Environmental Impact Assessment Report

Beinneun 2 Wind Farm

Volume 3

Technical Appendix A7.1: Ornithology Baseline Data

Document prepared by Envams Ltd and RPS Tetra Tech for Beinneun 2 Ltd

July 2025

BEINNEUN 2 WIND FARM

Technical Appendix A7.1 - Ornithology Baseline Data

ECO20797R
01 July 2025

rpsgroup.com

Document status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
Draft	Technical Appendix				28/11/24
Final	Technical Appendix				28/06/25

Approval for issue

16 July 2025

Prepared by:

RPS Tetra Tech

Floor 3 East, Mercantile Chambers,
53 Bothwell Street
Glasgow, G2 6TS

Prepared for:

Beinneun 2 Ltd.

C/O Shepherd & Wedderburn LLP
Octagon Point
5 Cheapside, London, EC2V 6AA

Contents

Tables

Figures

The following Figures are included in **Technical Appendix A7.2: Ornithology Figures**, which should be referred to in conjunction with this Technical Appendix.

Figure 7.1: Site Layout
Figure 7.2: Site Context in Relation to Natural Heritage Future Zone Boundary (NHFZ) and Special Protected Areas (SPAs)
Figure 7.3: Site Context in Relation to SPAs and SSSIs
Figure 7.4: Ornithological survey areas
Figure 7.5: Vantage point locations and viewsheds
Figure 7.6: Flight Activity (Vantage Point) Survey Results – Year 1 Breeding Season (May-August 2023)
Figure 7.7: Flight Activity (Vantage Point) Survey Results – Year 1 Non-Breeding Season (September-March 2024)
Figure 7.8: Flight Activity (Vantage Point) Survey Results – Year 2 Breeding Season (April-August 2024)
Figure 7.9: 2023 Breeding raptor survey results
Figure 7.10: 2024 Breeding Raptor and Targeted Eagle Survey Results
Figure 7.11: Moorland Breeding Birds Results (April-July 2023)
Figure 7.12: Moorland Breeding Birds Results (April-July 2024)
Figure 7.13: Golden Eagle Topography Model

Appendices

Appendix A Latin Names of Bird Species Included in this Report

1 INTRODUCTION

1.1 Applicant and Agent

1.1.1 Beinneun 2 Ltd ("the Applicant") is preparing an application for Beinneun 2 Wind Farm ("the Development") situated approximately 5 km northwest of Invergarry and approximately 10 km west of Fort Augustus in the Highland region ("the Site"). The Development will include up to 19 additional wind turbines of up to 200 m in tip height. The application includes associated infrastructure such as hardstanding areas, transformers, access tracks, cabling, a substation, temporary construction compound, borrow pits, a battery energy storage system, and an anemometry mast.

1.1.2 This Technical Appendix of the Environmental Impact Assessment (EIA) Report describes the ornithology survey methodologies undertaken and presents baseline results for 2023 and 2024 ornithology surveys. It also sets out the detail of the collision risk modelling used to assess the potential effects on selected bird species as a result of the Development.

1.1.3 RPS, a TetraTech Company (RPS), is an environmental consultancy working on behalf of the Applicant for the Development.

1.2 Location and Infrastructure

1.2.1 The Site is situated in Invergarry, Highland, Scotland, PH35 4HR centred approximately on grid reference **NH 23398 05392. Figure 7.1** shows the Site Location Plan.

1.2.2 The Site is located approximately 5 km northwest of Invergarry and 10 km west of Fort Augustus. There are a number of smaller groups of houses in this area including those at Faichem (5.9 km), Munerigie (3.8 km), and Inchlaggan (3.9 km). Generally, the immediate area to the north and west of the turbine envelope is sparsely populated.

1.2.3 The area within and surrounding the Site is dominated by upland heath and mire communities including blanket bog, wet heath, dry heath and montane heath. The Site lies in the Northern Highlands Natural Heritage Future Zone (NHFZ) (**Figure 7.2**).

1.2.4 The Development, illustrated in **Figure 7.1**, would consist of the following principal components (see the EIA Report, Chapter 4, Development Description, for more details):

- Up to 19 wind turbines, with a maximum tip height of up to 200 m;
- Associated foundations and crane hardstandings at each wind turbine location;
- Access tracks linking the turbine locations comprising of 23.8 km of new tracks;
- Battery Energy Storage System (BESS) compound containing approximately 27 battery containers;
- One meteorological mast;
- Network of underground cabling;
- New substation compound;
- One construction and storage compound; and
- Access to the Site will be taken from the west of the Site from the A87 at National Grid Reference (NGR) 219586, 806801.

1.2.5 The Development would be time-limited to 40 years from the first date of final commission. The construction phase would last approximately 18 months.

1.2.6 The Site encloses approximately 1,154 hectares (ha) of open moorland. The Site lies 150 m to 670 m Above Ordnance Datum (AOD), while the ground on which the proposed turbines will sit varies in height between 400 m and 600 m AOD.

1.3 Aims of Technical Appendix

1.3.1 This Technical Appendix describes the ornithology interests in and around the Site. Specifically, it presents the methods, results and conclusions of an ornithology desk study and a series of field surveys carried out in 2023 and 2024 The information presented in this Technical Appendix has been used to inform the Environmental Impact Assessment (EIA) (CIEEM, 2018) detailed in EIA Report Chapter 7, Ornithology, for the Development.

1.3.2 The broad aim of the desk study and ornithology surveys was to characterise the bird assemblage present in and around the Site boundary. Another more specific aim was to identify if any of the following were present:

- Habitats supporting breeding, passage or wintering birds that are a qualifying interest of any designated site of conservation interest for birds within 20 km of the Site; and/or
- Daily or seasonal periods of sensitivity for breeding, passage or wintering birds that are a qualifying interest of any designated site of conservation interest for birds within 20 km of the Site.

1.4 Confidential Appendix

1.4.1 In accordance with guidance from NatureScot (2016), some environmentally sensitive bird information has been withheld from this Technical Appendix and instead presented separately in a Confidential Annex of Environmentally Sensitive Bird Information A7.6 and Confidential Figures 1-5.

1.5 Core Study Area

1.5.1 The ornithology field surveys and data requests completed as part of the desk study were based on an initial site boundary and turbine layout that was current at the time, but covers a slightly different area to the submitted Site boundary. This is referred to as the Core Study Area (CSA).

2 DESK STUDY

2.1.1 This ornithology desk study looks at statutory designated sites within 20 km of the Site to identify any potential connectivity between the Site and the qualifying/notified bird species. The desk study also pulls together records of bird species of conservation interest, supplied by the RSPB and Highland Raptor Study Group. This information and the field survey data was used to inform the ES Chapter.

2.2 Target Species

2.2.1 The report concentrates on target species recorded within or around the Site which fall into at least one of the following categories:

- Birds listed on Annex I of the EU Birds Directive[1];
- Birds listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended)[2];
- Birds that are qualifying features of nature conservation designated sites in proximity or potentially connected to the Site;
- A species listed as "Red" on the Birds of Conservation Concern 5 (BoCC 5) (Stanbury *et al.,* 2021)[3]; and
- Birds included on the Scottish Biodiversity List[4].

2.2.2 Other species which are typically recognised as being potentially vulnerable to the effects of wind farm developments, but which do not fall under any of the above categories, such as certain wader and waterfowl species were also recorded as target species.

2.3 Designated Sites

2.3.1 In order to assess the potential effects of the Development on birds, the desk study collated pre-existing information on designated sites, including the site characteristics and qualifying species.

2.3.2 All Special Protection Areas (SPA) and Sites of Special Scientific Interest (SSSI) within 20 km of the Site were identified. Relevant information was collated on the designated sites which have potential for ornithological connectivity between their qualifying species/notified features and the Site (NatureScot, 2016). A search for all designated sites within a 20 km radius of the Site was made utilising the following online sources:

- NatureScot Sitelink[5];
- Joint Nature Conservation Committee website[6]; and
- Scotland Environment website[7].

[1] Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0147

[2] Wildlife and Countryside Act 1981 (as amended). Schedule 1 part 1, part 1A, A1 or part 2 of the Wildlife and Countryside Act 1981 (as amended). www.legislation.gov.uk/ukpga/1981/69/contents

[3] 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.

[4] Nature Scot. (2020) Scottish Biodiversity List. https://www.nature.scot/doc/scottish-biodiversity-list

[5] NatureScot. (nd) SiteLink. Available at: https://sitelink.nature.scot/home

[6] JNCC. (nd) Available at: https://jncc.gov.uk/

[7] Scotland's Environment. (nd) Scotland's Environment Map. Available at: https://www.environment.gov.scot/

SPAs

2.3.3 The desk study found three SPAs with ornithological features within 20 km of the Site: Glen Affric to Strathconon, Loch Knockie and Nearby Lochs, and West Inverness-shire Lochs, the locations of which are shown in **Technical Appendix A7.2, Figure 7.3**. The designated sites, along with their relevant features and distance from the Site are presented in **Table 1**.

Table 1: Special Protected Areas (SPAs) with ornithological features within 20 km of the Site

Designation	Designation	Feature(s)	Feature population	Status	Distance to the Site
Glen Affric to Strathconon	SPA	Breeding golden eagle	10 active territories in 2003, 2.2% of the GB population.	Favourable Maintained (2010)	11.4 km
Loch Knockie and Nearby Lochs	SPA	Breeding Slavonian grebe	1992 to 1995, up to 6 pairs, up to 10% of the GB population.	Unfavourable No change (2002)	14.7 km
West Inverness-shire Lochs	SPA	Breeding black-throated diver	1990 and 2005 - 6.6 pairs, 3.4% of the maximum estimate of the GB population of 189 pairs.	Favourable Maintained (2010)	0.13 km
		Breeding common scoter	1994-2000 and 2004-2005 - 7.8 pairs, 8.2% of the GB population of 95 pairs).	Unfavourable Declining (2018)	

Glen Affric to Strathconon SPA

2.3.4 The Glen Affric to Strathconon SPA lies 11.4 km north of the Site. It covers 50,419.34 ha (central grid reference NH 300410) and contains some of the highest mountains north of the Great Glen. Here there is a rich diversity of montane habitats including acid grasslands, heaths, and willow scrub. At lower levels there are dry and wet heaths, blanket bog, nutrient poor lochs, Caledonian forest, and bog woodlands. The pinewoods in Glen Affric, Glenstrathfarrar and Glen Cannich make up one of the largest remaining areas of Caledonian forest in the UK.

2.3.5 Glen Affric to Strathconon SPA qualifies under Article 4.1 by regularly supporting a population of European importance of the Annex 1 species, **golden eagle** *Aquila chrysaetos,* with 10 active territories in 2003 (2.2% of the GB population).

Loch Knockie and Nearby Lochs SPA

2.3.6 Loch Knockie and Nearby Lochs SPA is located 14.7 km east of the Site, centre grid reference NH 429032. Covering 396.4 ha, it comprises a group of lochs at the south-east end of the Great Glen in Highland region. The lochs are surrounded by mire, heath, mixed woodland and agricultural land, and the undisturbed aquatic plant communities within the SPA include extensive sedge beds. The boundary of the SPA follows those of Knockie Lochs Site of Special Scientific Interest (SSSI) and Glendoe Lochans SSSI.

