Table 2.1**.

Highland Raptor Study Group

2.2.6 Highland RSG stated that they consider the part of the central Highlands in which the Site is located to be an area with a large concentration of wildlife crime incidents and for this reason they were not willing to share records held of Schedule 1 raptors in the vicinity of the Site.

RSPB Scotland

2.2.7 The RSPB provided a small number of records, which included records of Schedule 1 raptor species seen within 2km of the Site and all from 2012, comprising red kite (two records), goshawk (one record) and white-tailed eagle (one record); all were individuals with no evidence of breeding. A further white-tailed eagle record provided was of two birds seen more than 8km from the Site and recorded in 2013.

2.2.8 The RSPB data also included a record of a male capercaillie seen flying over the A9 within 2km of the Site in late 2021. This was a 'casual' sighting, with the forest here not one that is routinely surveyed by the RSPB.

Highland Biological Recording Group

2.2.9 The species records returned by HBRG related to ecological (non-avian) features. However, a non-statutory designated site was identified: Loch Ruthven RSPB reserve. The RSPB reserve mostly overlaps with Loch Ruthven SPA and SSSI (**Table 2.2**), but includes an additional small area of woodland and hill ground.

2.2.10 Forestry and Land Scotland

2.2.11 FLS confirmed that they considered capercaillie to be absent from their forests in the vicinity of the Site, with their last record being a female in forestry over 2.5km from the Site, which was recorded in 2004.

3 FIELD SURVEYS

3.1.1 In order to assess the potential effects of the Proposed Development upon ornithological features, detailed knowledge of bird populations, distributions and flight activity within the vicinity of the Site, has been derived from a programme of field surveys undertaken between 2022 and 2024.

3.1.2 The suite of baseline ornithology surveys undertaken was informed by expert knowledge and experience of bird habitat associations at comparable sites and locations in Scotland.

3.1.3 Field survey effort and methodologies were agreed with NatureScot through informal consultation. Details of consultation undertaken are provided within **Chapter 7: Ornithology**.

3.1.4 All field surveys have been completed by professional ornithologists named in **Annex 2**; all of whom are highly experienced in bird identification and are fully conversant in bird survey methodologies for proposed wind farm developments.

3.1.5 Survey visits were undertaken in weather conditions conducive to survey. Details of weather conditions were regularly recorded during survey, with this information summarised in **Annex 2**.

3.1.6 It should be noted that the study areas for each survey type were based on covering the contemporaneous development area that was proposed at the time of undertaking the baseline surveys, plus an appropriate surrounding buffer. These broadly match with the part of the Site containing turbines (plus surrounding buffers), as illustrated on **Figure 7.1**. Any limitations resulting from changes in project layout after the commencement of baseline surveys are described below.

3.1 Methodologies

3.1.1 The following baseline ornithological surveys have been undertaken:

- Vantage Point Flight Activity Surveys;
- Moorland Breeding Bird Surveys (MBBS);
- Schedule 1 Breeding Raptor Surveys; and
- Breeding Black Grouse Surveys.

Vantage Point Flight Activity Surveys

3.1.2 Vantage Point (VP) flight activity surveys were undertaken between September 2022 and August 2024, in reference to NatureScot guidance (SNH, 2017). For exceptions see **Section 3.2: Field Survey Limitations**. The surveys covered two non-breeding seasons (taken to be the period September to March, in 2022/23 and 2023/24) and two breeding seasons (taken to be the period April to August, in 2023 and 2024).

3.1.3 Appropriate VP locations were set up to provide the best possible visual coverage of the indicative turbine layout (at the time of survey commencement) and, as much as possible, a 500m surrounding buffer; whilst adopting the minimum number of VPs in order to obtain this coverage (in accordance with NatureScot guidance (SNH, 2017)).

3.1.4 VP locations were positioned at the edge of the turbine development area to minimise any potential disturbance caused by surveyors. The VPs were also offset from summits to reduce visibility of surveyors.

3.1.5 During the course of the baseline survey programme, the VPs used to undertake the flight activity surveys changed several times to better cover the Proposed Development, as the turbine layout evolved. When surveys commenced in September 2022, they were undertaken from two VP locations (VP1 and VP2) (**Figure 7.2a**). In February 2023, the two VPs were relocated (VPs 1a and 2a) and a third VP location (VP3) was introduced (**Figure 7.2b**), to improve coverage of the likely development area. However, reassessment of the associated viewsheds in April 2023 concluded that sufficient coverage could be obtained using two VPs if the locations were moved or used an altered viewing orientation: now VP1b and VP2b (**Figure 7.2c**). Following NatureScot comment that coverage of the 500m buffer to the west of the proposed turbine locations could be improved, the orientation of VP1b was altered with this new viewing orientation used from March 2024.

3.1.6 The locations of these VPs and the period during the baseline survey campaign during which each was used, is summarised in **Table 3.1**.

Table 3.1: Vantage point locations used during baseline surveys September 2022 to August 2024.

VP	Grid Reference	Orientation	Months Surveyed
1	NH 72601 32581	Northeast	September 2022 to January 2023
2	NH 76208 32545	West	September 2022 to January 2023
1a	NH 72662 33009	East	February and March 2023
2a	NH 75100 32837	Southwest	February and March 2023
3	NH 73889 32337	North	February and March 2023
1b (looking southeast)	NH 72527 32582	Southeast	April 2023 to February 2024
1b (looking northeast)	NH 72527 32582	Northeast	March 2024 to August 2024
2b	NH 76206 32544	Southwest	April 2023 to August 2024

3.1.7 The viewshed of each VP iteration and the time period during which it was surveyed have been used in the analysis of flight activity. However, for the purposes of determining overall survey effort, all hours completed at VP1, VP1a and VP1b are considered together and all hours completed at VP2, VP2a and VP2b are considered together.

3.1.8 It is acknowledged that changing VPs during the course of the baseline survey programme is best avoided, however the overall coverage of the turbine area was largely comparable throughout, despite the small changes made. The subsequent Collision Risk Modelling (CRM) accounts for these changes by filtering flights to appropriate VP locations and by using VP-specific survey effort (see **Technical Appendix 7.2: Collision Risk Model Analysis**).

3.1.9 Visible areas for each VP viewshed were determined using a Digital Elevation Model (DEM), based on an observer height of 1m and a 20m above ground offset, and were subsequently ground-truthed prior to use.

3.1.10 Limitations in survey coverage against guidance are discussed in **Section 3.2: Field Survey Limitations**. However, overall, coverage of the proposed turbine locations is considered to have been sufficient to determine baseline conditions.

3.1.11 NatureScot guidance (SNH, 2017) recommends 36 hours of survey effort per VP per season (breeding and non-breeding). The total survey effort (hours) completed during the two years of baseline surveys at 'VP1' (comprising VP1, VP1a and VP1b) and 'VP2' (comprising VP2, VP2a and VP2b) is presented in **Table 3.2**. Effort at VP3 is also included for completeness however, as described above, this VP location was ceased after two months when a rearrangement of the VP locations meant that it was no longer required.

3.1.12 **Table 3.2** shows that in each season the minimum of 36 hours per VP was reached, with the exception of 'VP1' during the first non-breeding season (September 2022 to March 2023). This was a result of wintery weather during December and January preventing access to Site. However, in the second non-breeding season (September 2023 to March 2024), 36 hours were exceeded.

Table 3.2: VP flight activity survey effort (hours) – September 2022 to August 2024.

VP	Year 1													
	Non-breeding Season								Breeding Season					
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total	Apr	May	Jun	Jul	Aug	Total
1	6	6	6	-	2.5									
1a						6	6	**32.5**						**36**
1b									6	6	6	12	6	
2	6	6	6	6	2.5									
2a						6	6	**38.5**						**36**
2b									6	6	6	12	6	
3						*6*	*6*	***12***						
VP	**Year 2**													
	Non-breeding Season								**Breeding Season**					
	Sep	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Total**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Total**
1b	6	6	6	6	6	6	6	**42**	9	6	6	9	6	**36**
2b	6	6	6	6	6	6	6	**42**	9	6	6	9	6	**36**

3.1.13 Flight lines were mapped for all target species passing through the surveyed viewsheds. Details of species, number of birds, flight height (in bands), duration and direction were noted on standardised recording forms and field plans.

3.1.14 The height bands used when recording target species during the flight activity surveys are summarised in **Table 3.3**. The use of height bands aimed to determine flight activity as being at, below, or above collision risk height, whilst acknowledging that final turbine specifications had not been decided at the time of survey completion.

3.1.15 **Table 3.3** shows that the height bands were changed during the course of the baseline surveys. This is accounted for in the subsequent CRM (see **Technical Appendix 7.2: Collision Risk Model Analysis**).

Table 3.3: Height bands used during the flight activity surveys September 2022 to August 2024.

