

Appendix 7-7 – Bird Monitoring Programme

Proposed Cahermurphy
West Wind Farm



Table of Contents

1.	INTRODUCTION	2
1.1	Key Ornithological Receptors and Birds of Conservation Concern	2
1.2	Objectives.....	2
2.	METHODOLOGY	2
2.1	Pre-construction Bird Monitoring	2
2.2	Operational Bird Monitoring.....	3
2.2.1	Vantage Point Surveys.....	3
2.2.2	Collision Searches (Bird Casualties).....	3
2.3	Decommissioning Bird Monitoring	4
2.4	Monitoring of Hen Harrier Enhancement Lands.....	5
3.	TIMEFRAME OF PROPOSED MONITORING WORKS	6
4.	REPORTING	6
4.1	Sharing Ecological Data	6
	BIBLIOGRAPHY	8

TABLE OF TABLES

<i>Table 7 - 7 - 1 Key Ornithological Receptors identified</i>	2
<i>Table 7 - 7 - 2 Proposed bird monitoring work schedule for each monitoring year</i>	6

1. INTRODUCTION

This Bird Monitoring Programme has been prepared by MKO for the proposed Cahermurphy West Wind Farm, Co. Clare.

This document provides a timeframe and monitoring schedule for the bird population of the study area during the construction and operational phase of the project. Breeding and wintering bird surveys were undertaken during the period April 2023 to March 2025, encompassing two full breeding seasons and two full winter seasons, as well as autumn and spring migration periods. These surveys were in line with SNH guidance entitled “*Recommended bird survey methods to inform impact assessment of onshore wind farms*” (SNH, 2017, which was revised in NatureScot [2025]). The surveys undertaken to date have informed the various proposed bird monitoring measures outlined in this document.

1.1 Key Ornithological Receptors and Birds of Conservation Concern

Error! Reference source not found. lists the Key Ornithological Receptors recorded within the study area during field surveys.

Table 7-7-1 Key Ornithological Receptors identified

Common Name	Latin Name	Conservation Status
Hen Harrier	<i>Circus cyaneus</i>	Annex I EU Birds Directive
Kestrel	<i>Falco tinnunculus</i>	BoCCI Red Listed (Breeding Populations)
Snipe	<i>Gallinago gallinago</i>	BoCCI Red Listed (Breeding & Wintering Populations)
Buzzard	<i>Buteo buteo</i>	Raptor Species; Sensitive to wind farm developments
Sparrowhawk	<i>Accipiter nisus</i>	Raptor Species; Sensitive to wind farm developments

1.2 Objectives

This document has been prepared having regard to the following objectives:

- To ensure any required pre-commencement/ pre-construction phase monitoring is scheduled to ensure any impacts are avoided.
- To record usage of the site by birds and interaction with operating turbines during the post-construction phase of the development.
- To monitor short-term and long-term effects on bird populations with a particular emphasis on wintering and breeding birds deemed to be of high conservation concern (Annex I; EU Birds Directive and BoCCI red list species).
- To undertake collision monitoring and corpse searches for potential bird fatalities as a result of collision with turbine blades.
- To monitor the distribution and abundance of bird species within the enhancement lands.
- Report on findings of post construction monitoring at the end of each monitoring year (Year 1, 2, 3, 5, 10 and 15 of the lifetime of the wind farm). Following implementation, reporting on the compensation and enhancement lands would be undertaken yearly.

2. METHODOLOGY

2.1 Pre-construction Bird Monitoring

It is proposed that construction works will commence outside the bird nesting season (1st of March to 31st of August inclusive) to avoid the most sensitive time of the year for most bird species with the potential to use the site and its environs. Pre-commencement confirmatory surveys will be undertaken within one month prior to the initiation of works at the Proposed Project to identify sensitive sites (e.g. roosts).

Any requirement for construction works to run into the subsequent breeding or winter seasons following commencement will be subject to a repeat of the pre-commencement bird surveys to confirm the absence of breeding or roosting birds of conservation concern. These surveys will be conducted once per month during the breeding season (April to July) and once at the start of the winter season (October). The survey will aim to identify sensitive sites (e.g., nests or roosts depending on the season in question).