2.3.7 Loch Knockie and Nearby Lochs SPA qualifies under Article 4.1 by regularly supporting a population of European importance of the Annex 1 species: **Slavonian grebe** *Podiceps auritus* (1992 to 1995, up to 6 pairs, up to 10% of the GB population).

West Inverness-shire Lochs SPA

2.3.8 The West Inverness-shire Lochs SPA encompasses Lochs Affric, Cluanie, Loyne (including Lochan Bad an Losguinn), Garry (including Loch Poulary), Lundie, and Blair. Generally, the SPA extends to include the habitats within 10 m of the lochs' shorelines. It covers an area of 2,967.52 ha and regularly supports a population of European importance of the Annex I species, **black-throated diver** *Gavia arctica*, and a population of European importance of the migratory species, the **common scoter** *Melanitta nigra*.

SSSIs

2.3.9 There are three SSSIs within 20 km of the Site, the locations of which are shown in **Technical Appendix A7.2, Figure 7.3**. All three SSSI sites have ornithological features which could have connectivity with the Site. These are designated under national legislation (rather than European) to protect different biological and geological features of interest.

Glen Affric SSSI

2.3.10 Glen Affric SSSI covers 2,265.12 ha and lies at the head of Strathglass, 6 km west of the village of Cannich and 8.9 km from the Site. The majority of the SSSI lies on the southern shores of Loch Beinn a' Mheadhoin and Loch Affric, with two small outliers at Cougie and Coille Ruigh na Cuileige. It is notified for its native pinewood habitats and associated lichen and bird assemblages.

2.3.11 The bird assemblage includes several pinewood specialists such as **crested tit** *Lophophanes cristatus* and **Scottish crossbill** *Loxia scotica*. **Capercaillie** Tetrao *urogallus* are present in very low numbers and there is also a population of **black grouse** *Tetrao tetrix*.

2.3.12 Furthermore, Glen Affric is outstanding for the lichen flora that grows on its trees, with a significant number of nationally rare or scarce lichens, including *Bryoria furcellata*, *B. capillaris* and *Calicium parvum*. The many lochs and bogs support a rich dragonfly community including the rare brilliant emerald *Somatochlora metallica*.

Glendoe Lochans SSSI

2.3.13 Glendoe Lochans SSSI lies 14.7 km east of the Site and features several small lochans with moderate nutrient levels, situated on a plateau at 700 m above sea level, southeast of the Great Glen and about 8 km from Fort Augustus. The lochans range in size from 2-9 ha.

2.3.14 The SSSI is home to a nationally significant breeding population of **Slavonian grebes**. From 2005 to 2008, the average breeding population was 1.25 pairs, accounting for 3% of the current British population. Despite being at the highest altitude in Scotland for these birds, the Glendoe Lochans are among the most successful regular breeding sites for Slavonian grebes in the country.

2.3.15 Additionally, the SSSI supports around two breeding pairs of **common scoter**, representing 4% of the British population, making it a nationally important breeding site for this species as well.

2.3.16 The surrounding vegetation is a mix of wet heath, dry heath, mire, and flushes, with species-poor wet heath being predominant. The lochans host a natural aquatic plant community, including extensive sedge beds, which provide essential nesting and brood-rearing habitats for the birds.

Knockie Lochs SSSI

2.3.17 Knockie Lochs SSSI comprises two deep lochs with moderate nutrient levels, Loch nan Lann (23.5 ha) and Loch Knockie (68.5 ha). These lochs are situated on the southeast side of the Great Glen at an altitude of 200 m, approximately 4 km southwest of Whitebridge, and 18.2 km northeast of the Site. They are surrounded by broad-leaved woodland, conifer plantations, and some improved grassland. Loch Knockie also features several small, wooded islands.

2.3.18 This SSSI is of significant nature conservation importance as it supports a nationally important breeding population of **Slavonian grebes**. The Knockie Lochs supported one pair of grebes during most of the years from 1996 to 2002.

2.3.19 Both lochs contain extensive beds of emergent vegetation, including long-stalked pondweed *Potamogeton praelongus*. The sedge beds are dominated by bottle sedge *Carex rostrata* and slender sedge *Carex lasiocarpa*. These habitats provide essential nesting and brood-rearing areas for the birds.

West Inverness-shire Lochs SSSI

2.3.20 West Inverness-shire Lochs SSSI covers 2,967.52 ha, part of which lies 0.1 km to the east of the Site. It comprises eight freshwater, upland lochs lying within the altitudinal range 90-340 m above

sea level to the west of the Great Glen. The constituent lochs are Loch Affric, Loch Cluanie, Lochan Bad an Losguinn, Loch Loyne, Loch Lundie, Loch Garry, Loch Poulary and Loch Blair. The lochs are characterised by deep, acidic waters with patchy emergent vegetation.

2.3.21 The adjacent grass and heathland habitats provide nesting and brood-rearing areas for both **black-throated divers** and **common scoters**. The group of lochs that comprise this SSSI support nationally important numbers of these species. The SSSI is particularly important for black-throated divers due to its long history of use and the above average level of chick productivity that several of the component lochs demonstrate consistently. The lochs hold one of the main concentrations of breeding common scoter in Britain.

2.3.22 West Inverness-shire Lochs SSSI is also classified as an SPA for black throated diver and common scoter (see **paragraph 2.3.8**).

2.4 Data Search

Highland Raptor Study Group

2.4.1 Records were received from the Highland Raptor Study Group (HRSG) in July 2024. Records were derived from the CSA plus a 6 km buffer and are shown in **Table 2**. Records for white-tailed eagle and golden eagle, both Annex I and Schedule 1 species, were received. The records also showed the breeding locations of golden eagle and white-tailed eagle, and therefore, in accordance with guidance (NatureScot, 2016) the Confidential Annex is presented separately in **Confidential Annex A7.6** and **Confidential Figure 1**.

Table 2: Results from Highland Raptor Study Group data search for the CSA plus 6 km buffer

Species	Latin Name	Sensitivity			Buffer Zone Used in Search (km)	No. of Breeding Site Records	Year
		Annex 1	Schedule 1	BOCC5			
Golden eagle	*Aquila chrysaetos*	✓	✓	Green	6	3	2021
White-tailed eagle	*Haliaeetus albicilla*	✓	✓	Amber	-	1	2022-2023

RSPB

2.4.2 Records of notable bird species were received from the RSPB on 22 March 2024. The records were derived from a 2 km search radius around the CSA for the period from 2014 to 2024. A small dataset was returned, this included the target species black grouse, red-throated diver, and black-throated diver. **Table 3** presents a summary of the results from the data search, showing species recorded and their conservation status.

Table 3: Results from RSPB data search for the CSA plus 2 km buffer

Species	Latin Name	Sensitivity			Buffer Zone Used in Search (km)	No. of Records	Year
		Annex 1	Schedule 1	BOCC5			
Greylag goose	*Anser anser*		✓*	Amber	2	2	2022
Common scoter	*Melanitta nigra*		✓	Red	2	42	2021/2022
Red-breasted merganser	*Mergus serrator*			Amber	2	2	2022
Black grouse	*Lyrurus tetrix*			Red	2	1	2017
Common sandpiper	*Actitis hypoleucos*			Amber	2	5	2022
Common gull	*Larus canus*			Red	2	1	2022
Red-throated diver	*Gavia stellata*	✓	✓	Green	2	2	2022

Species	Latin Name	Sensitivity			Buffer Zone Used in Search (km)	No. of Records	Year
		Annex 1	Schedule 1	BOCC5			
Black-throated diver	*Gavia arctica*	✓	✓	Amber	2	2	2022
Hooded crow	*Corvus cornix*			Green	2	1	2022
Skylark	*Alauda arvensis*			Red	2	1	2022
Pied wagtail	*Motacilla alba*			Green	2	1	2022
Meadow pipit	*Anthus pratensis*			Amber	2	5	2022

*In Outer Hebrides, Caithness, Sutherland, and Wester Ross only.

3 FIELD SURVEY

3.1 Overview

3.1.1 A suite of ornithological field surveys was commissioned to cover the CSA together with species-specific buffers, these were conducted from April 2023 to mid-March 2024 (Year 1) and mid-March 2024 to August 2024 (Year 2). Additional targeted eagle species surveys were conducted from January to August 2024. See **Table 4** for the breeding seasons of raptors and species targeted during surveys (i.e., black grouse, and diver and scoter species), which is based on NatureScot (2014) guidance.

3.1.2 Field survey design complied with the latest NatureScot guidance (2017) and set out to document the distribution, abundance and flight activity of target bird species. This information was used to inform the EIA detailed in the accompanying EIA Report Chapter. All field surveys focussed on the target species (see Section 2.2).

3.1.3 All field surveyors had extensive ornithological field experience of the Scottish Uplands together with experience carrying out the bird survey methods, estimating flight heights and distances, recording data concisely and correctly, navigation techniques and health and safety. All surveyors held appropriate Schedule 1 licenses.

3.1.4 The ornithological survey programme was developed based on the particular ornithological sensitivities which were anticipated to occur within and around the CSA. The survey programme was devised following NatureScot's survey guidance for assessing onshore wind farms (NatureScot, 2017) as well as other relevant generic and species-specific survey guidance (Gilbert *et al.,* 1998; Hardey *et al.,* 2013).

3.1.5 There were no access restrictions within the survey areas present at the time of surveys.

Table 4: Breeding seasons of relevant target bird species

Species	Latin Name	Breeding Season (inclusive)
Common scoter	*Melanitta nigra*	Mid-April - August
Black grouse	*Lyrurus tetrix*	Mid-March - mid-August
Red-throated diver	*Gavia stellata*	April - mid-September
Black-throated diver	*Gavia arctica*	April - mid-September
Osprey	*Pandion haliaetus*	April - August
Golden eagle	*Aquila chrysaetos*	February - August
Sparrowhawk	*Accipiter nisus*	April - mid-August
Hen harrier	*Circus cyaneus*	Mid-March - mid-August
White-tailed eagle	*Haliaeetus albicilla*	Mid-February - August
Merlin	*Falco columbarius*	April - mid-August
Peregrine	*Falco peregrinus*	March - mid-August

Breeding season data from NatureScot (2024).

3.2 Flight Activity (Vantage Point) Survey Methods

Survey Aims

3.2.1 The vantage point (VP) surveys were designed to quantify the level of flight activity and its distribution over the VP survey area across the seasons to provide data for collision risk modelling (Band *et al*. 2007). However, the VP data was also used to provide an overview of how birds use the Site, to help to inform conclusions on potential disturbance and displacement. Data was collected during timed watches from six strategic VPs. The VP surveys followed methods detailed in NatureScot guidance (2017).

VP Survey Area and Viewsheds

3.2.2 The survey area was defined as the area surrounding the outermost proposed turbines (as proposed at the time of the start of the surveys), and an additional 500 m buffer, to address inaccuracies of position for flight line observations. The VP viewsheds were then created and arranged so that they covered the entire survey area.

Recording Methods

3.2.3 Following standard guidance during each three-hour VP watch, two recording methods were used to record data: focal bird sampling for target species and activity summaries for secondary species.