Height Band	Time Period	
	September 2022 to January 2023	**February 2023 to August 2024**
1	0-15m	0-20m
2	15-30m	20-40m
3	30-50m	40-160m
4	50-200m	160-200m
5	>200m	>200m

3.1.17 Secondary species were noted in five-minute summary intervals, with the number of birds present and general behaviour recorded, in order to build an overall picture of relative activity. Secondary species were not mapped, in line with NatureScot guidance (SNH, 2017).

Moorland Breeding Bird Surveys

3.1.18 A moorland breeding bird survey (MBBS) following an adapted Brown and Shepherd (1993) methodology, but updated to include four survey visits as recommended by Calladine *et al*. (2009), was undertaken in the breeding seasons of 2023 and 2024, in accordance with NatureScot guidance (SNH, 2017).

3.1.19 The MBBS study area covered the development area current at that time, plus a surrounding 500m buffer (where access permissions allowed), as shown on **Figure 7.1**. The geography of the Site meant that the 500m buffer was visible from within the Site and the survey included regular scanning of the southern and western edges of the study area, where access was not possible. Only open habitats were covered by the survey, as guidance does not require inclusion of forested habitats (SNH, 2017).

3.1.20 Layout changes following completion of the MBBS have resulted in the Proposed Development not being fully located within the MBBS study area. This is discussed in **Section 3.2: Field Survey Limitations**.

3.1.21 Target species for the MBBS comprised breeding moorland and open country non-passerine species, typically waders, waterfowl, grouse and gulls, in accordance with NatureScot guidance (SNH, 2017). Any other species of note encountered during the course of the survey were also recorded. During surveys all observations of target species (seen or heard) were recorded onto a base map, with any evidence of breeding activity also noted (e.g. displaying, alarming, juvenile birds).

3.1.22 Four visits were undertaken between April and July in each survey year, with one survey visit being completed each month. Survey effort is summarised in **Table 3.4**. Each survey visit was completed by two surveyors covering different parts of the study area on the same day.

Table 3.4: Moorland Breeding Bird Survey effort summary.

Survey Visit	2023			2024		
	Date	Time (Start)	Time (Finish)	Date	Time (Start)	Time (Finish)
1	28th April	08:30	14:30	14th April	08:30	13:30
2	17th May	08:30	13:30	15th May	08:30	13:30
3	15th June	08:45	13:15	30th June	08:30	12:30
4	25th July	12:30	17:45	26th July	08:30	14:30

3.1.23 Following completion of the four survey visits, territory analysis was undertaken to estimate the number and location of apparent territories within the study area, using a cluster analysis method as outlined in Bibby *et al*. (2000). Details of the methodology for undertaking the territory analysis can be provided upon request.

Schedule 1 Breeding Raptor Surveys

3.1.24 Dedicated searches for breeding Schedule 1 listed raptors were conducted in both survey years (2023 and 2024), adopting species-specific survey advice from Hardey *et al*. (2013), in accordance with NatureScot guidance (SNH, 2017).

3.1.25 The study area comprised the development area current at that time and out to 2km, extended to 6km for eagle species (where access permissions allowed). Presence and breeding evidence were recorded for all Schedule 1 and Annex 1 listed raptor and owl species, where observed, including within the wider eagle study area. The raptor study areas are shown on **Figure 7.1**.

3.1.26 Surveys consisted of a combination of walkovers and short vantage point watches over suitable habitat features, to determine occupancy and any evidence of breeding behaviour. The surrounding buffer was surveyed by scanning from within the Site and by using public highways. This included drive around surveys using public roads to cover the 6km buffer, where available.

3.1.27 Survey effort is summarised in **Table 3.5**. In 2023 the surveys were undertaken between April and August and in 2024 the surveys were undertaken between March and July. Dates when more than one observer was out on the same date, covering different parts of the study area, are marked with an asterisk.

Table 3.5: Breeding Schedule 1 raptor survey effort summary.

2023			2024		
Date	**Start time**	**Finish time**	**Date**	**Start time**	**Finish time**
25th April	11:00	17:00	8th March*	08:30	14:00
27th April	09:15	15:15	29th March*	07:00	13:30
17th May*	13:30	16:30	12th April	07:05	13:05
26th May	08:15	14:15	24th April	11:05	14:05
8th June	08:30	14:30	7th May*	10:55	16:55
30th June	09:15	15:15	17th May	07:00	13:00
10th August	09:15	15:15	7th June	08:45	14:45
			11th June	17:15	20:15
			14th June	08:25	14:25
*Two surveyors covering different areas.			26th July	06:00	12:00

Breeding Black Grouse Surveys

3.1.28 Searches for black grouse lek sites were undertaken in 2023, with reference to species specific guidance detailed in Gilbert *et al*. (1998) and in accordance with NatureScot guidance (SNH, 2017).

3.1.29 The survey area comprised suitable habitats within the development area current at that time, and out to 1.5km (where access allowed), as shown in **Figure 7.1**. Where access was not possible, these areas were scanned from within the Site boundary or from public highways. It is considered unlikely that lekking birds within the 1.5km buffer would not have been detected (seen or heard) during the surveys.

3.1.30 Visits were undertaken in April and May to locate and count any black grouse lekking within the study area. As the habitats on Site were known ahead of survey, an earlier March visit to identify suitable black grouse habitats (as is recommended in guidance) was not required. On the April visit, all habitats considered suitable for a lek site were checked, with the aim of locating and counting any displaying males. The survey was undertaken again in May to increase the likelihood of detecting presence.

3.1.31 With no black grouse recorded during the dedicated surveys in 2023, nor during the course of other baseline surveys, it was concluded that black grouse are absent from the vicinity of the Site and the black grouse survey was not repeated in 2024.

3.1.32 Survey effort for the black grouse surveys is summarised in **Table 3.6**. Surveys were undertaken at dawn in fine weather conditions conducive to survey. Each visit consisted of two surveyors covering different parts of the study area.

Table 3.6: Black grouse survey effort summary (2023).

Month	Date	Start time	Finish time	Sunrise (Inverness)
April	26th	04:40	07:40	05:39
May	11th	04:10	07:10	05:04

3.2 Field Survey Limitations

3.2.1 As described above, layout changes have resulted in the study areas used during baseline surveys not completely covering the Proposed Development in accordance with guidance (SNH, 2017). However, for black grouse and breeding Schedule 1 raptors, the dedicated surveys included buffers that have meant that all turbine locations have been covered; albeit the surveyed buffer of the easternmost turbines was approximately 1km for black grouse (not the original 1.5km) and was approximately 1.5km for breeding raptors (not 2km) (**Figure 7.1**). This limitation is considered highly unlikely to have resulted in key species having been missed during these surveys.

3.2.2 For the MBBS, the layout changes mean that the easternmost turbine is located just outside the study area used, but by less than 100m (**Figure 7.1**). This is not considered to be a substantive limitation, as any target species recorded just outside the study area would have been noted as part of the survey, to aid in the territory analysis. Any territories of target species centred on this turbine would have also overlapped with the study area; with any target species in this area highly likely to have been encountered over the course of the four survey visits. It should also be noted that the results of the MBBS are an estimate of breeding wader numbers that allow a measure of relative abundance to be assessed, and will generally not produce exact numbers. As the part of the wind farm area not captured by the MBBS study area is of the same habitat as that which is located within it, these habitats are considered to have been adequately sampled by the survey, and it is highly unlikely that any records have been missed that would have altered the assessment of baseline conditions.

3.2.3 As well as changes to the layout of the Proposed Development post-survey, survey coverage was also affected by surveyor access permissions, which did not extend outside the Site boundary. For the MBBS this applied to the southern and westernmost parts of the study area. These areas were visible and readily scanned from within the Site. It is acknowledged that target species in the far edge of the study area may have been overlooked, however breeding territories of small species such as dunlin were recorded outside the Site (**Figure 7.5a**). The breeding bird assemblage in the study area is considered to have been determined sufficiently for target species to inform the assessment. The wider study area of the other surveys, particularly the 6km buffer applied for the eagle searches, includes some remote ground that it was not possible to access or observe during the baseline surveys; though such areas are sufficiently distant from the Site that no disturbance/ displacement impacts could be predicted for any breeding raptors overlooked in these locations. However, the results of the baseline surveys show that raptor territories were recorded in the wider area and, combined with the knowledge of golden eagle territories described in the GET Model Report, the data gathered are considered sufficient to inform the impact assessment.

3.2.4 The location and orientation of the VP viewsheds changed over the course of completing the flight activity surveys, as described in **Section 3.1: Methodologies** and illustrated on **Figures 7.2a - 7.2c**; with these changes taken into account in the CRM. The changes were made to best provide coverage of proposed turbine locations as the project evolved. All turbine locations associated with the Proposed Development were covered throughout the baseline survey period, with the exception of during the brief period of February and March 2023, when two turbine locations lay outside the viewsheds used at that time (**Figure 7.2b**). This is acknowledged as a limitation, however, the turbines affected received VP coverage in 22 of the 24 months (92%) of the baseline survey period and so are considered to have been adequately sampled. The February to March period was covered at all turbine locations in Year 2, with survey effort in the 2023/24 non-breeding season exceeding guidance (SNH, 2017).

