Technical Appendix 9.1: Ornithology Surveys 2021-23

Windburn Wind Farm

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Executive Summary

The purpose of this report is to present the results of the baseline ornithology surveys undertaken for the proposed development, between April 2021 and March 2023.

The aim of these surveys was to provide baseline data on the breeding and non-breeding bird populations within the proposed development site and species-specific survey buffers, in order to inform an Ecological Impact Assessment (EcIA). This report does not provide advice on potential impacts and mitigation for the proposed development.

Surveys conducted consisted of the following:

- Flight activity surveys were carried out at the site during April - August 2021, September 2021-February 2022, March-August 2022 and September 2022-March 2023.
    - Flight activity was recorded by nine primary target species (pink-footed goose, hen harrier, golden eagle, merlin, red kite, kestrel, golden plover, common snipe and curlew).
    - Moderately high levels of activity by kestrel and red kite.
- Breeding wader surveys were completed between April and July 2021 and April and July 2022 with a maximum of two snipe territories recorded within the survey buffer of 500m each season.
- Species-specific raptor surveys were undertaken within 2km of the site (completed during April to July 2021 and April to July 2022). No raptors were recorded breeding onsite, however red kite, kestrel, hen harrier, peregrine falcon and golden eagle were recorded flying over or hunting on site or within 2km.
- Black grouse surveys were undertaken in 2021 with no records of black grouse returned. Surveys in 2022 were scoped out following consultation with NatureScot.

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Acronyms and Abbreviations

BTO	British Trust for Ornithology
CRM	Collision Risk Modelling
ECU	Energy Consents Unit
MBWS	Moorland Breeding Wader Surveys
NS	NatureScot
PCH	Potential Collision Height
SLR	SLR Consulting
SNH	Scottish Natural Heritage
SPA	Special Protection Areas
SSSI	Sites of Special Scientific Interest
The applicant	Windburn Windfarm Ltd
VPs	Vantage Points
WP	Windfarm Polygon

1.0 Introduction

Windburn Windfarm Ltd (the applicant) is applying to the Energy Consents Unit (ECU) for consent to develop a wind farm on moorland and grazing land in the Ochil Hills, approximately 2.9km to the north of the settlement of Alva. The site is located across both Clackmannanshire Council and Perth & Kinross Council administrative areas and is in close proximity to the boundary with Stirling Council to the west.

It is anticipated that the proposed development would comprise up to 13 wind turbines with associated infrastructure including internal transformers, crane hardstandings, access tracks, cabling, borrow pits and a single substation including control building, battery storage and ancillary services equipment ('the proposed development'). It is proposed that the turbines blade tip height of the turbines would be up to 149.9m.

1.1 Site Description

The proposed wind farm, centred around NGR NN 87737 02889, is located in the Ochil hills within both Clackmannanshire and Perth and Kinross Council administrative areas. The site is located on moorland approximately 2.9km north of the village of Alva and immediately west of the existing Burnfoot Hill Wind Farm. The site is currently managed for grazing with some recreational use by the public. Access to the site will be from the north off the Sheriffmuir road.

The majority of site is characterised by open moorland and grassland, and the entire site is grazed by sheep. The River Devon, a small burn with steep gullies and two tributaries, starts within the site boundary and runs south west to north east towards Glendevon reservoir. The reservoir lies to the east of the site, outside the site boundary. Alva Burn and East Cameron Burn start within the site boundary and run east to west down the steep slopes in the west of the site. Topography ranges from approximately 142m AOD at the north of the site near the A9, up to approximately 677m AOD on Ben Buck in the south east of the site.

1.2 Designated Sites

There are no statutory or non-statutory sites designated for their avian interest within the site boundary. The only nearby statutory sites designated for their avian interest are those on the Firth Forth, and nearby lochs and reservoirs. Significant negative impacts on these sites from the proposed development are highly unlikely due to distance and lack of use of the site by qualifying features.

The following statutory sites designated for ornithology (including Special Protection Areas (SPA), Ramsar and Sites of Special Scientific Interest (SSSI)) are located within a 20km radius of the site. A 20km radius of the site was used due to the site falling within the core foraging range of designated species which could potentially use the site (i.e., wintering and migratory grey geese).

South Tayside Goose Roosts SPA / Ramsar (approximately 5.7km north of the site) supports populations of European importance of the migratory species: wigeon *Mareca penelope*, pink-footed goose *Anser brachyrhynchus* and greylag goose *Anser anser*. This SPA is overlapped completely by parts of three SSSIs: Carsebreck and Rhynd Lochs SSSI, Drummond Lochs SSSI, and Dupplin Lakes SSSI. The lochs provide roost sites for internationally important numbers of wintering geese and for nationally important numbers of nesting ducks.