Focal bird sampling for target species:

3.2.4 The area in view was scanned until a target species was detected, at which point it was followed until it ceased flying or was lost from view. The time the target bird was detected, and the flight duration were both recorded. The flight path of the bird was plotted in the field onto OS 1:25,000 scale maps. The bird's flight height was estimated at the time of detection and then at 15 second intervals thereafter. Flight heights were classified into the following height bands:

- Height band 1: <20m;
- Height band 2: 20-40m;
- Height band 3: 40-100m;
- Height band 4: 100-150m;
- Height band 5: 150-250m;
- Height band 6: 250m+.

3.2.5 Observations of target species took priority over completion of activity summaries.

Activity summaries for secondary species:

3.2.6 Each watch was sub-divided into 5-minute periods, at the end of which the number and activity of all secondary species observed was recorded. If a target species was being tracked at the end of a 5-minute period, then the activity summary for that period was abandoned and a new one started once observations of the target species have ended. Observation of target species took priority over recording of secondary species. Static birds, e.g. perched birds and birds on water bodies were recorded once only on arrival at the VP. Thereafter, only flying birds and newly noticed perched/swimming birds were included in the activity summaries. This allowed greater time for focal bird sampling rather than repeated observations of the same static birds.

3.2.7 Six VPs were identified to adequately cover the survey area for the CSA. Details of each of these VP locations are provided in **Table 5** while their locations and viewsheds are illustrated in **Technical Appendix A7.2**, **Figure 7.4**.

Table 5: Vantage Point (VP) locations for flight activity surveys completed for the Development

VP Number	Grid Reference	View Angle (degrees)	Within Site Boundary?
1	NH 21488 06646	264	Outwith
2	NH 20645 05532	228	Outwith
3	NH 20461 04634	236	Within
4	NH 22280 05256	181	Outwith
5	NH 23040 05465	88	Outwith
6	NH 25900 06944	204	Outwith

Survey Timing

3.2.8 NatureScot guidance requires that a minimum of 36 hours of survey effort is carried out at each VP in each relevant survey season (i.e. breeding and non-breeding). At Beinneun 2 Wind Farm tThe flight activity survey programme was devised to cover the generic breeding season (mid-March to August inclusive), as well as that of golden eagle (February to August inclusive) and white-tailed eagle (mid-February to August inclusive) which were anticipated to occur in the vicinity of the CSA, with effort in February and March captured in 2024.

3.2.9 Survey effort was spread throughout the daytime period to best represent temporal flight activity patterns. Each survey was undertaken by a single observer in good conditions (i.e. visibility of at least 2 km). Weather and visibility conditions were recorded on an hourly basis including information on wind strength and direction, precipitation and cloud cover.

3.2.10 All VP watches were limited to a maximum of three hours duration by any single observer, with a minimum of half an hour break between any two consecutive VP surveys. Simultaneous VPs were not carried out where one observer's VP position was located within another surveyor's viewshed. Similarly, VP surveys were not programmed to take place whilst other ecological or ornithological survey work, with potential to affect results, was being undertaken within or around the CSA.

3.2.11 During each VP watch surveyors continuously scanned the airspace within the 2 km, 180° viewshed arc of the respective VP location using the naked eye as well as binoculars and/or scope to record all target bird species. Although a viewshed radius of 2 km will be used to record all species, observations of birds located outside of this radius (e.g. flocks of large, easily detectable birds) were also recorded to provide additional context.

3.2.12 Once a bird or flock was detected, it was observed until it had landed or flown out of sight. The paths of all observed flights (flightlines) were drawn directly onto 1:10,000 OS maps while the following associated flight data was also recorded:

- Flight start time;
- Species (where identification was uncertain, observations were identified to species group level at a minimum);
- Number of birds/flock size;
- Flight duration;
- Bird(s) occupancy at one of six height bands above ground level (1 = <20m, 2 = 20-40m, 3 = 40-100m, 4 = 100-150m, 5 = 150-250m, 6 = 250m+) for each 15 second flight time interval; and
- Behaviour (including territorial or nesting behaviour).

3.2.13 In addition to flights by target species, the presence and behaviour of any other notable species which may be potentially vulnerable to the effects of wind turbines (so-called secondary species) was also recorded.

3.2.14 Due to late commissioning of the ornithology surveys, the Year 1 breeding season VP surveys covered 24 hours at each VP between May and August 2023, rather than the 36 hours per VP recommended by NatureScot (2017) guidance (which was current at the time.

3.2.15 However, 36 hours of survey per VP was completed during each of the following seasons:

- 2023-24 non-breeding season (September to mid-March); and
- 2024 breeding season (mid-March to August).

3.2.16 NatureScot confirmed (via email dated 12/11/2024) that no further surveys were required after August 2024.

3.2.17 **Table 6** presents a summary of the flight activity survey effort undertaken for Year 1 and Year 2, which resulted in a total of **576 hours** of VP survey effort across the survey period.

Table 6. Summary of flight activity survey effort completed for the Development during Year 1 (May 2023 to mid-March 2024) and Year 2 (mid-March – August 2024)

	Survey Effort (hours)						
Month	**VP1**	**VP2**	**VP3**	**VP4**	**VP5**	**VP6**	**Total Effort**
Year 1							
Breeding Season							
May '23	6	6	6	6	6	6	36
June '23	6	6	6	6	6	6	36
July '23	6	6	6	6	6	6	36
August '23	6	6	6	6	6	6	36
Total	**24**	**24**	**24**	**24**	**24**	**24**	
Non-breeding season							
September '23	6	6	6	6	6	6	36
October '23	6	6	6	6	6	6	36
November '23	6	6	6	6	6	6	36
December '23	6	6	6	6	6	6	36
January '24	6	6	6	6	6	6	36
February '24*	6	6	6	6	6	6	36
Total	**36**	**36**	**36**	**36**	**36**	**36**	
Year 2							
Breeding season							
Late March '24*	6	6	6	6	6	6	36
April '24	6	6	6	6	6	6	36
May '24	6	6	6	6	6	6	36
June '24	6	6	6	6	6	6	36
July '24	6	6	6	6	6	6	36
August '24	6	6	6	6	6	6	36
Total	**36**	**36**	**36**	**36**	**36**	**36**	
Total Survey Effort	**96**	**96**	**96**	**96**	**96**	**96**	**576**

*Breeding season for golden eagle.

3.3 Breeding Raptor Survey Methods

3.3.1 The CSA plus a surrounding buffer of 2 km and 6 km was surveyed for breeding raptors and golden eagle, respectively (survey area is shown in **Technical Appendix A7.2, Figure 7.5**). During Year 1, surveys were undertaken between May and July 2023. During Year 2, surveys were undertaken between February and August 2024

3.3.2 Survey protocols followed the standard methodologies for assessing raptor populations as set out by Hardey *et al.* (2013) and Gilbert *et al.* (1998). The surveys involved monthly visits between April and July in 2023 and 2024 to determine presence, territory occupation and breeding success. Covering this period encompassed the time of the year when activity most raptor species is highest and their presence most likely to be detected. Golden eagle surveys were conducted monthly between March to August 2024 to detect territory occupation and early season displaying.

3.3.3 During each survey, areas of suitable habitat including heather moorland and other areas of open habitat, craggy rock faces and cliffs, steep sided burns, trees along the forest edge and older stands of trees within the forest were targeted. Surveyors also stopped repeatedly to scan for birds from ad hoc vantage points. The location of any nest sites or nesting / territorial activity of raptors was recorded, as were any sightings and signs of activity (e.g. prey remains, plucking posts).

3.3.4 All observations of raptor species and any associated field signs (e.g. moulted feathers, prey remains, pellets etc.) were recorded and their locations or flight lines mapped using standard BTO

symbols and activity codes. The grid references of any nest sites (regardless of activity status) were also recorded. In doing so, care was taken not to disturb occupied nest sites and all surveyors held a Schedule 1 survey licence issued by NatureScot.

3.3.5 During the Year 1 breeding season (April – July 2023), a total of 17 survey visits comprising **82.75 hours** were undertaken to cover the breeding raptor survey buffer of the CSA. **Table 7.** presents the breeding raptor survey effort.

Table 7: Breeding raptor survey effort completed for the Development during Year 1 (April to July 2023)

Date	Month	Surveyor(s)	Start time	End time	Duration (hh:mm)
26/04/2023	April	RS & ED	11:00	16:00	05:00
27/04/2023	April	RS & ED	10:00	17:00	07:00
28/04/2023	April	RS & ED	09:45	14:00	04:15
15/05/2023	May	KCu	09:55	15:55	06:00
16/05/2023	May	KCu	06:55	09:55	03:00
16/05/2023	May	KCu	10:00	13:00	03:00
17/05/2023	May	KCu	06:55	09:55	03:00
18/05/2023	May	KCu	07:00	12:00	05:00
19/05/2023	May	KCu	07:00	12:30	05:30
02/06/2023	June	KCu	10:40	15:10	04:30
21/06/2023	June	DG & RS	09:30	13:00	03:30
22/06/2023	June	DG & RS	09:00	17:00	08:00
23/06/2023	June	RS & PB	09:00	13:00	04:00
24/07/2023	July	RS & PB	17:00	18:00	01:00*
25/07/2023	July	RS & PB	09:00	17:00	08:00
26/07/2023	July	RS & PB	09:00	17:00	08:00
27/07/2023	July	RS & PB	09:00	13:00	04:00

Surveyors: RS – Rio Stirling; ED – Eleonora Di Cuffa; KCu – Kevin Cuthbert; DG – Darren Graham; PB – Patrick Beaumont.

*Short survey conducted when surveyors arrived at the CSA early the day before commencing surveys.

3.3.6 During the Year 2 breeding season (April – July 2024), a total of 14 survey visits comprising **65.75 hours** were undertaken to cover the breeding raptor survey buffer of the CSA. **Table 8** presents the breeding raptor survey effort.

Table 8: Breeding raptor survey effort completed for the Development during Year 2 (April to July 2024)

Date	Month	Surveyor(s)	Start time	End time	Duration (hh:mm)
17/04/2024	April	PB & RW	10:00	16:00	06:00
18/04/2024	April	PB & RW	10:00	16:00	06:00
19/04/2024	April	PB & RW	09:30	11:00	01:30*
27/05/2024	May	RS & RW	16:00	17:30	01:30*
28/05/2024	May	RS & RW	09:00	17:00	08:00
29/05/2024	May	RS & RW	05:30	10:00	04:30
30/05/2024	May	RS & RW	10:00	17:00	07:00
24/06/2024	June	RS & PB	15:45	17:00	01:15*
25/06/2024	June	RS & PB	10:00	17:00	07:00
26/06/2024	June	RS & PB	10:00	17:00	07:00
15/07/2024	July	RS & PB	16:00	17:00	01:00*
16/07/2024	July	RS & PB	10:00	17:00	07:00
17/07/2024	July	RS & PB	10:00	16:00	06:00

Date	Month	Surveyor(s)	Start time	End time	Duration (hh:mm)
18/07/2024	July	RS & PB	10:00	12:00	02:00*

Surveyors: RS – Rio Stirling; RW – Rachael Ward; PB – Patrick Beaumont.

*Short survey conducted when surveyors arrived at Site location early the day before commencing surveys, or surveyed prior to travelling home.