3.2.5 NatureScot guidance (SNH, 2017) states that as well as covering turbine locations, a surrounding 500m buffer should also be visible. It was not possible to achieve this for all turbine locations but, overall, coverage was sufficient for undertaking the assessment. Turbine buffers within the turbine envelope achieved good coverage and the majority of the surrounding buffer outside the turbine envelope also received VP coverage. It should be noted that the collision risk model is not spatially explicit but rather calculates average flight activity rates within each viewshed that are then applied across the full collision risk area; therefore small gaps in coverage are taken into account.

3.2.6 The northern part of the Site in which the site access road would be located was not subject to dedicated baseline ornithology surveys, although all parts of the Site were located within the study areas for black grouse and breeding Schedule 1 raptor surveys (**Figure 7.1**). Although this part of the Site was not covered by MBBS, much of this area is plantation or open woodland and there is no requirement to undertake the survey in such habitats. It is acknowledged that nesting birds may be present along the route of the site access road but these would be identified through pre-construction surveys and implementation of relevant protection measures as part of standard embedded mitigation.

3.2.7 Poor weather conditions in the mid-winter period of the 2022/23 non-breeding season affected access to Site at this time, with this resulting in a small shortfall in survey effort at VP1 (32.5 hours completed, rather than the 36 hours required in guidance (SNH, 2017)). The months when survey effort was missed or reduced (December and January) represent a period of low flux in bird populations. Additionally, few birds can be expected to be encountered at this time of year in upland areas, especially when there is lying snow, as was the case at this time; and which is shown by the VP2 data of the same time period (no target or secondary species recorded in December 2022 during the six hours completed at VP2). Therefore, the reduced survey effort is considered not to have had a substantive impact on the data collected. Furthermore, in the second non-breeding season surveyed (2023/24), survey effort exceeded 36 hours at both VPs.

3.3 Results

Vantage Point Flight Activity Surveys

3.3.1 A summary of the target species recorded during the VP flight activity surveys is presented in **Table 3.7**. Note that for completeness all records are presented in this table, including flights which would not be at collision risk (i.e. flights above and below rotor swept height or that lie outside the rotor swept area of the proposed turbines). For a summary of 'at-risk' flights see **Table 3.8**. Note that the number of individuals presented is simply the sum of the number of birds recorded in each flight, but in some cases this may refer to the same bird seen more than once.

3.3.2 Full details of these records are presented in **Annex 3**.

3.3.3 Flight-lines for baseline Year 1 are illustrated on **Figure 7.4a** (raptor species) and **Figure 7.4b** (other species), and for Year 2 on **Figure 7.4c** (raptor species) and **Figure 7.4d** (other species).

Table 3.7: Flight activity survey results (all target species).

Species	No. of flights	No. of individuals
Non-breeding season year 1 (September 2022 to March 2023)		
Golden plover	6	73
Greylag goose	1	2
Peregrine	1	1
Red kite	11	15
Breeding season year 1 (April to August 2023)		
Curlew	1	1
Dunlin	9	11
Golden eagle	7	8
Golden plover	5	8
Hen harrier	2	2
Merlin	1	1
Pink-footed goose	1	64
Red kite	26	26
White-tailed eagle	6	6
Non-breeding season year 2 (September 2023 to March 2024)		
Golden eagle	3	3
Golden plover	3	38
Goshawk	1	1
Gyr falcon	4	4
Hen harrier	1	1
Pink-footed goose	11	679
Red kite	18	18
White-tailed eagle	5	7
Breeding season year 2 (April to August 2024)		
Golden plover	3	7
Red kite	26	28
White-tailed eagle	5	5

3.3.4 The purpose of the flight activity surveys is to determine potential collision risk of target species. Target species flights recorded outside the collision risk zone (CRZ) or not recorded at potential collision height (PCH) can be considered as not being at risk from collision and are excluded from the assessment. The identification of collision risk flights, including how CRZ and PCH have been defined in the assessment, is covered in **Technical Appendix 10.2: Collision Risk Model Analysis**.

3.3.5 Those target flights regarded as being at risk of collision (i.e. flights that passed through the CRZ within height bands that overlap with PCH) are summarised in **Table 3.8** (both seasons combined). The species for which CRM was undertaken are highlighted in bold in the table (see **Technical Appendix 10.2: Collision Risk Model Analysis**).

Table 3.8: Target species flight activity - 'at risk' flights

Species	Number of flights	Number of individuals	Total flight time (seconds)[3]
Curlew	1	1	221
Dunlin	4	5	800
Golden eagle	4	4	1,182
Golden plover	10	80	8,712
Greylag goose	1	2	276
Gyr falcon	1	1	75
Pink-footed goose	4	272	34,274
Red kite	53	56	11,386
White-tailed eagle	10	10	3,404

Moorland Breeding Bird Surveys

3.3.6 The MBBS and subsequent territory analysis produced estimates for the number of territories of target species present within the study area. These estimates are summarised in **Table 3.9**. The assemblage of breeding birds is considered to be typical for a managed moorland site in the central Highlands.

3.3.7 The locations of these territories, based on estimated central point, are illustrated on **Figure 7.5a** (2023) and **Figure 7.5b** (2024).

Table 3.9: Moorland Breeding Bird Survey Results

Species	No. of territories	
	2023	**2024**
Curlew	1	-
Dunlin	2	1
Golden plover	7	5
Red grouse	6	3
Snipe	2	-

Schedule 1 Breeding Raptor and Owl Surveys

3.3.8 The dedicated Schedule 1 raptor surveys, in conjunction with the other baseline surveys, produced the following results. Further details, including grid references of nest sites, can be found in **Technical Appendix 7.3: Confidential Ornithology**. Relevant records are illustrated on **Figure 7.6**.

Osprey

3.3.9 In 2024 a pair of ospreys was confirmed as breeding at a nest located over 750m from the Site. This distance therefore exceeds the buffer around an osprey nest recommended in guidance of 350-750m (Goodship & Furness, 2022) such that no disturbance would be expected to occur as a result of the

[3] Duration of each flight is multiplied by the number of individual birds and summed for each species. Times presented are those of the full duration of flightlines recorded, before apportioning time to 'at-risk'.

Proposed Development. Other osprey records include a sighting over potentially suitable nesting habitat (different to that above) more than 2km from the Site, but no evidence of breeding was recorded here. Within the Site there is no habitat considered favourable for nesting osprey.

Merlin

3.3.10 In 2024 a pair of merlins was determined to have bred over 3km from the Site, with aggressive behaviour recorded in June and two recently fledged juveniles recorded close by in July. This territory is located closer to the existing Glen Kyllachy Wind Farm than it would be to the Proposed Development. In 2023, a juvenile was recorded from the western part of the Site. There was no evidence of this bird originating from within the Site and it is thought to have dispersed from a territory in the wider area; perhaps in a similar area to that recorded in 2024 (outside the 2km study area).

Goshawk

3.3.11 In March 2024 a male goshawk was recorded undertaking a display flight over suitable habitat more than 2km from the Site and it is likely that this represents an occupied territory. It is possible that goshawk territories are present in the extensive plantation forestry to the north of the Site but no evidence was recorded of breeding within the 2km study area. The Site does not support habitat considered suitable for nesting goshawk.

Red kite

3.3.12 Although red kite was the most frequently recorded Schedule 1 raptor during baseline surveys, most records were of birds foraging rather than of birds displaying behaviour indicative of breeding. There was one record of a bird carrying food to a probable nest site, with this located more than 4km from the Site. Although no evidence of breeding was recorded elsewhere, frequent records and suitable habitat are present in the Moy area and in Strathnairn and breeding within these areas is possible. The Moy Valley is located within red kite core foraging range of 4km from the Site, whilst parts of Strathnairn are located within maximum foraging range of 6km (SNH, 2016), and so it is possible that at least some of the red kites recorded using the Site are breeding birds from the wider area. The Site itself is considered to hold habitat unlikely to be favourable for nesting and there was no evidence of any nests within potential disturbance distance of the Site (150-300m (Goodship and Furness, 2022)).

Golden eagle

3.3.13 Golden eagle was infrequently recorded during the dedicated raptor surveys, and some records referred to immature (non-breeding) birds. The only records of adults recorded during the dedicated surveys came from open ground west of the Site (on one date in 2023) and more than 3km from the Site (on one date in 2024). The infrequency of golden eagle records during all field surveys suggests that the Site is located outside the core territory of any occupied ranges. NatureScot guidance (SNH, 2016) states that golden eagles have a core range of 6km and a maximum range of up to 9km. See also the GET Model Report in **Technical Appendix 7.3: Confidential Ornithology**.