This monitoring will involve surveying onsite and to a 500m radius of the development footprint/works areas. Monitoring will be undertaken by a suitably qualified ornithologist. The survey period will include one month prior to the initiation of works, four visits between April and July and one visit during the winter period (October). If a sensitive area is identified, the nest/roost sites will be located, and no works shall be undertaken within a species-specific buffer in line with best practice guidance (e.g. Forestry Commission Scotland, 2006; Goodship and Furness 2022; Ruddock and Whitfield, 2007). No works within the buffer zone shall be permitted until it can be demonstrated that the species is no longer reliant on the area for breeding or roosting.

All site staff and subcontractors will be made aware of any restrictions to be imposed by means of a toolbox talk and a map of the 'no-work zone' will be made available to all construction staff. The restricted area will also be marked off using hazard-tape fencing to alert all personnel on site to the suspension of works within that area.

2.2 Operational Bird Monitoring

Survey methods employed for operational monitoring will be in line with guidelines issued by the Scottish Natural Heritage (SNH, 2009). Operational monitoring will be undertaken in Years 1, 2, 3, 5, 10 and 15 of the lifetime of the wind farm. Operational monitoring will include vantage point surveys and a programme of regular corpse searching of birds that may potentially collide with operating turbines during the operational phase of the wind farm project.

Bird monitoring will include the following survey methods:

- Flight activity surveys: vantage point surveys
- Targeted bird collision surveys (corpse searches) will be undertaken. The surveys will include detection and scavenger trials, to correct for these two biases and ensure the resulting data is robust.

2.2.1 Vantage Point Surveys

Vantage point surveys will be undertaken monthly during operational years 1, 2, 3, 5, 10 and 15 of the lifetime of the wind farm. The methodology for vantage point watches will follow guidelines issued by the SNH (2009) and NatureScot (2025). The proposed vantage point watches will adhere to a minimum of 36 hours/VP per season as per guidelines issued by SNH/NatureScot. Monthly visits will be undertaken between January and December inclusive. During each visit, six-hour vantage point watches will be undertaken from each fixed vantage point location that offers an un-interrupted view of the study area. Vantage points will be undertaken from the same locations that pre-planning surveys which informed the EIAR application of the Proposed Project (i.e. VPs 1, 2, 3 & 4)¹. Vantage point surveys will be timed to provide a spread over the full daylight period including dawn and dusk watches to coincide with the highest periods of bird activity. Behavioural categories for the observation of bird interactions with operational wind farms will be in line with terminology outlined by Meredith *et al.*, (2002).

2.2.2 Collision Searches (Bird Casualties)

Surveys for bird casualties will follow survey methods broadly based on guidelines issued by the Scottish Natural Heritage (2009) and search methods adopted by Duffy & Steward, '*Turbine Search Methods and Carcass Removal Trials at the Braes of Doune Windfarm*' (Natural Research Information Note 4. Natural Research Ltd, Banchory, UK, 2008).

¹ The adequacy of the vantage point viewsheds will be monitored throughout the lifetime of the wind farm.

It is proposed to undertake a minimum of one visit per month during each survey year by a trained dog and handler, where possible. During each visit, searches will be undertaken at each operating turbine location by a trained dog and handler. Edkins (2014) "Impacts of Wind Energy Developments on Birds and Bats: Looking into The Problem", recommends the "search width should be equal to the maximum rotor tip height". Given a turbine rotor tip height of between 180 and 185 meters the search area surrounding the base of the turbine would be taken as a radius of between 90 and 92.5 meters centred on the turbine base. This area will be the subject of target searches for bird casualties. Searches will incorporate the use of transects spaced at 10m intervals apart with the observer covering 5m on either side for each transect. Locations and coordinates of transect routes will be confirmed using a portable GPS recording device. Recording sheets will be used to document bird carcasses encountered in the field.

The following details will be considered during field surveys: GPS location of each bird carcass, photographic record, carcass condition (intact (carcass that is completely intact or not badly composed), scavenged (evidence that the carcass was fed upon by a scavenger/predator) or feather spot (ten or more feathers indicating predation or scavenging or two or more primary feathers must be present to consider the carcass a casualty)), distance from the turbine location, date, time, etc.