Breeding Eagle Surveys

3.3.7 Targeted eagle surveys were undertaken between March and August 2024 to capture the eagle breeding season and any early territorial behaviour, details of which are presented in **Table 9**. In total, 15 visits comprising 100 hours were undertaken during the Year 2 breeding season for golden eagle.

Table 9: Breeding eagle survey effort completed for the Development during Year 2 (March to August 2024)

Date	Month	Surveyor(s)	Start time	End time	Duration
06/03/2024	March	JMo	10:00	16:00	06:00
06/03/2024	March	ML	10:05	16:05	06:00
07/03/2024	March	ML	12:05	18:05	06:10
07/03/2024	March	ML	08:35	11:35	03:00
19/03/2024	March	JMo	09:20	12:20	03:00
12/04/2024	April	GH	09:30	15:30	06:00
12/04/2024	April	CGr	09:30	15:30	06:00
29/05/2024	May	JPr	08:00	16:00	08:00
30/05/2024	May	JPr	08:00	16:00	08:00
25/06/2024	June	JPr	08:00	16:00	08:00
26/06/2024	June	JPr	08:00	16:00	08:00
12/07/2024	July	JPr	08:00	16:00	08:00
13/07/2024	July	JPr	08:00	16:00	08:00
13/08/2024	August	JPr	08:00	16:00	08:00
14/08/2024	August	JPr	08:00	16:00	08:00

Surveyors: JMo – Jamie Morton; ML – Marcus Lawson; GH – Gary Haskins; CGr – Chris Griffin; JPr – Jordan Prendergast.

3.4 Moorland Breeding Bird Survey Methods

3.4.1 The moorland breeding bird surveys (MBBS) were designed to cover all areas of open moorland within the CSA and a surrounding buffer of 500 m to determine the species using the MBBS area and the locations of any breeding territories of birds of conservation concern.

3.4.2 Surveys followed a modified Brown and Shepherd methodology (Brown and Shepherd, 1993), as summarised in Gilbert *et al.* (1998) and involved four survey visits conducted between April and July (of 2023 and 2024) in line with the methods of Calladine *et al.* (2009) as recommended by NatureScot (2017). During each survey visits the surveyors followed transect routes covering the entire survey area to within 100 m of all parts of open moorland. The behaviours of all birds seen or heard during the surveys were recorded on large-scale (1:10,000) maps using standard BTO coding and notation. Survey visits were undertaken in good, clear weather conditions (wind less than Beaufort Wind Force Scale 5).

3.4.3 The MBBS area is shown in **Technical Appendix A7.2, Figure 7.5**. In both Year 1 and Year 2 MBBS were combined with breeding raptor surveys when these were being undertaken from within the CSA and MBBS area. **Table 10** and **Table 11** show the MBBS survey effort in Year 1 and Year 2 respectively. The Year 1 comprised 13 visits totalling **79.5 hours** of survey time, while Year 2 was 14 visits of **66.5 hours**.

Table 10: MBBS survey effort completed for the Development during the 2023 survey season (Year 1)

Date	Month	Surveyor(s)	Start time	End time	Duration (hh:mm)
26/04/23	April	RS & ED	11:00	16:00	05:00
27/04/23	April	RS & ED	09:00	13:00	04:00
28/04/23	April	RS & ED	09:45	12:40	03:00
15/05/23	May	YB	09:50	17:10	07:20
16/05/23	May	YB	11:20	17:50	06:30
17/05/23	May	YB	08:30	14:45	06:15
18/05/23	May	YB	08:40	14:50	06:10
19/05/23	May	YB	08:30	13:45	05:15
21/06/23	June	DG & RS	09:00	13:00	04:00
22/06/23	June	RS & PB	09:00	17:00	08:00
23/06/23	June	RS & PB	09:00	13:00	04:00
25/07/23	July	RS & PB	09:00	17:00	08:00
26/07/23	July	RS & PB	09:00	17:00	08:00
27/07/23	July	RS & PB	09:00	13:00	04:00

Surveyors: RS – Rio Stirling; ED – Eleonora Di Cuffa; YB – Yvonne Brown; DG – Darren Graham; PB – Patrick Beaumont.

Table 11: MBBS survey effort completed for the Development during the 2024 survey season (Year 2)

Date	Month	Surveyor(s)	Start time	End time	Duration (hh:mm)
17/04/24	April	PB & RW	10:00	16:00	06:00
18/04/24	April	PB & RW	10:00	16:00	06:00
19/04/24	April	PB & RW	09:30	11:00	01:30*
27/05/24	May	RS & RW	16:00	17:30	01:30*
28/05/24	May	RS & RW	09:00	17:00	08:00
29/05/24	May	RS & RW	05:30	10:00	04:30
30/05/24	May	RS & RW	10:00	17:00	07:00
24/06/24	June	RS & PB	15:00	17:00	02:00*
25/06/24	June	RS & PB	10:00	17:00	07:00
26/06/24	June	RS & PB	10:00	17:00	07:00
15/07/24	July	RS & PB	16:00	17:00	01:00*
16/07/24	July	RS & PB	10:00	17:00	07:00
17/07/24	July	RS & PB	10:00	16:00	06:00
18/07/24	July	RS & PB	10:00	12:00	02:00*

Surveyors: RS – Rio Stirling; RW – Rachael Ward; PB – Patrick Beaumont.

*Short survey conducted when surveyors arrived at the CSA early the day before commencing surveys, or surveyed prior to travelling home.

3.4.4 All breeding bird survey records were entered into ESRI's ArcGIS Geographical Information System (GIS) software. These were then analysed in order to identify the minimum number of possible, probable or confirmed breeding territories for species of conservation concern. For wading birds, this was done following the methods of Brown and Shepherd (1993) whereby breeding territories were assigned on the basis of at least one registration of birds engaging in territorial behaviour including displaying, singing or alarm calling, distraction displays, territorial disputes or the detection of eggs, nests or young. Where possible, simultaneous registrations of birds displaying such behaviour were used to identify different territories. Where this was not possible, such registrations which were from the same survey visit and were within 500 m of each other (200 m for dunlin and passerines) were assumed to be associated with the same territory, while registrations beyond this distance from one another were considered to be from separate,

neighbouring territories. For registrations from different survey visits, birds within 1,000 m of each other (500 m for dunlin) were assumed to be from with the same territory.

3.4.5 For all other species, territories were assigned following the CBC methods described in Gilbert *et al.* (1998) and Bibby *et al.* (2007). This either involves the identification of clusters of registrations of birds of the same species displaying breeding characteristics (e.g. singing, alarm calling, nest building, mating) or food provisioning in the same general area over successive survey visits (probable breeding), or the discovery of an active nest (confirmed breeding, e.g. containing eggs or chicks). Given that the surveys comprised multiple visits per month over the breeding season, the minimum requirement for a cluster, and hence a probable breeding territory, to be defined was at least two registrations conforming to the above criteria recorded on separate survey visits conducted at least ten days apart.

3.4.6 Based on the territory analysis procedure detailed above, the estimated number of breeding territories held by each species was identified within the entire breeding raptor survey area and within the Site itself. Territories which were centred just outside the Site boundary, but which were assigned on the basis of a cluster of registrations where some were from within the wind farm site boundary, were considered to be within the site in accordance with the CBC methodology for so-called 'edge clusters.'

3.4.7 For skylark and meadow pipit, for which territory mapping is often ineffective due to their high abundance, territories were represented by the peak count of singing males during the early breeding season surveys, before the fledging of juvenile birds which would artificially inflate the estimated abundance of breeding individuals.

3.5 Black Grouse Survey Methods

3.5.1 Targeted surveys were undertaken to determine the presence of black grouse around the CSA. Grouse surveys were designed to cover all areas of suitable lekking habitat (e.g. areas of short grassland or moorland particularly near forest edges and along forest rides) within the CSA and a surrounding buffer of 1.5 km to determine the presence or absence of lekking black grouse. The black grouse survey area is shown in **Technical Appendix A7.2, Figure 7.4**.

3.5.2 Two rounds of surveys were undertaken between late April and mid-May in Years 1 and 2 and were conducted within 2 hours of dawn (Gilbert *et al.* 1998). Surveys only commenced when weather conditions were dry and calm, allowing the call of lekking males to be heard. Care was taken not to disturb lekking birds, which were observed from distance and counted using binoculars and/or a scope.

3.5.3 Any identified leks were observed from suitable vantage points, avoiding disturbance to lekking birds, and the number of males (not just displaying birds) and females seen in the lekking area were recorded on each survey visit. The GPS coordinates and details of any observations or signs of black grouse were also recorded. Leks located 200 m or more apart were considered to be separate, unless professional judgement suggested otherwise in accordance with standard guidance.

3.5.4 **Table 12** presents a summary of the black grouse survey effort undertaken in Year 1 (2023) and Year 2 (2024).

Table 12: Summary of black grouse survey effort completed for the Development in Year 1 (2023) and Year 2 (2024)

Date	Month	Surveyor	Sunrise Time*	Start Time	End Time	Duration (hours)
Year 1 (2023)						
26/04/2023	April	ED	05:42	04:30	06:30	2
27/04/2023	April	ED	05:40	04:40	06:40	2
16/05/2023	May	KCu	04:57	03:55	06:55	3
17/05/2023	May	KCu	04:55	04:50	07:50	3
18/05/2023	May	KCu	04:53	04:00	07:00	3
Year 2 (2024)						

Date	Month	Surveyor	Sunrise Time*	Start Time	End Time	Duration (hours)
30/04/2024	April	RS	05:30	04:30	06:30	2
01/05/2024	May	RS	05:28	04:30	06:30	2
29/05/2024	May	RW	04:36	03:30	05:30	2
29/05/2024	May	RW	04:34	03:30	05:30	2

Surveyors: RS – Rio Stirling; ED – Eleonora Di Cuffa; KCu – Kevin Cuthbert; RW – Rachael Ward.

*Sunrise times recorded at Invermoriston, from https://www.timeanddate.com/

3.6 Breeding Diver and Common Scoter Survey Methods

3.6.1 Red-throated diver, black-throated diver and common scoter are Schedule 1 species that were identified in the desk study as being qualifying features of SPAs within 20 km and have also been recorded within 2 km of the CSA (RSPB, 2024). In accordance with NatureScot (2017) guidance, all potentially suitable diver and scoter breeding habitat within the CSA plus a 1 km survey area (**Technical Appendix A7.2, Figure 7.4**) was surveyed for the presence of the species, evidence of breeding behaviour, and the successful rearing and fledging of juvenile birds. The objective of the survey was to understand the proximity of breeding locations to the proposed turbines and works areas to assess the potential effects of the Development. All suitable diver breeding waterbodies (lochs, lochans and bog pool systems) were surveyed following the standard techniques described in Gilbert *et al.* (1998) as recommended by NatureScot.

3.6.2 Divers typically breed on small, shallow pools or lochans in open moorland, although larger lochs are occasionally used with small islands or promontories often being preferred. Nests, which consists of little more than a scrape on the ground or an area of depressed vegetation, are usually established very near to the edge of the water, typically in areas which are fringed with sedges and grasses (Gilbert *et al.,* 1998). Common scoter are similar in that they also nest on the ground near water, including moorland lochs, slow moving rivers and on islands or shorelines. Females make a depression in the ground, usually in sheltered areas, and line it with their down feathers.