Peregrine

3.3.14 Evidence of possible breeding was recorded during the field surveys, with a pair of peregrines seen displaying, approximately 4km from the Site, in March 2024. In June 2024 another pair was recorded in a different location more than 4km from the Site, though no suitable nesting habitat exists at this location. The data suggest that peregrine likely breed within the wider area, but the species was recorded very infrequently in the vicinity of the Site, which does not support nesting locations suitable for peregrine.

Short-eared owl

3.3.15 In May 2023 a short-eared owl was recorded on the western edge of the Site during a black grouse survey. As short-eared owl is largely nocturnal or crepuscular (active at dusk and dawn) it is possible that this species was under-recorded during the baseline surveys. As May is within the core breeding season for this species, the sighting is taken to represent a bird on territory although, if nesting had been successful, it is considered highly likely that further sightings later in the season would have been recorded. Short-eared owl territories have a core radius of 2km and a maximum of 5km (SNH, 2016), so a nest within 2km of the Site is considered likely. If the nest had been within the Site boundary, it could be expected that it would have been detected during the MBBS.

Breeding Black Grouse Surveys

3.3.16 No black grouse were recorded during the dedicated surveys nor incidentally during the other survey types. It is concluded that black grouse are not present in the vicinity of the Site.

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ANNEX 1 – BIRD SPECIES SUMMARY

Table A1-1 provides a list of bird species referred to within **Chapter 7: Ornithology** and/or the associated Technical Appendices. Both common and scientific names are presented along with a summary of each species' conservation status using the following abbreviations:

- Red (high concern), amber (medium concern) or green (least concern) as listed on the Birds of Conservation Concern (BoCC) (Stanbury *et al*., 2021);
- Schedule 1 (Sch1/1A/A1) - species listed on Schedule 1, Schedule 1A or Schedule A1 of the Wildlife and Countryside Act (1981, as amended);
- SBL - species listed on the Scottish Biodiversity List; and
- Ann1 - species listed on Annex 1 of the Birds Directive (2009/147/EC);

Table A1.1: Summary of bird species referred to in the text.

Common name	Scientific Name	Conservation Status
Canada goose	*Branta canadensis*	-
Greylag goose	*Anser anser*	Amber
Pink-footed goose	*Anser brachyrhynchus*	Amber
Wigeon	*Mareca penelope*	Amber
Mallard	*Anas platyrhynchos*	Amber
Teal	*Anas crecca*	Amber
Tufted duck	*Aythya fuligula*	Green
Scaup	*Aythya marila*	Red; Sch1; SBL
Goldeneye	*Bucephala clangula*	Red
Goosander	*Mergus merganser*	Green
Red-breasted merganser	*Mergus serrator*	Amber
Red grouse	*Lagopus lagopus*	Amber; SBL
Capercaillie	*Tetrao urogallus*	Red; Sch1; SBL; Ann1
Black grouse	*Lyurus tetrix*	Red; SBL
Little grebe	*Tachybaptus ruficollis*	Green
Slavonian grebe	*Podiceps auritus*	Red; Sch1; SBL; Ann1
Oystercatcher	*Haematopus ostralegus*	Amber
Golden plover	*Pluvialis apricaria*	Green; SBL; Ann1
Curlew	*Numenius arquata*	Red; SBL
Bar-tailed godwit	*Limosa lapponica*	Amber; SBL; Ann1
Dunlin	*Calidris alpina*	Red; SBL
Snipe	*Gallinago gallinago*	Amber
Redshank	*Tringa totanus*	Amber
Common tern	*Sterna hirundo*	Amber; SBL; Ann1
Cormorant	*Phalacrocorax carbo*	Green
Osprey	*Pandion haliaetus*	Amber; Sch1; SBL; Ann1
Golden eagle	*Aquila chrysaetos*	Green; Sch1/1A/A1; SBL; Ann1
Sparrowhawk	*Accipiter nisus*	Amber

Goshawk	*Accipiter gentilis*	Green; Sch1
Hen harrier	*Circus cyaneus*	Red; Sch1/1A; SBL; Ann1
Red kite	*Milvus milvus*	Green; Sch1/1A; SBL; Ann1
White-tailed eagle	*Haliaeetus albicilla*	Amber; Sch1/1A/A1; SBL; Ann1
Common buzzard	*Buteo buteo*	Green
Short-eared owl	*Asio flammeus*	Amber; SBL; Ann1
Kestrel	*Falco tinnunculus*	Amber; SBL
Merlin	*Falco columbarius*	Red; Sch1; SBL; Ann1
Gyr falcon	*Falco rusticolus*	Sch1; Ann1
Peregrine	*Falco peregrinus*	Green; Sch1; SBL; Ann1
Raven	*Corvus corax*	Green
Skylark	*Alauda avensis*	Red; SBL
Meadow pipit	*Anthus pratensis*	Amber

ANNEX 2 – ORNITHOLOGY FIELD SURVEY EFFORT

The following codes were used to record weather conditions during surveys and are used in **Tables A2.1** to **A2.9:**

Wind Speed		**Rain**		**Cloud Cover**	
Calm	0	None	0	Out of 8 (oktas)	
Light air	1	Drizzle/mist	1		
Light breeze	2	Light showers	2	**Frost**	
Gentle breeze	3	Heavy showers	3	None	0
Moderate breeze	4	Heavy rain	4	Ground	1
Fresh breeze	5			All day	2
Strong breeze	6	**Visibility**			
Moderate gale	7	Poor	0	**Snow**	
Fresh gale	8	<1km	1	None	0
Strong gale	9	>1km	2	On site	1
Whole gale	10			High ground	2
Storm	11	**Cloud Height**			
		<150m	0		
Wind Direction		150-500m	1		
16 point compass		>500m	2		

The following field surveyors carried out the ornithology surveys: D. Burt (DB), P Carroll (PC), G Dunbar (GD), C. Griffin (CG), V. Hastie (VH), M. Lawson (ML), A. McNab (AM), J. Morton (JM), S. MacDonald (SM), J. Pass (JP), G. Riddoch (GR) and M. Wood (MW).

Table A2.1: Flight activity survey effort (September 2022 to August 2024).
Note: weather data was recorded by survey up to January 2023 and hourly from February 2023.

Date	VP	Start time	Finish time	VP hours	Wind speed	Wind direction	Rain	Cloud cover	Visibility	Frost	Snow
16/09/2022	1	09:10	12:10	3	3	N	0	7	2	0	0
16/09/2022	2	12:40	15:40	3	4	N	3	5	2	0	0
19/09/2022	1	13:55	16:55	3	2	NNW	0	8	2	0	0
19/09/2022	2	10:25	13:25	3	2	N	2	8	2	0	0
24/10/2022	1	11:20	14:20	3	4	SW	0	6	2	0	0
24/10/2022	1	14:50	17:50	3	4	SW	0	7	2	0	0
25/10/2022	2	09:30	12:30	3	4	SW	2	8	2	0	0
25/10/2022	2	13:00	16:00	3	4	W	2	8	2	0	0
23/11/2022	1	09:10	12:10	3	4	SSW	1	7	2	0	0
23/11/2022	1	12:40	15:40	3	4	SSW	0	6	2	0	0
25/11/2022	2	08:45	11:45	3	5	SW	4	6	2	0	0
25/11/2022	2	12:15	15:15	3	5	SW	0	3	2	0	0
10/12/2022	2	10:35	12:35	3	3	E	3	7	2	1	1
10/12/2022	2	13:05	15:05	3	4	NE	1	6	2	0	1
31/01/2023	1	09:40	12:10	2.5	4	NNW	0	8	2	0	1
31/01/2023	2	13:10	15:40	2.5	3	WNW	0	8	2	0	1
24/02/2023	1	11:00	14:00	3	4/3/4	NE/NNE/NNE	3/0/3	6/7/7	2/2/2	0/0/0	2/2/2
24/02/2023	1	14:30	17:30	3	4/3/4	NE/NNE/NNE	0/3/0	7/7/7	2/2/2	0/0/0	2/2/2
27/02/2023	3	08:30	11:30	3	4/4/4	E/ESE/E	0/0/1	8/8/8	2/2/2	0/0/0	0/0/0
27/02/2023	3	12:00	15:00	3	4/3/4	E/E/E	1/0/0	8/8/7	2/2/2	0/0/0	0/0/0
28/02/2023	2	11:00	14:00	3	3/3/4	SSE/SE/SE	0/0/0	8/8/8	1/2/2	0/0/0	0/0/0
28/02/2023	2	14:30	17:30	3	3/3/4	SSE/SSE/SSE	0/0/0	8/8/8	2/1/2	0/0/0	0/0/0
14/03/2023	2	08:10	11:10	3	4/3/3	NW/NW/NW	0/0/0	6/6/6	2/2/2	2/2/2	1/1/1
14/03/2023	2	11:40	14:40	3	3/4/4	NW/NW/NW	0/2/0	7/6/7	2/2/2	2/2/2	1/1/1
16/03/2023	1	07:35	10:35	3	2/2/3	E/E/SE	0/3/2	8/7/7	2/2/2	2/2/2	1/1/1
16/03/2023	1	11:05	14:05	3	3/3/3	SE/E/NE	2/2/3	8/8/8	2/2/2	2/2/2	1/1/1
17/03/2023	3	08:50	11:50	3	2/2/2	SE/E/E	0/0/0	1/1/1	2/2/2	0/0/0	0/0/0
17/03/2023	3	12:20	15:20	3	2/2/2	NE/E/E	0/0/0	1/1/1	2/2/2	0/0/0	0/0/0