Firth of Forth SPA / Ramsar (approximately 7.8km south of the site) supports non-breeding populations of European importance of the Annex 1 species: red-throated diver *Gavia stellata*, Slavonian grebe *Podiceps auritus*, golden plover *Pluvialis apricaria* and bar-tailed godwit *Limosa lapponica*. It also qualifies by regularly supporting a population of European

importance of sandwich tern *Sterna sandvicensis* during the passage period. It further qualifies by regularly supporting populations of European importance of the migratory species: pink-footed goose; shelduck *Tadorna tadorna*; knot *Calidris canutus*; redshank *Tringa totanus* and turnstone *Arenaria interpres*. It regularly supports in excess of 20,000 individual waterfowl. The boundary of the SPA mostly follows that of the Firth of Forth SSSI.

Sites designated for ornithology within 20km are shown in relation to the proposed development on **Figure 9.1.1**.

1.3 Scope of Work

The scope of the bird survey programme in 2021-2023 was designed and undertaken with reference to current NatureScot guidance (SNH 2017)[1]. Given the location of the site and the range of habitats present, the scope of ornithological survey work included the following:

- Flight activity surveys from two fixed Vantage Points (VPs), using viewsheds of 2km;
- Breeding wader surveys;
- Breeding raptor surveys; and
- Black grouse lek surveys.

Survey areas are shown on **Figure 9.1.2**.

A consultation was undertaken with NatureScot in March 2022, comprising of a review of all the existing contemporary bird survey data for the proposed development as well as relevant contextual data collected from adjacent wind farm sites[2]. The purpose of the review was to establish the requirement for a second year of ornithology surveys to inform the impact assessment. NatureScot confirmed that a second year of vantage point, wader and raptor surveys was expected, but that a second year of black grouse surveys was not necessary.

The scope of survey work carried out during April 2021 to March 2023 is summarised in **Table 1-1**.

Table 1-1:Scope of Ornithology Surveys, April 2021- March 2023

Survey Type	Summary Methodology (see Section 3 for further details)
Vantage Point (VP) Surveys/ Flight Activity Surveys	Standard flight activity surveys, undertaken during April 2021 to March 2023 from a combination of three VPs covering the site (**Figure 9.1.3a** and **Figure 9.1.3b**). Note that VP 2 on **Figure 9.1.3a** was re-located to VP 3 in October 2021 due to landowner access issues. Target species included: • All raptors and owls listed on Annex I of the Birds Directive or Schedule 1 of the Wildlife and Countryside Act 1981; • All wader species; and • All wild goose, swan and duck species, except for Canada goose and mallard.

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

[2] SLR (2022). Windburn Ornithology Data Review. Unpublished.

Survey Type	Summary Methodology (see Section 3 for further details)
Moorland Breeding Wader Surveys	Four visits were carried out between April and July 2021 and were repeated in 2022 within the site development area plus a 500m buffer using an adapted Brown and Shepherd (1993)[3] methodology.
Breeding Raptor Surveys	Four visits were carried out between April and July 2021 and were repeated in 2022. Species-specific surveys were undertaken for all raptors likely to occur, following methods outlined within Hardey *et al.* (2013)[4], within 2km of the site development area. Data collected during VP surveys and moorland breeding bird surveys were also used to define territories within the survey buffer.
Black Grouse Lek Surveys	Three visits to habitats suitable for lekking birds within the development area to assess suitability and usage. Methods based on Etheridge and Baines (1995)[5]. The visits were in April and May 2021. Surveys were not undertaken in 2022.

Further breeding wader, breeding raptor and black grouse surveys were carried out in the 2023 breeding season to cover the additional development area in Perth & Kinross plus the proposed access route, which were not previously surveyed. The details of these surveys are provided in **Technical Appendix 9.2: Additional Bird Surveys 2023.**

1.4 Purpose of Report

This report outlines the surveys undertaken and methods used during the baseline ornithology surveys. It summarises the survey data obtained and provides descriptions of the legal and conservation status of the species recorded.

The assessment of impacts resulting from the proposed development and the development of mitigation measures, if required, are covered in **Chapter 9: Ornithology**.

1.5 Target Species

Target species for the surveys were defined by legal and/or conservation status and vulnerability to impacts caused by wind turbines, as defined in SNH, 2017. Scientific names for all species referred to in this report are given in Section 4.0.

1.5.1 Primary Target Species

The following species were considered as primary target species:

- Annex I and Schedule 1 raptor and owl species, plus kestrel[6];
- Breeding and migratory wildfowl; and
- Breeding and migratory waders.

[3] A. F. Brown & K. B. Shepherd (1993). A method for censusing upland breeding waders. Bird Study, 40:3, 189-195, DOI: 10.1080/00063659309477182

[4] Hardey, J., Crick, H.Q.P., Wernham, C., Riley, H., Etheridge, B., Thompson, D. (2013). *Raptors: A field guide for surveys and monitoring* (3rd Edition).

[5] Etheridge, B. & Baines, D. (1995). *Instructions for the Black Grouse Survey 1995/6: a Joint RSPB/GCT/JNCC/SNH Project.* Unpublished.

[6] Due to conservation status as an Amber species and the species vulnerability to wind turbines

1.5.2 Secondary Target Species

The following species were considered as secondary target species:

- Non-Annex I and Schedule 1 raptor species (other than kestrel);
- Raven; and
- And other species of lesser conservation importance which are considered to be potentially vulnerable to impacts from wind farm developments.