3.6.3 Lochan occupancy visits, which involve inspecting each lochan on foot to determine diver or scoter occupancy, were conducted in the months of May and June.

3.6.4 For the lochan occupancy visits: the breeding suitability of all waterbodies was assessed and any presence and/or signs of diver or scoter were searched for. If birds were seen then they were watched from a distance to check for any breeding behaviour (e.g. displaying, nest site prospecting, incubation, etc.). If no birds were seen then all waterbodies were inspected more closely by walking the perimeter (where possible) to search for signs of nesting (such as nest scrapes, eggshell fragments or dead chicks).

3.6.5 If diver or scoter were present during the lochan occupancy visits, and particularly if breeding was suspected, a third survey was to be carried out to establish breeding success and productivity. During this final visit any occupied waterbodies identified during the previous surveys should be checked for the presence of young birds or evidence of nesting. Any young birds present and equal to or greater than two-thirds adult size should be assumed to survive to fledging and counts of such birds are used to determine productivity.

3.6.6 Surveys were carried out in good weather conditions, ensuring good visibility (greater than 2 km) and avoiding high wind (no greater than Beaufort Wind Force 4). A total of 27 lochans within the 1 km survey buffer were surveyed. All divers and signs were recorded on large scale (1:10,000) OS maps or were entered into ESRI's ArcGIS Geographical Information System (GIS) software. Shorelines and waterbodies were viewed from a distance using binoculars or a scope. Survey times and weather conditions were also recorded. Every effort was made to avoid disturbance to any birds present and all surveyors held a Schedule 1 survey licence issued by NatureScot. **Table 13** shows the survey schedule for the diver/scoter occupancy and productivity surveys at Beinneun 2 Wind Farm. As no diver or scoter, nor signs of the species, were recorded during the occupancy surveys in May or June 2023, no productivity surveys were undertaken. A pair of red-throated diver were recorded in May 2024 on lochan 3. This was revisited in July to determine productivity.

Table 13: Diver/scoter occupancy and productivity survey effort completed for the Development (2023/2024)

Survey Date	Month	Start Time	End Time
Year 1 - 2023			
30/05/2023	May	13:40	17:10
01/06/2023	June	11:15	17:00
Year 2 - 2024			
06/05/2024	May	10:00	15:30
07/05/2024	May	10:00	15:00
30/05.2024	May	12:00	17:00
31/05/2024	May	09:30	15:00
16/07/2024	July	10:00	15:00

4 ORNITHOLOGICAL FIELD SURVEY RESULTS

4.1 Flight Activity Vantage Point Surveys

4.1.1 During flight activity surveys, a bird is considered to be 'at risk' of collision if it was recorded at Potential Collision Height (PCH). For this interim report, PCH reflects the maximum and minimum survey height bands within which the rotors of the proposed turbine design will pass (i.e. 28-200 m). Therefore, PCH includes all flights from height band 2 (20 m-40 m) to height band 5 (150 m-200 m).

Year 1 (2023) – Breeding Season

4.1.2 In Year 1 a total of 31 flights by nine target species were recorded throughout the breeding season flight activity surveys. These results are presented in **Table 14** and **Technical Appendix A7.2, Figure 7.6**.

4.1.3 Golden eagle were the most frequently recorded species flying over/within the CSA with nine flights. All of these flights were at PCH for either all or the majority of the flight duration. Six of the flights were recorded over the west area of the Site, while the other three were in the south and east of the survey buffer, near Meall a' Chrom Dhoire and Meall nam Fairneag. All but one flight was described as displaying hunting behaviour.

4.1.4 White-tailed eagle was also recorded a number of times, with seven flights across the 2023 breeding season, five of which displayed hunting behaviour. All the flights were at PCH and were located around the centre to the east of the Site (one individual appeared from Mullach Coire Ardachaidh flying to the east), with one other flight being in the south of the survey buffer (**Technical Appendix A7.2, Figure 7.6**.

4.1.5 Other species recorded at PCH during the 2023 breeding season were osprey with three flights, two of which were within the Site boundary and the third flying over the northeast of Loch Loyne; snipe was recorded on three occasions in the centre to east of the Site, one of which was an individual with two observed flights (Flight ID27 in **Technical Appendix A7.2, Figure 7.6**); red-throated diver and golden plover in the northeast of the Site, and also greenshank in the west, in close proximity of lochans 6-9.

4.1.6 Species recorded which were not flying at PCH were merlin (one flight) and teal (two flights), all in the west of the Site (**Table 14).**

Table 14: Flight activity survey results completed for the Development during the breeding season – Year 1 (2023)

Date	Month	Time	Species	No. of Birds	Flight Duration (sec)	Time at PCH (sec)
22/05/2023	May	14:24	Golden eagle	1	180	180
22/05/2023	May	14:34	Golden eagle	1	150	150
22/05/2023	May	15:58	Merlin	1	15	0
22/05/2023	May	16:40	Golden eagle	2	345	345
22/05/2023	May	15:39	Osprey	1	120	120
23/05/2023	May	09:58	Snipe	1	75	75
23/05/2023	May	09:05	White-tailed eagle	1	135	120
24/05/2023	May	15:01	White-tailed eagle	2	45	45
24/05/2023	May	15:20	White-tailed eagle	1	225	225
24/05/2023	May	15:26	White-tailed eagle	1	45	15
26/05/2023	May	15:43	Golden eagle	1	735	735
26/05/2023	May	15:57	Golden eagle	1	885	885
30/05/2023	May	15:41	Red-throated diver	1	120	120
20/06/2023	June	12:05	Greenshank	1	75	75

Date	Month	Time	Species	No. of Birds	Flight Duration (sec)	Time at PCH (sec)
20/06/2023	June	08:14	Osprey	1	195	195
20/06/2023	June	11:45	Teal	1	30	0
20/06/2023	June	09:26	Teal	1	30	0
29/06/2023	June	08:49	Golden plover	1	45	15
10/07/2023	July	18:36	Snipe*	1	615	600
10/07/2023	July	17:53	Greenshank	1	30	0
10/07/2023	July	17:54	Snipe	1	1,650	1,635
24/07/2023	July	12:14	Golden eagle	1	705	675
24/07/2023	July	16:04	Osprey	1	105	105
26/07/2023	July	14:47	Golden plover	3	105	30
21/08/2023	August	15:44	Golden eagle	1	255	255
21/08/2023	August	13:18	White-tailed eagle	1	465	390
23/08/2023	August	11:05	White-tailed eagle	1	330	255
23/08/2023	August	10:37	White-tailed eagle	1	180	135
24/08/2023	August	13:36	Golden eagle	1	345	225
24/08/2023	August	10:34	Golden eagle	1	345	345

*This individual was recorded as two flights – Flight ID27 in Technical Appendix A7.2, Figure 7.6.

Year 1 (2023/2024) – Non-Breeding Season

4.1.7 Error! Reference source not found. presents the results of the flight activity surveys throughout the Year 1 non-breeding season (2023/2024). Flight activity recorded in target species is presented in **Technical Appendix A7.2, Figure 7.7**.

4.1.8 In Year 1 a total of 15 flights by six target species were recorded throughout the non-breeding season. Activity was highest in September, with seven flights being recorded accounting for over half of the total activity for the season.

4.1.9 Golden eagle flights were recorded on 10 occasions during the non-breeding season **Table 15.** The flights, which consisted mostly of adult birds, were predominantly distributed over the edge of the Site in the open moorland to the east and the west. One flight was over the central area of the Site, between Carn Ban and Meall a' Chrom Dhoire (**Technical Appendix A7.2, Figure 7.7**). This individual was observed hunting and performed two display flights, though no other eagles were recorded nearby at this time. All but one golden eagle flight recorded in the 2023/2024 non-breeding season were at PCH.

4.1.10 One white-tailed eagle flight was recorded in September, flying around the east of the Site, catching thermals. The bird was observed for 1,005 seconds and was at PCH throughout **(Table 15; Technical Appendix A7.2, Figure 7.7**).

4.1.11 Other species recorded in the Year 1 non-breeding season were merlin, hen harrier and golden plover, all recorded as single flights by individuals and not flying at PCH (**Table 15; Technical Appendix A7.2, Figure 7.7**). The hen harrier was recorded hunting within the Site boundary on the west side.

4.1.12 A flock (21) of Canada goose were recorded at PCH in January, flying north around the west of the Site boundary, towards Loch Loyne (**Table 15; Technical Appendix A7.2, Figure 7.7**).

Table 15: Flight activity survey results completed for the Development during non-breeding season – Year 1 (2023/2024)

Date	Month	Time	Species	No. of Birds	Flight Duration (sec)	Time at PCH (sec)
2023						
23/08/2023	August	14:04	Hen harrier	1	45	0

Date	Month	Time	Species	No. of Birds	Flight Duration (sec)	Time at PCH (sec)
23/08/2023	August	10:52	Merlin	1	45	0
02/09/2023	September	13:47	Golden eagle	1	150	150
02/09/2023	September	12:38	Golden eagle	1	210	165
02/09/2023	September	13:53	Golden eagle	1	60	60
02/09/2023	September	15:13	Golden eagle	1	150	150
03/09/2023	September	13:50	Golden eagle	1	30	0
03/09/2023	September	13:56	Golden eagle	1	135	90
08/09/2023	September	16:38	White-tailed eagle	1	1,005	1,005
23/10/2023	October	14:56	Golden eagle	1	1,035	735
16/11/2023	November	15:07	Golden eagle	1	315	270
16/11/2023	November	12:47	Golden eagle	1	135	90
16/11/2023	November	13:41	Golden eagle	1	825	780
2024						
26/01/24	January	10:22	Canada goose	21	285	285
20/02/24	February	12:47	Golden plover	1	45	0

Year 2 (2024) – Breeding Season

4.1.13 In Year 2 a total of 20 flights by 8 target species were recorded throughout the breeding season flight activity surveys. **Table 16** and **Technical Appendix A7.2, Figure 7.8** present the results of the flight activity surveys for the Development throughout the breeding season of Year 2.

4.1.14 Golden eagle was the most frequently recorded species with 11 flights, flying over and within the western and eastern areas of the Site. All of these flights were at PCH. Most of the individuals recorded were identified as adults, and pairs were recorded in February and April (**flight IDs 50 and 63 in Technical Appendix A7.2, Figure 7.8**).

4.1.15 Three white-tailed eagle flights were recorded from VP2 in the south-western area of the Site. These flights were recorded on the same day in March and comprised one adult and one juvenile (2nd calendar year) bird. Both individuals were flying at PCH.

4.1.16 One osprey was recorded in April in the west of the site, hunting over lochans and around turbines. The bird was flying at PCH for half of the recorded flight duration.

4.1.17 A flock of 68 pink-footed geese were recorded in April, south-west of the Site, flying at PCH in a northerly direction. Two teal were also recorded, at PCH, in a similar area outside the Site boundary, though heading south-east.

4.1.18 Two greenshank and two mallard were recorded by the same lochan in the west of the Site in April, though only the greenshank spent any time at PCH. One golden plover was recorded in May, north of the Site boundary on the western side. The individual was recorded as calling in flight and was at PCH for the duration.