Date	VP	Start time	Finish time	VP hours	Wind speed	Wind direction	Rain	Cloud cover	Visibility	Frost	Snow
26/04/2023	1	08:20	11:20	3	1/1/1	N/N/N	0/0/0	3/4/4	2/2/2	1/0/0	2/2/2
26/04/2023	1	11:50	14:50	3	2/1/2	NNW/WN/NWW	0/0/0	4/4/4	2/2/2	0/0/0	2/2/2
26/04/2023	2	07:45	10:45	3	1/1/2	N/NE/N	0/0/0	3/4/3	2/2/2	0/0/0	0/0/0
26/04/2023	2	11:15	14:15	3	2/2/2	NNE/N/N	0/0/0	4/4/4	2/2/2	0/0/0	0/0/0
11/05/2023	1	07:10	10:10	3	1/2/2	NE/NE/NE	0/0/0	1/4/6	2/2/2	0/0/0	0/0/0
15/05/2023	1	12:25	15:25	3	5/5/5	NW/NW/NW	0/0/0	6/7/7	2/2/2	0/0/0	0/0/0
11/05/2023	2	07:10	10:10	3	2/3/3	NE/NE/NW	0/0/0	2/4/6	2/2/1	0/0/0	0/0/0
15/05/2023	2	12:30	15:30	3	4/3/4	WNW/WNW/W	0/0/1	5/5/6	2/2/2	0/0/0	0/0/0
16/06/2023	1	05:45	08:45	3	2/2/3	NE/NE/NE	0/0/0	4/4/3	2/2/2	0/0/0	0/0/0
16/06/2023	1	09:15	12:15	3	3/3/3	NE/NE/NE	0/0/0	4/4/4	2/2/2	0/0/0	0/0/0
16/06/2023	2	05:45	08:45	3	3/3/3	W/W/W	0/0/0	3/4/3	2/2/2	0/0/0	0/0/0
16/06/2023	2	09:15	12:15	3	3/4/4	W/W/W	0/0/0	3/3/3	2/2/2	0/0/0	0/0/0
14/07/2023	1	07:20	10:20	3	2/3/3	SE/SE/SE	0/2/2	8/8/8	2/2/2	0/0/0	0/0/0
14/07/2023	1	10:50	13:50	3	4/4/4	ESE/SE/SE	2/0/0	7/8/8	2/2/2	0/0/0	0/0/0
24/07/2023	1	15:10	18:10	3	3/3/2	NNW/NNW/NW	0/0/0	6/7/7	2/2/2	0/0/0	0/0/0
24/07/2023	1	18:40	21:40	3	2/3/3	NW/WNW/WNW	0/0/0	8/8/8	2/2/2	0/0/0	0/0/0
14/07/2023	2	07:00	10:00	3	2/2/2	SSE/SE/SSE	0/2/2	8/8/8	2/2/2	0/0/0	0/0/0
14/07/2023	2	10:30	13:30	3	3/4/4	SE/SE/SE	2/2/2	7/7/8	2/2/2	0/0/0	0/0/0
24/07/2023	2	15:00	18:00	3	3/3/4	NW/NW/NW	0/0/0	7/7/8	2/2/2	0/0/0	0/0/0
24/07/2023	2	18:30	21:30	3	4/4/3	NW/NW/NW	0/0/0	8/8/8	2/2/2	0/0/0	0/0/0
11/08/2023	1	06:50	09:50	3	3/5/4	S/WSW/WSW	0/3/0	6/8/7	2/1/2	0/0/0	0/0/0
11/08/2023	1	10:20	13:20	3	5/5/4	WSW/WSW/WSW	0/0/0	6/3/2	2/2/2	0/0/0	0/0/0
11/08/2023	2	06:50	09:50	2	4/5/5	S/SW/SW	0/3/0	6/7/7	2/2/2	0/0/0	0/0/0
11/08/2023	2	10:20	13:20	2	4/4/4	SW/SW/SW	0/0/0	3/2/2	2/2/2	0/0/0	0/0/0
13/09/2023	1	09:05	12:05	3	2/3/3	S/S/S	0/0/0	5/7/8	2/2/2	0/0/0	0/0/0
13/09/2023	1	12:35	15:35	3	3/4/4	S/S/S	0/0/0	8/8/8	2/2/2	0/0/0	0/0/0
13/09/2023	2	09:05	12:05	3	3/4/3	SSW/SSW/S	0/0/0	7/8/8	2/2/2	0/0/0	00/0
13/09/2023	2	12:35	15:35	3	4/4/5	SSE/SSESSE	0/0/0	8/8/8	2/2/2	0/0/0	0/0/0
24/10/2023	1	09:30	12:30	3	1/2/2	E/E/E	0/0/1	8/8/8	2/2/1	0/0/0	0/0/0
24/10/2023	1	13:00	16:00	3	2/2/2	E/E/E	0/2/2	7/7/7	2/2/2	0/0/0	0/0/0
24/10/2023	2	09:30	12:30	3	1/1/2	ESE/ESE/ESE	1/1/0	8/8/8	1/1/2	0/0/0	0/0/0

Date	VP	Start time	Finish time	VP hours	Wind speed	Wind direction	Rain	Cloud cover	Visibility	Frost	Snow
24/10/2023	2	13:00	16:00	3	2/2/2	ESE/ESE/ESE	0/2/0	8/8/7	2/2/2	0/0/0	0/0/0
09/11/2023	1	07:50	10:50	3	3/2/3	SE/SE/SE	0/0/0	2/1/2	2/2/2	1/1/0	0/0/0
09/11/2023	1	11:20	14:20	3	2/2/2	SE/SE/SE	0/0/0	2/2/2	2/2/2	0/0/0	0/0/0
09/11/2023	2	07:50	10:50	3	3/3/3	S/S/S	0/0/0	2/2/3	2/2/2	0/0/0	0/0/0
09/11/2023	2	11:20	14:20	3	2/2/2	S/S/S	0/0/0	3/3/2	2/2/2	0/0/0	0/0/0
05/12/2023	1	09:10	12:10	3	0/0/0	-/-/-	0/0/0	7/6/5	2/2/2	2/2/2	1/1/1
05/12/2023	1	12:40	15:40	3	0/0/1	-/-/SE	0/0/0	4/5/6	2/2/2	2/2/2	1/1/1
05/12/2023	2	09:10	12:10	3	1/0/1	NNE/-/NE	0/0/0	7/3/4	2/2/2	2/2/2	1/1/1
05/12/2023	2	12:40	15:40	3	1/2/2	NE/NE/NE	0/0/0	5/3/6	2/2/2	2/2/2	1/1/1
11/01/2024	1	09:15	12:15	3	2/0/1	NNE/-/NE	0/1/1	7/8/7	2/2/1	1/1/1	2/2/2
11/01/2024	1	12:45	15:45	3	1/2/2	NE/NE/NE	1/0/0	7/8/8	1/2/1	1/1/1	2/2/2
11/01/2024	2	09:10	12:10	3	2/1/1	NE/NE/NE	0/0/1	7/8/8	2/2/1	2/2/2	1/1/1
11/01/2024	2	12:40	15:40	3	1/1/1	NE/NNE/NNE	1/0/0	8/7/8	1/1/1	2/2/2	1/1/1
13/02/2024	1	08:50	11:50	3	5/5/5	WSW/WSW/SW	0/0/0	3/5/7	2/2/2	1/1/0	1/1/1
13/02/2024	1	12:20	15:20	3	4/5/6	SW/SW/SW	0/0/0	5/3/4	2/2/2	0/0/0	1/1/1
13/02/2024	2	08:50	11:50	3	4/4/5	WSW/WSW/WSW	2/0/0	6/6/5	2/2/2	0/0/0	1/1/1
13/02/2024	2	12:20	15:20	3	5/5/4	WSW/WSW/WSW	0/0/0	3/2/2	2/2/2	0/0/0	1/1/1
04/03/2024	1	11:35	14:35	3	3/4/4	SE/SE/ESE	0/0/0	1/1/1	2/2/2	0/0/0	1/1/1
04/03/2024	1	15:05	18:05	3	4/3/2	SE/SE/SE	0/0/0	2/4/7	2/2/2	0/0/0	1/1/1
04/03/2024	2	11:30	14:30	3	3/3/3	SSE/SE/SE	0/0/0	3/4/3	2/2/2	0/0/0	1/1/1
04/03/2024	2	15:00	18:00	3	4/3/3	SE/SE/SE	0/0/0	4/4/3	2/2/2	0/0/0	1/1/1
15/04/2024	1	10:15	13:15	3	4/4/4	NW/NW/NW	0/0/0	8/8/8	2/2/2	0/0/0	0/0/0
15/04/2024	1	13:45	16:45	3	4/4/4	NW/NW/NW	1/1/1	8/8/8	2/2/2	0/0/0	0/0/0
22/04/2024	1	12:00	15:00	3	2/2/3	NNW/NNW/NNW	0/1/1	8/8/7	2/2/2	0/0/0	0/0/0
15/04/2024	2	10:30	13:30	3	4/4/4	NNW/NNW/NNW	0/0/1	8/8/8	2/2/2	0/0/0	0/0/0
15/04/2024	2	14:00	17:00	3	4/4/4	NW/NW/NW	1/0/1	8/8/8	2/2/2	0/0/0	0/0/0
22/04/2024	2	16:00	19:00	3	2/2/3	N/NNE/NE	1/0/0	8/6/5	2/2/2	0/0/0	0/0/0
16/05/2024	1	10:40	13:40	3	1/2/1	NNE/NNE/N	0/0/0	6/3/3	1/2/2	0/0/0	0/0/0
16/05/2024	1	14:10	17:10	3	2/3/2	N/NW/NW	0/0/0	2/3/3	2/2/2	0/0/0	0/0/0
16/05/2024	2	11:00	14:00	3	3/3/3	NE/NE/NE	0/0/0	8/5/2	1/2/2	0/0/0	0/0/0
16/05/2024	2	14:30	17:30	3	3/3/3	NE/NE/NE	0/0/0	2/1/1	2/2/2	0/0/0	0/0/0

Date	VP	Start time	Finish time	VP hours	Wind speed	Wind direction	Rain	Cloud cover	Visibility	Frost	Snow
10/06/2024	1	10:50	13:50	3	4/4/4	NW/NW/NW	2/3/0	8/8/8	2/2/2	0/0/0	0/0/0
10/06/2024	1	14:20	17:20	3	4/3/3	NW/NW/NW	2/3/0	8/8/8	2/2/2	0/0/0	0/0/0
10/06/2024	2	10:50	13:50	3	4/4/4	NW/NW/NW	3/3/0	8/8/8	2/2/2	0/0/0	0/0/0
10/06/2024	2	14:20	17:20	3	4/3/3	NW/NW/NW	2/3/0	8/8/8	2/2/2	0/0/0	0/0/0
19/07/2024	1	09:10	12:10	3	4/4/4	SE/SE/SSE	0/0/0	6/7/7	2/2/2	0/0/0	0/0/0
19/07/2024	1	12:40	15:40	3	4/4/4	SSE/SSE/SSE	0/0/0	8/8/8	2/2/2	0/0/0	0/0/0
22/07/2024	1	14:00	17:00	3	2/3/3	E/N/N	0/0/0	6/7/7	2/2/2	0/0/0	0/0/0
19/07/2024	2	09:10	12:10	3	5/5/5	SE/SSE/SSE	0/0/0	6/7/7	2/2/2	0/0/0	0/0/0
19/07/2024	2	12:40	15:40	3	5/5/5	SSE/SSE/SSE	0/1/0	7/8/7	2/2/2	0/0/0	0/0/0
22/07/2024	2	14:00	17:00	3	2/1/2	SSE/SSE/ENE	0/0/0	8/8/8	2/2/2	0/0/0	0/0/0
11/08/2024	1	08:00	11:00	3	2/2/2	SW/SW/SW	0/0/0	4/5/6	2/2/2	0/0/0	0/0/0
11/08/2024	1	11:30	14:30	3	2/2/2	SW/SW/SW	0/0/0	6/5/4	2/2/2	0/0/0	0/0/0
10/08/2024	2	08:00	11:00	3	3/4/4	WSW/WSW/WSW	0/0/0	4/4/6	2/2/2	0/0/0	0/0/0
10/08/2024	2	11:30	14:30	3	4/4/4	WSW/WSW/WSW	2/0/-	7/8/6	2/2/2	0/0/0	0/0/0

Table A2.2: MBBS effort Year 1 (2023)

Date	Surveyor	Start Time	Finish time	Wind speed	Wind direction	Rain	Cloud cover	Visibility
28/04/2023	JM	08:30	13:00	1/2/2/3/2	NNE/NNE/NNE/NE/NE	0/0/0/2/0	3/4/6/6/5	2/2/2/2/2
28/04/2023	VH	08:30	14:30	2/3/3/3/3/3	NW/NNW/NW/NW/NW/NW	0/0/0/2/0/0	7/7/7/7/6/6	0/0/0/0/0/0
17/05/2023	DB	08:30	13:30	3/3/3/3/3	S/S/SSW/S/SSW	0/0/0/0/0	8/8/7/8/7	2/2/2/2/2
17/05/2023	GD	08:30	13:30	4/4/4/4/4	W/W/W/W/W	0/0/0/0/0	5/6/8/8/8	2/2/2/2/2
15/06/2023	GD	08:45	13:15	3/3/3/3/3	SE/SE/SE/S/S	0/0/0/0/0	2/2/2/1/2	2/2/2/2/2
15/06/2023	DB	08:45	13:15	3/3/3/3/3	SE/SSE/SE/SE/S	0/0/0/0/0	2/2/2/2/2	2/2/2/2/2
25/07/2023	GD	12:30	17:30	3/3/3/3/3	N/N/N/N/N	0/0/2/0/0	8/7/8/7/7	2/2/2/2/2
25/07/2023	DB	12:45	17:45	3/3/3/3/3	N/N/N/N/N	0/0/2/0/0	8/7/8/7/7	2/2/2/2/2

Table A2.3: MBBS effort Year 2 (2024)

Date	Surveyor	Start Time	Finish time	Wind speed	Wind direction	Rain	Cloud cover	Visibility
14/04/2024	GM	08:30	13:30	3/4/3/3/4	SW/SW/SW/SW/SW	0/0/0/0/0	2/5/8/8/8	2/2/2/2/2
14/04/2024	CG	08:30	13:30	3/4/4/3/3	SW/SW/SW/SW/SW	0/0/0/0/0	2/4/7/8/8	2/2/2/2/2
15/05/2024	JP	08:30	13:30	3/3/3/3	SSW/SSW/SSW/SSW	0/0/0/0	1/0/0/0	2/2/2/2
15/05/2024	JM	08:30	13:30	3/2/2/2/2	S/S/SSE/SSE/SSE	0/0/0/0/0	5/3/3/3/4	2/2/2/2/2
30/06/2024	JP	08:30	12:30	4/4/4/4	WNW/WNW/WNW/WNW	0/0/0/0	8/8/8/8	2/2/2/2
30/06/2024	CG	08:30	12:30	4/4/4/4	WNW/WNW/WNW/WNW	0/0/0/0	8/8/8/8	2/2/2/2
26/07/2024	ML	08:30	14:30	4/4/3/3/3/3	WSW/WSW/WSW/WSW/WSW/WSW	0/0/0/0/0/2	3/4/5/5/6/6	2/2/2/2/2/2
26/07/2024	SM	08:30	14:30	4/4/4/4/4/4	WSW/WSW/WSW/WSW/WSW/WSW	0/0/0/0/0/2	2/4/6/6/6/6	2/2/2/2/2/2

Table A2.4: Annex 1 & Schedule 1 breeding raptor and owl survey effort Year 1 (2023)

Date	Surveyor	Start time	Finish time	Wind speed	Wind direction	Rain	Snow
25/04/2023	VH	11:00	17:00	3/3/2/3/3/3	NNW/NNW/NNW/NNW/NNW/NNW	0/2/0/2/0/0	0/1/1/1/1/1
27/04/2023	VH	09:15	15:15	4/3/3/3/3/4	SW/SW/SW/SW/SW/SW	3/2/2/1/1/2	1/0/0/0/0/0
17/05/2023	DB	13:30	16:30	4/4/5	SSW/SSW/SSW	0/0/1	0/0/0
17/05/2023	GD	13:30	16:30	4/4/4	W/W/W	0/0/2	0/0/0
26/05/2023	PC	08:15	14:15	3/3/3/3/3/3	WNW/WNW/W/W/W/W	0/0/0/0/0/0	0/0/0/0/0/0
08/06/2023	PC	08:30	14:30	2/3/3/3/3/3	ENE/ENE/ENE/ENE/ENE/ENE	0/0/0/0/0/0	0/0/0/0/0/0
30/06/2023	ML	09:15	15:15	4/4/4/3/1/1	SW/SW/SW/SW/SW/SW	0/0/0/0/2/0	0/0/0/0/0/0
10/08/2023	SM	09:15	15:15	1/1/1/1/3/3	SSE/NNE/NW/E/SW/SWE	0/0/0/0/0/0	0/0/0/0/0/0