Table 16: Flight activity survey results completed for the Development during breeding season – Year 2 (2024)

Date	Month	Time	Species	No. of Birds	Flight duration (secs)	Time at PCH (secs)
26/01/2024	January*	12:45	Golden eagle	1	60	60
20/02/2024	February*	11:34	Golden eagle	2	135	135
20/02/2024	February*	11:43	Golden eagle	1	105	105
20/02/2024	February*	11:43	Golden eagle	1	45	45
20/02/2024	February*	10:19	Golden eagle	1	690	615
20/02/2024	February*	10:22	Golden eagle	1	330	330
18/03/2024	March	12:37	White-tailed eagle	1	45	45

Date	Month	Time	Species	No. of Birds	Flight duration (secs)	Time at PCH (secs)
18/03/2024	March	12:37	White-tailed eagle	1	45	45
18/03/2024	March	12:58	White-tailed eagle	1	150	120
22/03/2024	March	10:23	Golden eagle	1	630	630
22/03/2024	March	10:25	Golden eagle	1	510	435
11/04/2024	April	10:31	Osprey	1	210	105
11/04/2024	April	13:11	Greenshank	2	75	30
11/04/2024	April	15:44	Mallard	2	60	0
15/04/2024	April	16:31	Golden eagle	1	75	75
15/04/2024	April	17:14	Golden eagle	2	195	195
15/04/2024	April	17:25	Golden eagle	1	120	105
17/04/2024	April	14:15	Pink-footed goose	68	75	75
07/05/2024	May	12:30	Golden plover	1	465	465
20/06/2024	June	11:55	Teal	2	180	180

*These flights were recorded during the breeding season for eagle species, which begins earlier than the generic breeding bird season

Summary of Vantage Point Surveys through all Seasons and Years

4.1.19 A summary for each target species recorded throughout the VP surveys for the Development is presented in **Table 17**. Only species highlighted in bold had three or more flights recorded within the collision risk area over the course of the surveys. **Hence, the only five species taken forward for further detailed CRM assessment were golden eagle, white-tailed eagle, osprey, snipe, and greenshank.**

Table 17: Summary of the vantage point surveys completed for the Development during all seasons in Year 1 and Year 2

Species	No. of Birds	Year 1 Flight Duration (sec)	Year 1 PCH Time (sec)	Year 2 Flight Duration (sec)	Year 2 PCH Time (sec)	Total PCH Time (sec)	Collision Risk Modelling Completed?
Canada goose	21	285	285	0	0	285	×
Snipe	3	2,340	2,310	0	0	2,310	✓
Golden eagle	33	9,495	8,640	390	375	9,015	✓
Golden plover	9	225	45	465	465	510	×
Greenshank	5	120	75	75	30	105	✓
Hen harrier	1	45	0	0	0	0	×
Merlin	2	60	0	0	0	0	×
Osprey	4	420	420	210	105	525	✓
Red-throated diver	1	120	120	0	0	120	×
Teal	4	60	0	180	180	180	×
White-tailed eagle	12	2,670	2,400	0	0	2,400	✓
Mallard	2	0	0	60	0	0	×
Pink-footed goose	68	0	0	75	75	75	×

Total	**165**	**15,840**	**14,295**	**1,455**	**1,230**	**15,525**	**-**

4.2 Breeding Raptor Surveys

Year 1 (2023)

4.2.1 Error! Reference source not found. and **Technical Appendix A7.2, Figure 7.9** show the results of the breeding raptor surveys completed for the Development in 2023. Five target species were recorded during the surveys, the most frequent of which was golden eagle with ten recorded flights in total, and a further five sightings. One male was recorded in flight on 16th May, one adult was recorded on 17th May, one female on 19th May and seven flights were recorded on 2nd June. All of which were located outside the Site boundary. Six of the flights were recorded around Beinn an Eon to the north of the Site. However, there was no evidence that golden eagle were breeding in any of these areas. Two incidental golden eagle flights were recorded in the western areas within the Site boundary.

4.2.2 One adult white-tailed eagle was recorded in flight on 16th May and three flights were recorded on 18th May. There was no evidence of breeding by white-tailed eagle within the Site boundary, however, evidence of breeding was recorded nearby. This information is further detailed in **Confidential Annex 7.5** and **Confidential Figure 2**.

4.2.3 Hen harrier, with one flight, was recorded on 16th May flying over open moorland and forestry south of the Site. One osprey flight was also recorded on 16th May, carrying food in flight over the western area of the operational wind farm.

4.2.4 In addition to target raptor species, merlin was also recorded twice in the survey buffer, during the raptor and black grouse surveys on 16th and 17th May respectively. Buzzard was also recorded frequently within the breeding raptor survey area during both raptor surveys and the MBBS.

Table 18: Breeding raptor survey results completed for the Development – Year 1 (2023)

Date	Month	Species	#Birds	Sex	Age	Type of record	Notes
28/04/2023	April	Buzzard	1	-	-	Sighting	Observed hunting over the open moorland and forestry plantation.
28/04/2023	April	Golden eagle	1	-	-	Aggressive behaviour	Soaring, mobbed by two smaller birds.
28/04/2023	April	Buzzard	1	-	-	Sighting	Soaring above conifer forestry plantation.
28/04/2023	April	Buzzard	1	-	-	Sighting	Soaring outside buffer, then headed SW and within the buffer.
28/04/2023	April	Golden eagle	1	-	J	Sighting	Soaring west of T15, dropped to the ground east of T15.
15/05/2023	May	Common scoter	2	-	-	Sighting	-
15/05/2023	May	Greenshank	1	-	-	Alarm calls	-
15/05/2023	May	Greenshank	1	-	-	Sighting	-
16/05/2023	May	Hen harrier	1	M	-	In flight	Hunting.
16/05/2023	May	Golden eagle	1	M	-	In flight	
16/05/2023	May	Osprey	1	-		Carrying food	Flying at collision height.
16/05/2023	May	White-tailed eagle	1	-	A	In flight	Collision height through CSA.
17/05/2023	May	Golden eagle	1	-	A	In flight	Displaying. In primary moult.
18/05/2023	May	White-tailed eagle	1	-	-	In flight	-
18/05/2023	May	White-tailed eagle	1	-	-	In flight	-
18/05/2023	May	White-tailed eagle	1	-	-	In flight	-

Date	Month	Species	#Birds	Sex	Age	Type of record	Notes
18/05/2023	May	Black-throated diver	2	-	-	Sighting	Loafing on loch
18/05/2023	May	White-tailed eagle	1	-	-	Unoccupied nest	Old nest, not in use.
18/05/2023	May	White-tailed eagle	2	-	-	Occupied nest	Chicks on nest, minimum 2 chicks.
19/05/2023	May	Golden eagle	1	F	A	In flight	Not in moult.
19/05/2023	May	Golden plover	1	-	-	In flight	Displaying.
19/05/2023	May	Greenshank	1	-	-	In song	-
19/05/2023	May	Dunlin	2	-	-	In song	-
02/06/2023	June	Golden eagle	1	-	-	In flight	Soaring, lost in clouds.
02/06/2023	June	Golden eagle	1	-	-	In flight	Displaying, flying at same time as another golden eagle.
02/06/2023	June	Golden eagle	1	-	-	In flight	Flying at same time as another golden eagle.
02/06/2023	June	Golden eagle	1	-	-	In flight	First perched, then off displaying.
02/06/2023	June	Golden eagle	1	-	-	In flight	Displaying.
02/06/2023	June	Golden eagle	1	-	-	In flight	Displaying.
02/06/2023	June	Golden eagle	1	-	-	In flight	-
21/06/2023	June	Kestrel	1	-	-	Sighting	Hovering.
22/06/2023	June	Golden eagle	2	-	-	Sighting	Soaring high.
22/06/2023	June	Golden eagle	1	-	A	Sighting	Possible golden eagle in distance.
22/06/2023	June	Golden eagle	2	-	A	Sighting	Soaring.
23/06/2023	June	Osprey	1	-	-	Sighting	Hovering with beating wings.
24/07/2023	July	Buzzard	3	-	-	Sighting	-
25/07/2023	July	Buzzard	3	-	A	Sighting	Three flying, one perched on rock for 10 minutes.

M = Male, F = Female, A = Adult, J = Juvenile. Where no data was collected by surveyor, a dash '-' has been placed.

Year 2 (2024) – Breeding Season

4.2.5 **Error! Reference source not found.** and **Technical Appendix A7.2, Figure 7.10** present the results of the breeding raptor surveys conducted for the Development in Year 2. The only target species recorded was white-tailed eagle with six sightings. Three of these sightings were around Loch Garry, near to the active nest recorded on 18th May 2023. Two adults were recorded here at the same time, and a juvenile the following day, indicating breeding in the area, likely by the same pair of the active and disused nests found in 2023.

4.2.6 Secondary species recorded include three adult buzzard flights (in the west of the breeding raptor survey area, one of which was within the Site boundary), and one adult kestrel in flight (north of the Site boundary in the east).

Table 19: Breeding raptor survey results completed for the Development – Year 2 (2024)

Date	Month	Species	#Birds	Sex	Age	Type of record	Notes
17/04/2024	April	Buzzard	1	-	A	In flight	-
27/05/2024	May	White-tailed eagle	1	-	A	In flight	-
28/05/2024	May	Buzzard	1	-	A	In flight	Being chased by a greenshank, very pale buzzard.

Date	Month	Species	#Birds	Sex	Age	Type of record	Notes
29/05/2024	May	White-tailed eagle	1	-	J	Resting	-
30/05/2024	May	White-tailed eagle	1	-	J	Resting	-
26/06/2024	June	White-tailed eagle	1	-	A	Preening	Perched in tall conifer, seen preening its wings.
26/06/2024	June	White-tailed eagle	1	-	A	Resting	Sat on the ground on the banks of the loch. (2 individuals in total including the other in the tree as both are visible).
16/07/2024	July	Kestrel	1	-	A	In flight	Seen briefly hovering before disappearing over the brow of the hill.
16/07/2024	July	Buzzard	1	-	A	In flight	Seen hovering briefly and stooping to the ground.
18/07/2024	July	White-tailed eagle	1	-	J	Resting	Seen from a distance, sat on rocks by the shore. Disappeared after a few minutes. Likely a juvenile due to size and dark plumage.

A = Adult, J = Juvenile. Where no data was collected by surveyor, a dash '-' has been placed.

Breeding Eagle Surveys – Year 2 (2024)

4.2.7 **Table 20** and **Technical Appendix A7.2, Figure 7.10** present the results of the Year 2 golden eagle breeding season surveys undertaken for the Development between March and August 2024. Target species were observed in March only. There were seven golden eagle sightings during the surveys on 6th and 7th March, including birds of both male and female (as well as undetermined) sex. One adult white-tailed eagle was also recorded on 6th March.

4.2.8 The sightings were all in the west and southwest of the Site, one of which (adult golden eagle) was outside the 6 km eagle survey area. Golden eagle were recorded displaying twice during the surveys, the first was a pair on 6th March and the second a single male on the following day. On the same days, each had a record of a juvenile golden eagle, one was in second calendar year while the other was said to be forth calendar year.

4.2.9 **Technical Appendix A7.2, Figure 7.13** shows the golden eagle topography model results in relation to the Site which is discussed further in the Environmental Impact Assessment Report Chapter 7: Ornithology.