Table A2.5: Annex 1 & Schedule 1 breeding raptor and owl survey effort Year 2 (2024)

Date	Surveyor	Start time	Finish time	Wind speed	Wind direction	Rain	Snow
08/03/2024	ML	08:30	14:00	3/3/3/3/4/3	ENE/ENE/E/E/E/E	6/7/7/7/5/7	0/0/0/0/0/0
08/03/2024	JM	08:30	14:00	2/2/2/3/3/3	ESE/ESE/E/E/ENE/ENE	0/0/0/0/0/0	0/0/0/0/0/0
29/03/2024	JM	07:10	13:10	1/2/2/2/2/3	NE/NE/SSW/SSW/SW/SW	0/0/0/0/0/0	2/2/2/2/2/2
29/03/2024	DB	07:00	13:00	1/2/3/4/4/4	W/SW/SW/SW/SW/SW	0/0/0/0/0/0	1/1/1/1/1/1
29/03/2024	AM	10:30	13:30	1/2/2	W/W/W	0/0/0	0/0/0

Date	Surveyor	Start time	Finish time	Wind speed	Wind direction	Rain	Snow
12/04/2024	AM	07:05	13:05	3/3/3/3/3/3	W/W/WSW/WSW/WSW/WSW	0/0/0/0/0/0	0/0/0/0/0/0
24/04/2024	SM	11:05	14:05	3/3/3	NW/NW/NW	0/0/0	0/0/0
10/05/2024	SM	10:55	16:55	2/2/2/3/3/3	E/E/ESE/ESE/ESE/ESE	0/0/0/0/0/0	0/0/0/0/0/0
07/05/2024	ML	10:55	16:55	2/2/2/2/2/2	E/ESE/ESE/ESE/ESE/ESE	0/0/0/0/0/0	0/0/0/0/0/0
17/05/2024	GD	07:00	13:00	3/3/4/4/4/4	E/E/E/E/E/E	0/0/0/0/0/0	0/0/0/0/0/0
07/06/2024	JM	08:45	14:45	2/2/3/3/2/2	WSW/WSW/W/NW/NW/NW	0/0/1/0/0/0	0/0/0/0/0/0
11/06/2024	AM	17:15	20:15	3/3/3	N/N/N	0/0/2	0/0/0
14/06/2024	ML	08:25	14:25	1/2/2/2/3/3	SW/SW/SW/SW/SW/SW	0/0/0/0/0/0	0/0/0/0/0/0
14/06/2024	SM	08:25	14:25	1/2/2/3/3/3	WSW/SW/SW/SW/W/W	0/0/0/0/0/2	0/0/0/0/0/0
26/07/2024	GD	06:00	12:00	3/3/3/3/4/4	SE/SE/SE/SE/SE/SE	0/0/0/0/0/0	0/0/0/0/0/0

Table A2.6: Black grouse survey effort Year 1 (2023)

Date	Surveyor	Start time	Finish time	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
26/04/2023	JM	04:40	07:40	0/0/0	-/-/-	0/0/0	4/5/6	2/2/2	2/2/2	1/1/1	2/2/2
26/04/2023	VH	04:40	07:40	1/1/2	N/NW/N	0/0/0	7/6/4	2/2/2	2/2/2	1/1/1	0/0/0
11/05/2023	MW	04:10	07:10	0/0/0	-/-/-	0/0/0	1/1/1	2/2/2	2/2/2	0/0/0	0/0/0
11/05/2023	JM	04:10	07:10	0/1/2	-/NE/NE	0/0/0	1/1/2	1/1/1	2/2/2	0/0/0	0/0/0

ANNEX 3 – VP FLIGHT ACTIVITY SURVEYS: TARGET SPECIES FLIGHTS

Tables A3.1 and **A3.2** presents details of target species flight lines recorded during VP surveys undertaken between September 2019 and August 2021.

The species, number of birds, total flight time (in seconds) and duration spent at each height band (HT) is presented. Note that the flights presented refer to all target species flights recorded, and not just those flights which are identified as being 'at collision risk' from the Proposed Development.

British Trust for Ornithology (BTO) codes[4] used are: ***GJ** – Greylag goose, **PG** – Pink-footed goose, **DN** – Dunlin, **GP** – Golden plover, **Cu** - Curlew, **EA** – Golden eagle, **WE** – White-tailed eagle, **GI** – Goshawk, **HH** – Hen harrier, **KT** – Red kite, **ML** – Merlin, **PE** – Peregrine, and **YF** – Gyr falcon.*

Table A3.1: Target species flight activity (September 2022 to August 2024)

Date	VP	Species	Min.no	start time	duration	HB1	HB2	HB3	HB4	HB5
16/09/2022	1	KT	1	10:51:00	97	97				
16/09/2022	1	KT	2	10:54:00	136	136				
16/09/2022	1	KT	3	10:59:00	100	60	40			
16/09/2022	1	KT	1	11:47:00	277	15	60	60	142	
16/09/2022	1	KT	1	12:09:00	141	90	30	21		
16/09/2022	2	PE	1	13:06:00	449				449	
16/09/2022	2	KT	2	13:44:00	200		15	105	80	
19/09/2022	2	KT	1	14:09:00	56		15	41		
24/10/2022	1	KT	1	15:58:00	133	120	13			
25/10/2022	2	KT	1	11:17:00	238	180	58			
25/10/2022	2	KT	1	13:46:00	193	193				
24/02/2023	1	GP	11	15:19	180	15	60	105	0	0
24/02/2023	1	GP	11	15:35	225	0	45	180	0	0
27/02/2023	3	GP	12	14:09	163	0	0	0	163	0
28/02/2023	2	KT	1	15:48	132	0	0	132	0	0

[4] 'BTO Species Codes' Available at: https://www.bto.org/sites/default/files/u16/downloads/forms_instructions/bto_bird_species_codes.pdf (Accessed January 2025).

Date	VP	Species	Min.no	start time	duration	HB1	HB2	HB3	HB4	HB5
14/03/2023	2	GJ	2	10:42	138	0	0	0	138	0
17/03/2023	3	GP	13	10:21	142	0	0	0	0	142
17/03/2023	3	GP	13	10:48	111	111	0	0	0	0
17/03/2023	3	GP	13	14:03	128	128	0	0	0	0
26/04/2023	1	KT	1	11:18	98	0	38	60	0	0
26/04/2023	1	GP	1	12:40	16	16	0	0	0	0
26/04/2023	1	KT	1	12:42	259	0	34	225	0	0
26/04/2023	1	PG	64	13:02	125	0	0	50	75	0
26/04/2023	2	CU	1	09:23	221	0	0	45	30	146
26/04/2023	2	KT	1	11:16	290	20	105	75	90	0
26/04/2023	2	KT	1	12:15	193	0	88	105	0	0
15/05/2023	1	EA	1	14:32	835	465	270	100	0	0
15/05/2023	1	KT	1	14:44	28	0	28	0	0	0
15/05/2023	1	KT	1	15:18	236	180	56	0	0	0
15/05/2023	2	KT	1	12:52	44	0	14	30	0	0
15/05/2023	2	KT	1	13:20	93	45	48	0	0	0
15/05/2023	2	KT	1	14:32	36	0	36	0	0	0
16/06/2023	1	DN	1	06:21	95	95	0	0	0	0
16/06/2023	1	GP	1	06:24	110	50	60	0	0	0
16/06/2023	1	DN	1	06:33	90	90	0	0	0	0
16/06/2023	1	DN	1	07:18	90	90	0	0	0	0
16/06/2023	1	DN	1	07:53	200	80	120	0	0	0
16/06/2023	1	DN	2	07:56	90	90	0	0	0	0
16/06/2023	1	DN	1	08:02	40	40	0	0	0	0
16/06/2023	1	KT	1	08:31	560	0	50	225	195	90
16/06/2023	1	GP	1	09:21	230	15	45	170	0	0
16/06/2023	1	EA	1	09:23	100	0	55	45	0	0
16/06/2023	1	DN	1	09:28	160	70	90	0	0	0
16/06/2023	1	DN	2	09:33	150	60	90	0	0	0
16/06/2023	1	KT	1	09:40	490	0	70	270	150	0
16/06/2023	1	KT	1	09:51	320	0	15	180	125	0