Table 20: Breeding golden eagle survey results completed for the Development – Year 2 (2024)

Date	Month	Species	#Birds	Sex	Age	Type of record	Notes
06/03/2024	March	Golden eagle	2	P	-	In flight	Pair displaying then drifted SW and displayed more intensely before high circling and drifting SE.
06/03/2024	March	Golden eagle	1	-	A	In flight	11:29am - outside survey area.
06/03/2024	March	Golden eagle	1	-	J	In flight	11:57am, 2nd calendar year, flew south.
06/03/2024	March	White-tailed eagle	1	-	A	In flight	14:36pm, flew east.
06/03/2024	March	Golden eagle	2	P	A	In flight	14:54pm, displaying.
07/03/2024	March	Golden eagle	1	-	J	In flight	4th calendar year, flew SW.
07/03/2024	March	Golden eagle	1	F	A	In flight	10:18am, flew north.
07/03/2024	March	Golden eagle	1	M	A	In flight	Flew south then displayed going low to the ground, then headed SW.

M = Male, F = Female, P = Pair, A = Adult, J = Juvenile. Where no data was collected by surveyor, a dash '-' has been placed.

4.3 Moorland Breeding Bird Surveys

4.3.1 A total of 24 species were recorded during the moorland breeding bird surveys in 2023 and 2024, of which 14 were protected or notable species of conservation concern (i.e., Annex I, Schedule 1, or red-listed BoCC). These are identified in **Table 21** along with their legal protection and/or conservation status, and the minimum number of breeding territories held by them. Potential breeding territories discovered in 2023 and 2024 are presented in **Technical Appendix A7.2, Figure 7.11** and **Figure 7.12**, respectively. Overall, the species recorded during the surveys are representative of the woodland/woodland edge and open moorland habitats associated with the Site.

4.3.2 Golden plover, greenshank, red-throated diver, osprey, golden eagle, and hen harrier were species recorded (all on the Site with the exception of golden eagle recorded only in survey buffer) which are listed on Annex I of the EU Birds Directive and/or Schedule 1 of the Wildlife and Countryside Act 1981. Of these species, only greenshank was confirmed to be breeding within the survey area. An active nest site was located on 28th May where an adult pair and one chick were present.

4.3.3 A further seven red-listed birds of conservation concern and/or SBL-listed species were also recorded within the 500 m MBBS buffer: red grouse, golden plover, red-throated diver, kestrel, hooded crow, and skylark, which were identified to be potentially holding breeding territories within the survey area. Only red grouse, golden plover, red-throated diver and skylark held any territories within the Site. The distribution of breeding territories held by these species is shown in **Technical Appendix A7.2, Figure 7.11** and **Figure 7.12**.

Table 21: MBBS results and conservation status – Year 1 (2023) and Year 2 (2024)

Species	Conservation Status					Presence / Minimum No. of Breeding Territories*:	
	Annex I EU Birds Directive	Schedule 1	Red-listed BoCC	Amber-listed BoCC	SBL	Site	Survey Buffer
Canada goose						*Outside buffer*	
Greylag goose				✓		*Flying over the Site*	
Mallard				✓		2	-
Teal				✓		3	2
Red grouse				✓	✓	2	1
Cuckoo			✓		✓	-	1
Golden plover	✓				✓	2	4
Dunlin			✓		✓	*Outside buffer*	
Snipe				✓		2	1
Common sandpiper				✓		*Outside buffer*	
Greenshank		✓		✓		3**	1
Red-throated diver	✓	✓			✓	1	-
Osprey	✓	✓		✓	✓	*Outside buffer*	
Golden eagle	✓	✓			✓	-	*Present only*
Hen harrier	✓	✓	✓		✓	*Outside buffer*	
Buzzard						*Present only*	1
Kestrel				✓	✓	*Present only*	1
Carrion crow						-	*Present only*
Hooded crow					✓	*Present only*	3
Raven						-	2

Species	Conservation Status					Presence / Minimum No. of Breeding Territories*:	
	Annex I EU Birds Directive	Schedule 1	Red-listed BoCC	Amber-listed BoCC	SBL	Site	Survey Buffer
Meadow pipit				✓		*1 nest recorded on Site. Peak count of 79 meadow pipit recorded across Site in May.*	
Skylark			✓		✓	*Peak count of 52 individuals recorded in May.*	
Willow warbler				✓		*Outside buffer*	
Wheatear				✓		1	1
Pied wagtail						*Outside buffer*	

*Minimum number of breeding territories reported using the maximum number of possible/probable/confirmed territories recorded on Site or within MBBS buffer during one breeding season (2023 or 2024).

**One breeding territory excluded from Figures due to being sensitive breeding data.

4.4 Black Grouse Surveys

Year 1 (2023)

4.4.1 **Table 22** and **Technical Appendix A7.2, Figure 7.4**shows the results from the 2023 black grouse surveys. Seven male black grouse were observed in the north-west areas of the Site during the April surveys, one of which was recorded lekking in an area of clear-fell containing young birch trees of approximately 3 m in height. Two male black grouse were also recorded during the May survey, in open moorland just south of the April lekking record, and although they were not observed lekking, their early morning presence together in suitable habitat suggests that they had been. These lek sites are over 200m from each other and are therefore considered to be separate according to the standard survey methodology for this species (Gilbert *et al.,* 1998).

4.4.2 In addition, incidentally, two male black grouse were recorded in April, 5 km east of the Site, on Millenium Wind Farm. In May, three males were recorded lekking here (grid ref. NH 27058 10283).

Table 22: Black grouse lek survey results at the Site (2023)

Date	No. of Males	Location	Approx. Grid Ref.	Observation	Details
26/04/2023	1	Northwest area of Site, along a burn with young birch and open habitat, southeast of felled trees area.	NH 22214 08147	Observed	Heard at least two males but only seen one.
26/04/2023	1	Within area of conifer saplings and clear-felled area.	NH 21831 08072	Heard calling	One male calling. Not sighted.
26/04/2023	2	Area with young birch ~3m in height and within clear felled area.	NH 21252 07929	Lekking	Two males: one calling and displaying, and one male in flight.
27/04/2023	1	Moorland/scrub habitat by A87 road beside northeast section of Loch Loyne.	NH 19787 07139	Flying	Seen flying over road. Then located south of this, on higher ground calling.
27/04/2023	1	Moorland/scrub habitat south of A87 road, Allt Garbh-Dhoire.	NH 20570 07574	Flying	Seen flying east to west at approximate location where heard male calling but not seen. Also, probably a different male calling in the above the gully but not located.

Date	No. of Males	Location	Approx. Grid Ref.	Observation	Details
16/05/2023	2	Open moorland habitat.	NH 21302 07628	Flying	Another black grouse heard calling.

Year 2 (2024)

4.4.3 **Table 23** and **Technical Appendix A7.2, Figure 7.4** present the results of the 2024 black grouse surveys. No males were recorded lekking in 2024, however a single male was observed displaying beside the wind farm track in the north of the Site in May. In the same area, two males were recorded flying in areas of clear-fell and conifer plantation. Although these individuals were not observed lekking, their early morning presence together in suitable habitat suggests that they may have been.

4.4.4 In April two males were recorded feeding separately, one in the same area as the displaying and flying males in May, and the other was recorded in moorland/scrub habitat between Loch Loyne and the A87 road, in the northwest of the survey buffer.

Table 23: Black grouse lek survey results (2024)

Date	No. of Males	Location	Approx. Grid Ref.	Observation	Details
30/04/2024	1	Moorland/scrub habitat north of A87 road and south of Loch Loyne.	NH 19675 06977	Feeding	Male walking by A87 road.
30/04/2024	1	Moorland/clear-fell habitat along wind farm track.	NH 22053 08178	Feeding	Male feeding by side of road.
29/05/2024	1	Moorland/clear-fell habitat along wind farm track.	NH 22027 08144	Display	Male displaying by side of road.
29/05/2024	1	Clear-fell and conifer plantation.	NH 22071 09044	Flying	Flying in a northerly direction.
29/05/2024	1	Clear-fell and conifer plantation.	NH 21772 08740	Flying	Flying in north-east direction.

4.5 Breeding Diver and Common Scoter Surveys

Year 1 (2023)

4.5.1 During the 2023 occupancy surveys completed for the Development, all lochs/lochans within the 1 km survey area were recorded and assessed. **Confidential Appendix A7.6, Confidential Figure 3** and **Table 24** present the findings of the survey, detailing the waterbodies' status, suitability for breeding and whether any birds were present. Only seven out of the 27 lochs surveyed were deemed suitable for breeding by diver species or common scoter. These were lochans 3, 8, 12, 16, 18, 21, and 25, however there was no evidence of breeding found during the surveys. The species recorded around the lochans were greenshank, feeding by lochan 3; three teal on lochan 8 with a common sandpiper recorded nearby; and individual golden plovers were recorded nearby to lochans 10, 16, and 21 (**Table 24**).

4.5.2 A pair of common scoter were also recorded on lochan 3, incidentally, during a breeding raptor survey on 15th May 2023. Similarly, a pair of black-throated diver were observed loafing on Loch Garry during a VP survey on 18th May. These records have been included in **Confidential Appendix A7.6, Confidential Figure 3.**

Table 24: Breeding diver and common scoter results (2023)

Date	Lochan ID	Suitable for Breeding?	Diver/Scoter Presence?	Notes
30/05/2023	1	No	-	Dried up.
30/05/2023	2	No	-	-
30/05/2023	3	Yes	Greenshank feeding on loch side.	-
30/05/2023	4	No	-	-
30/05/2023	5	No	-	-
30/05/2023	6	No	-	-
30/05/2023	7	No	-	-
30/05/2023	8	Yes	Three teal, one common sandpiper.	No diver/scoter breeding activity.
30/05/2023	9	No	-	Dried up.
30/05/2023	10	No	Golden plover nearby.	-
30/05/2023	76	No	-	Extra lochan found during survey, located beside lochan 10.
30/05/2023	11	No	-	-
30/05/2023	12	Yes	-	No breeding activity.
30/05/2023	13	No	-	-
30/05/2023	14	No	-	-
30/05/2023	15	No	-	-
01/06/2023	16	Yes	Golden plover nearby.	No breeding activity.
01/06/2023	17	No	-	-
01/06/2023	18	Yes	-	No breeding activity.
01/06/2023	19	No	-	-
01/06/2023	20	No	-	-
01/06/2023	21	Yes	Golden plover nearby.	No breeding activity.
01/06/2023	22	No	-	-
01/06/2023	23	No	-	-
01/06/2023	24	No	-	-
01/06/2023	25	Yes	-	No breeding activity.
01/06/2023	26	No	-	-

Year 2 (2024)

4.5.3 The 27 registered lochans (**Table 25**) within the CSA and 1 km breeding diver/scoter survey area were visited again in 2024. A pair of red-throated diver were recorded feeding in lochan 3 on two occasions, 6th and 31st May) (**Technical Appendix A7.2, Figure 15**). The pair was also recorded during the MBBS on 18th April and 28th May. There was no evidence of breeding, and the pair were not present during the June or July MBBS when the lochan was surveyed.