Date	VP	Species	Min.no	start time	duration	HB1	HB2	HB3	HB4	HB5
16/06/2023	1	EA	2	10:04	260	0	0	0	0	260
16/06/2023	1	ML	1	10:04	260	0	0	0	0	260
16/06/2023	1	KT	1	10:17	280	0	0	165	115	0
16/06/2023	1	KT	1	10:21	190	0	30	160	0	0
16/06/2023	1	HH	1	10:24	95	20	45	30	0	0
16/06/2023	1	WE	1	10:25	970	0	0	735	225	10
16/06/2023	1	DN	1	11:18	140	50	90	0	0	0
16/06/2023	1	KT	1	11:35	200	0	0	0	110	90
16/06/2023	2	WE	1	10:12	131	0	15	45	30	41
16/06/2023	2	WE	1	10:38	257	2	90	135	30	0
16/06/2023	2	KT	1	10:44	184	0	64	120	0	0
16/06/2023	2	WE	1	10:50	343	0	15	45	45	238
14/07/2023	1	KT	1	11:22	30	0	30	0	0	0
14/07/2023	1	KT	1	12:28	120	0	75	45	0	0
14/07/2023	2	WE	1	09:22	45	0	0	45	0	0
14/07/2023	2	KT	1	11:11	420	30	285	105	0	0
14/07/2023	2	KT	1	11:23	135	0	135	0	0	0
14/07/2023	2	KT	1	12:44	90	0	60	30	0	0
14/07/2023	2	KT	1	13:14	60	0	60	0	0	0
24/07/2023	1	EA	1	16:45	51	51	0	0	0	0
24/07/2023	1	EA	1	16:47	27	27	0	0	0	0
24/07/2023	1	EA	1	16:51	85	0	0	85	0	0
24/07/2023	1	WE	1	18:01	94	94	0	0	0	0
24/07/2023	2	KT	1	15:18	76	0	0	76	0	0
11/08/2023	1	HH	1	09:47	137	137	0	0	0	0
11/08/2023	1	GP	2	11:31	20	20	0	0	0	0
11/08/2023	1	GP	3	11:40	15	15	0	0	0	0
11/08/2023	1	EA	1	12:47	198	0	63	135	0	0
11/08/2023	1	KT	1	12:50	321	30	261	30	0	0
11/08/2023	1	KT	1	13:04	399	0	0	399	0	0
11/08/2023	2	KT	1	12:56	62	17	45	0	0	0

Date	VP	Species	Min.no	start time	duration	HB1	HB2	HB3	HB4	HB5
13/09/2023	1	PG	50	09:37	162	0	0	162	0	0
13/09/2023	1	PG	65	10:01	119	0	0	0	0	119
13/09/2023	1	KT	1	11:30	31	31	0	0	0	0
13/09/2023	1	PG	80	11:33	158	0	0	0	0	158
13/09/2023	1	KT	1	12:55	52	0	30	22	0	0
13/09/2023	1	KT	1	13:07	196	136	60	0	0	0
13/09/2023	1	WE	1	13:35	108	33	45	30	0	0
13/09/2023	1	WE	1	13:41	50	50	0	0	0	0
13/09/2023	1	PG	108	15:28	103	0	0	60	30	13
13/09/2023	1	PG	70	15:32	65	0	0	0	0	65
13/09/2023	2	PG	48	09:24	48	0	0	48	0	0
13/09/2023	2	PG	50	09:35	141	0	0	30	105	6
13/09/2023	2	PG	65	10:03	199	0	0	0	0	199
13/09/2023	2	PG	47	10:21	126	0	0	0	0	126
13/09/2023	2	KT	1	11:48	77	0	0	77	0	0
13/09/2023	2	KT	1	11:54	363	0	138	225	0	0
13/09/2023	2	PG	75	12:37	214	0	0	0	214	0
13/09/2023	2	KT	1	13:04	177	0	0	75	60	42
13/09/2023	2	WE	1	13:29	248	83	60	105	0	0
13/09/2023	2	PG	21	14:07	140	0	0	0	0	140
13/09/2023	2	KT	1	15:31	132	0	0	132	0	0
24/10/2023	1	KT	1	11:00	15	15	0	0	0	0
24/10/2023	1	GP	9	11:02	35	0	30	5	0	0
24/10/2023	1	GP	1	13:58	10	10	0	0	0	0
09/11/2023	1	YF	1	10:22	63	63	0	0	0	0
09/11/2023	1	KT	1	11:45	203	30	38	135	0	0
09/11/2023	1	KT	1	12:17	18	0	18	0	0	0
09/11/2023	2	KT	1	08:39	89	89	0	0	0	0
09/11/2023	2	YF	1	10:30	19	19	0	0	0	0
09/11/2023	2	YF	1	10:37	75	60	15	0	0	0
09/11/2023	2	YF	1	10:47	62	62	0	0	0	0

Date	VP	Species	Min.no	start time	duration	HB1	HB2	HB3	HB4	HB5
09/11/2023	2	KT	1	13:03	153	108	45	0	0	0
09/11/2023	2	KT	1	14:01	327	327	0	0	0	0
05/12/2023	1	GI	1	13:57	133	133	0	0	0	0
05/12/2023	2	KT	1	09:54	245	140	105	0	0	0
05/12/2023	2	KT	1	14:24	356	135	150	71	**0**	0
05/12/2023	2	HH	1	15:01	388	388	0	0	0	0
13/02/2024	1	WE	3	12:51	142	0	0	22	45	75
13/02/2024	1	EA	1	13:08	514	514	0	0	0	0
13/02/2024	1	EA	1	13:24	162	45	117	0	0	0
13/02/2024	1	EA	1	13:36	258	0	0	120	105	33
04/03/2024	1	KT	1	12:43	156	15	75	66	0	0
04/03/2024	1	WE	1	12:52	371	60	90	150	45	26
04/03/2024	1	GP	28	13:28	47	32	15	0	0	0
04/03/2024	2	KT	1	12:56	87	87	0	0	0	0
04/03/2024	2	KT	1	14:09	110	65	45	0	0	0
22/04/2024	1	KT	1	12:02	205	0	180	25	0	0
22/04/2024	1	KT	2	12:21	230	30	105	95	0	0
22/04/2024	1	KT	1	12:24	70	15	55	0	0	0
22/04/2024	1	GP	1	12:40	0	0	0	0	0	0
22/04/2024	1	KT	1	13:18	90	15	45	30	0	0
22/04/2024	1	KT	1	14:09	82	7	60	15	0	0
22/04/2024	1	GP	3	14:17	50	0	0	50	0	0
15/04/2024	2	KT	1	13:05	246	0	0	246	0	0
15/04/2024	2	KT	1	14:15	235	70	135	30	0	0
15/04/2024	2	KT	2	16:20	156	0	120	36	0	0
22/04/2024	2	GP	2	16:02	50	0	50	0	0	0
22/04/2024	2	GP	2	16:08	40	0	40	0	0	0
22/04/2024	2	KT	1	17:21	620	30	360	230	0	0
16/05/2024	1	KT	1	15:51	96	66	30	0	0	0
16/05/2024	2	KT	1	12:58	271	0	46	150	75	0
16/05/2024	2	WE	1	14:40	141	0	0	0	36	105

Date	VP	Species	Min.no	start time	duration	HB1	HB2	HB3	HB4	HB5
10/06/2024	1	KT	1	11:40	288	15	108	165	0	0
10/06/2024	1	KT	1	13:13	324	30	60	234	0	0
10/06/2024	1	KT	1	14:31	247	202	45	0	0	0
10/06/2024	2	KT	1	12:02	238	178	60	0	0	0
10/06/2024	2	KT	1	14:26	55	0	55	0	0	0
22/07/2024	1	KT	1	15:49	40	0	10	30	0	0
22/07/2024	1	WE	1	15:50	238	0	0	0	163	75
22/07/2024	1	KT	1	15:51	38	0	0	0	0	38
19/07/2024	2	KT	1	12:57	39	0	15	24	0	0
22/07/2024	2	KT	1	15:12	105	0	45	60	0	0
23/07/2024	2	WE	1	15:47	138	0	0	0	123	15
24/07/2024	2	WE	1	15:47	686	0	0	0	671	15
25/07/2024	2	KT	1	16:21	128	0	30	98	0	0
11/08/2024	1	WE	1	11:51	430	0	0	255	175	0
11/08/2024	1	KT	1	12:49	85	0	60	25	0	0
11/08/2024	1	KT	1	13:54	235	0	75	160	0	0
11/08/2024	1	KT	1	13:58	230	0	0	230	0	0
11/08/2024	1	KT	1	14:02	100	0	60	40	0	0
10/08/2024	2	KT	1	11:42	565	0	130	435	0	0