4.5.4 There was no breeding activity recorded at any of the other lochans during the occupation surveys in May, though **Table 25** presents the species that were observed in or near to lochs on/around the Site. Notably, a pair of red-breasted merganser were recorded feeding in the northeast of Loch Loyne on 6th May. A greenshank was also observed at lochan 2 and 3 on the same day, and two were recorded at lochans 9 and 10 the following day. These lochans are all within 1.4km of each other and greenshank were recorded frequently in this area during the MBBS where breeding was confirmed.

4.5.5 Also, incidentally, three common scoter were observed on Loch Garry, approx. grid ref. NH 22090 02076, during MBBS.

Table 25: Breeding diver and common scoter results (2024)

Date	Time	Lochan ID	Species	No. of Birds	Age	Activity	Notes
06/05/2024	12:20	Loch Loyne	Ringed plover	2	Adult	Calling	Pair on northeast bank shore.
06/05/2024	13:00	Loch Loyne	Red-breasted merganser	2	Adult	Feeding	Pair along north-east bank.
06/05/2024	13:14	Loch Loyne	Common sandpiper	1	Adult	Feeding	Along north-east bank.
06/05/2024	13:59	3	Red-throated diver	2	Adult	Feeding	Pair
06/05/2024	14:00	3	Greenshank	1	Adult	Calling	-
06/05/2024	14:01	3	Wheatear	1	Adult	Not determined	Perched on post.
06/05/2024	14:17	2	Greenshank	1	Adult	Calling	Possibly flushed earlier from lochan 3.
07/05/2024	10:43	10	Greenshank	1	Adult	Calling	Feeding then flushed alarm calling.
07/05/2024	11:08	6	Teal	2	Adult	Flushed	Pair
07/05/2024	11:28	9	Greenshank	1	Adult	Territorial behaviour/ Alarm call	-
07/05/2024	12:53	12	Teal	1	Adult	Feeding	-
30/05/2024	16:30	Loch Loyne	Common sandpiper	2	Adult	Territorial behaviour/ Alarm call	Pair along north-east bank.
31/05/2024	11:49	3	Red-throated diver	2	Adult	Feeding	-

5 IMPORTANT ORNITHOLOGICAL FEATURES

5.1.1 **Table 26** shows the 38 target species recorded during the desk study and field. The species in **bold** are those which are considered to be Important Ornithological Features (IOFs). **Table 27** presents conservation listings for the nine identified IOF target species.

5.1.2 The list of IOF s to be scoped into the EIA was selected based on the bird species both presented in the desk study and recorded in the field survey results. Sensitive records of the nesting locations of any Schedule 1 species have been placed in the Confidential Annex.

5.1.3 The importance of ecological features is dependent upon their biodiversity, social, and economic value within a geographic framework of appropriate reference (CIEEM, 2018). IOF s have been identified based on biodiversity importance, recognised through international or national legislation, or through local, regional, or national conservation plans, and on assessment of value according to the functional role of the species. This includes:

- Species listed on Annex 1 of the Birds Directive;
- Species populations which are of international importance in Scotland; and
- Populations occurring within the Site area which are considered to be of regional, national or international importance.

5.1.4 The IOFs included within the assessment are those species recorded during the surveys that could be potentially affected by the Development. Species that were recorded in very small numbers or very infrequently during the baseline surveys are excluded because the risk of a significant effect on their populations is negligible.

5.1.5 IOFs were selected from the 38 target species.

- Common scoter;
- Black grouse;
- Golden plover;
- Greenshank;
- Red-throated diver;
- Black-throated diver;
- Golden eagle;
- White tailed eagle; and
- Osprey.

Table 26: Target species recorded during the desk study and field surveys for the Development

Species (IOFs shown in bold)	Desk Study Results		Field Surveys					
	SPA qualified species, SSSI notified natural feature or assemblage component	Highland Raptor Study Group dataset	RSPB Records	VP Survey	Breeding Raptor Survey	Moorland Breeding Bird Survey	Black Grouse Survey	Breeding Diver Survey
Canada goose				✓		✓		
Greylag goose			✓			✓		
Pink-footed goose				✓				
Mallard				✓		✓		
Teal				✓		✓		✓
Red-breasted merganser			✓					✓
Common scoter	✓		✓		✓			
Slavonian grebe	✓							
Capercaillie	✓							
Black grouse	✓		✓				✓	
Red grouse						✓		
Golden plover				✓		✓		✓
Ringed plover								✓
Dunlin					✓	✓		✓
Snipe				✓		✓	✓	
Common sandpiper			✓			✓		✓
Greenshank				✓	✓	✓		✓
Red-throated diver			✓	✓				✓
Black-throated diver	✓		✓		✓			
Golden eagle	✓	✓		✓	✓	✓		✓
White tailed eagle		✓		✓	✓			
Hen harrier				✓	✓	✓		
Buzzard					✓	✓		
Kestrel					✓	✓		
Merlin				✓			✓	
Osprey				✓	✓	✓		
Carrion crow						✓		
Hooded crow			✓			✓		
Raven					✓	✓		
Cuckoo							✓	
Crested tit	✓							
Scottish crossbill	✓							
Skylark						✓		
Willow warbler						✓		
Wheatear						✓		✓
Pied wagtail						✓		
Meadow pipit			✓			✓		
Tree pipit							✓	

Table 27: Conservation listings for nine IOFs

Species	Annex I of Directive 2009/147/EC on the Conservation of Wild Birds (the Birds Directive)	Schedule 1 of the Wildlife and Countryside Act 1981 (as amended)	BoCC5 Red or Amber lists	SBL
Geese, ducks				
Common scoter		✓	Red	✓
Grouse				
Black grouse			Red	✓
Waders				
Golden plover	✓			✓
Greenshank		✓	Amber	
Divers				
Red-throated diver	✓	✓		✓
Black-throated diver	✓	✓	Amber	✓
Raptors				
Golden eagle	✓	✓		✓
White tailed eagle	✓	✓	Amber	✓
Osprey	✓	✓	Amber	✓

6 REFERENCES

- Band, W., Madders, M. and Whitfield, D.P. (2007) Developing field and analytical methods to assess avian collision risk at wind farms. In: Janss, G., de Lucas, M. and Ferrer, M. (eds.) Birds and Wind Farms. Quercus, Madrid. 259-275.
- Bibby C., Burgess N., Hill D. and Mustoe S. (2007) Bird Census Techniques, 2nd Edition, Academic Press, London.
- Brown, A.F. and Shepherd, K.B. (1993) A method for censusing upland breeding waders. *Bird Study* 40: 189-195.
- Calladine, J., Garner, G., Wernham, C. and Thiel, A. (2009) The influence of survey frequency on population estimates of moorland breeding birds, *Bird Study*, 56:3, 381-388.
- CIEEM. (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Available at: https://cieem.net/wp-content/uploads/2019/02/Combined-EclA-guidelines-2018-compressed.pdf.
- Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0147.
- Envams Ltd. (2023) Beinneun 2 Wind Farm Environmental Scoping Report (November 2023). Document prepared by Envams Ltd for Beinneun 2 Ltd. Available at: https://www.energyconsents.scot/ApplicationDetails.aspx?cr=ECU00004972.
- Gilbert, G. Gibbons, D.W. and Evans, J. (1998) Bird Monitoring Methods. RSPB, Sandy.
- Hardey, J., Crick, H.Q.P., Wernham, C.V., Riley, H., Etheridge, B. and Thompson, D.B.A. (2013) Raptors: a field guide for surveys and monitoring, 3rd Edition, The Stationary Office, London.
- JNCC. (nd) Available at: https://jncc.gov.uk/.
- NatureScot (2014) Breeding season dates for key breeding species in Scotland.
- NatureScot. (2016) Environmental Statements and Annexes of Environmentally Sensitive Bird Information. Guidance for Developers, Consultants and Consultees. Version 2. Available at: https://www.nature.scot/doc/environmental-statements-and-annexes-environmentally-sensitive-bird-information.
- NatureScot. (2017) Recommended bird survey methods to inform impact assessment of onshore wind farms. Version 2. Available at: https://www.nature.scot/doc/recommended-bird-survey-methods-inform-impact-assessment-onshore-windfarms.
- Nature Scot. (2020) Scottish Biodiversity List. Available at: https://www.nature.scot/doc/scottish-biodiversity-list.
- NatureScot. (2024) Standing Advice for Planning Consultations – Birds. Available at: https://www.nature.scot/doc/standing-advice-planning-consultations-birds.
- NatureScot. (nd) SiteLink. Available at: https://sitelink.nature.scot/home.
- Pebesma, E. and Bivand, R. (2023) Spatial Data Science: With Applications in R. Chapman and Hall/CRC. https://doi.org/10.1201/9780429459016.
- Scotland's Environment. (nd) Scotland's Environment Map. Available at: https://www.environment.gov.scot/.
- 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.

- Wildlife and Countryside Act 1981. Schedule 1 part 1, part 1A, A1 or part 2 of the Wildlife and Countryside Act 1981 (as amended). Available at: www.legislation.gov.uk/ukpga/1981/69/contents.
- Provan, S. and Whitfield, S. (2007) Avian flight speeds and biometrics for use in collision risk modelling. Report to SNH from Natural Research.
- Robinson, R.A. (2005) BirdFacts: profiles of birds occurring in Britain & Ireland. BTO, Thetford Available at: http://www.bto.org/birdfacts.

Appendix A

Latin Names of Bird Species Included in this Report

Common Name	Latin Name	BTO Code
Canada goose	*Branta canadensis*	CG
Pink-footed goose	*Anser brachyrhynchus*	PG
Mallard	*Anas platyrhynchos*	MA
Teal	*Anas crecca*	T.
Common scoter	*Melanitta nigra*	CX
Red-breasted merganser	*Mergus serrator*	RM
Red grouse	*Lagopus scotica*	RG
Capercaillie	*Tetrao urogallus*	CP
Black grouse	*Lyrurus tetrix*	BK
Cuckoo	*Cuculus canorus*	CK
Slavonian grebe	*Podiceps auritus*	SZ
Golden plover	*Pluvialis apricaria*	GP
Snipe	*Gallinago gallinago*	SN
Common sandpiper	*Actitis hypoleucos*	CS
Greenshank	*Tringa nebularia*	GK
Red-throated diver	*Gavia stellata*	RH
Black-throated diver	*Gavia arctica*	BV
Osprey	*Pandion haliaetus*	OP
Golden eagle	*Aquila chrysaetos*	EA
Sparrowhawk	*Accipiter nisus*	SH
Hen harrier	*Circus cyaneus*	HH
White-tailed eagle	*Haliaeetus albicilla*	WE
Buzzard	*Buteo buteo*	BZ
Kestrel	*Falco tinnunculus*	K.
Merlin	*Falco columbarius*	ML
Peregrine	*Falco peregrinus*	PE
Carrion crow	*Corvus corone*	C.
Hooded crow	*Corvus cornix*	HC
Raven	*Corvus corax*	RN
Crested tit	*Lophophanes cristatus*	CI
Skylark	*Alauda arvensis*	S.
Willow warbler	*Phylloscopus trochilus*	WW
Wheatear	*Oenanthe oenanthe*	W.
Pied/white wagtail	*Motacilla alba*	PW
Meadow pipit	*Anthus pratensis*	MP
Tree pipit	*Anthus trivialis*	TP
Scottish crossbill	*Loxia scotica*	CY