Carcass removal trials and searcher efficiency trials will be undertaken to account for the ability of the dog team to find bird carcasses and the likelihood of scavenging of corpses by animals. This is done to ensure a more accurate estimation of the total number of collision victims. During carcass removal trials, a carcass is placed in a study area periodically and is monitored for a set number of days or until scavengers remove the carcass (this can be done with the use of a trail camera). A determination on carcass removal is made when no body parts containing flesh or bone or >10 disarticulated feathers can be found. During searcher efficiency trials, a number of carcasses are placed in a study area by one worker, then searched for by another worker with the dog. These may be conducted on the same day as surveys are carried out to avoid flooding the area with carcasses and increasing scavenger activity. The result of these trials provides a correction factor that can be applied to the results of the carcass searches.

2.3

Decommissioning Bird Monitoring

It is proposed that decommissioning works will commence outside the bird nesting season (1st of March to 31st of August inclusive) to avoid the most sensitive time of the year for most bird species with the potential to use the site and its environs. Pre-commencement confirmatory surveys will be undertaken within one month prior to the initiation of works at the Proposed Project to identify sensitive sites (e.g. roosts).

Any requirement for decommissioning works to run into the subsequent breeding or winter seasons following commencement will be subject to a repeat of the pre-commencement bird surveys to confirm the absence of breeding or roosting birds of conservation concern. These surveys will be conducted once per month during the breeding season (April to July) and once at the start of the winter season (October). The survey will aim to identify sensitive sites (e.g., nests or roosts depending on the season in question).

This monitoring will involve surveying onsite and to a 500m radius of the development footprint/works areas. Monitoring will be undertaken by a suitably qualified ornithologist. The survey period will include one month prior to the initiation of works, four visits between April and July and one visit during the winter period (October). If breeding or roosting activity is identified, the nest/roost sites will be located, and no works shall be undertaken within a species-specific buffer in line with best practice guidance (e.g. Forestry Commission Scotland, 2006; Goodship and Furness 2022; Ruddock and Whitfield, 2007). No works within the buffer zone shall be permitted until it can be demonstrated that the species is no longer reliant on the nesting or roosting areas.

All site staff and subcontractors will be made aware of any restrictions to be imposed by means of a toolbox talk and a map of the 'no-work zone' will be made available to all construction staff. The restricted area will also be marked off using hazard-tape fencing to alert all personnel on site to the suspension of works within that area.

Monitoring of Hen Harrier Enhancement Lands

The enhancement lands for hen harrier will be the subject of ongoing monitoring to assess the effectiveness of the measures proposed and employed and to contribute to advances in habitat management methods, which can be applied to future similar projects. The monitoring can also aid adaptation and implementation of improved methods and measures as they emerge, or intensification of successful measures deployed from farm plan to farm plan.

The monitoring measures will include:

- The areas proposed for enhancement will be the subject of ongoing monitoring during the operational phase of the wind farm to ensure it is offering supporting habitat for breeding hen harrier. The ongoing monitoring will take place during the breeding bird season. The monitoring will seek to identify whether hen harrier are utilising the areas under active management for foraging and will be conducted by way of vantage point surveys (six hours in duration). These surveys will be undertaken once a month March to August inclusive, at each enhancement area, each year.
- Passerine point counts will be undertaken monthly from April to September inclusive in each monitoring year at each of the enhancement areas. The monitoring aims to investigate to what extent enhancement measures e.g. seed crops, increase the availability of prey species for hen harrier.
- Areas of favourable hen harrier foraging habitat (i.e. scrub, blanket bog, wet heath and heather banks) within the enhancement areas should be accurately mapped and should be monitored annually to check that the areas so covered have not altered in size and that the grazing regime that is in place is maintaining the current state of these habitats (i.e. neither poaching nor overgrowth of open areas is occurring). As well as mapping, this monitoring will be recorded by means of fixed-point photography.

Following commencement of the Hen Harrier Enhancement Plan, the efficacy of the enhancement measures will be reviewed yearly. Analysis of the data collected will be the basis for a review of the measures and techniques employed. This analysis will be contained in an annual report. Should any adjustments to the plan be deemed necessary or advisable, these should be undertaken in consultation with the NPWS prior to any alterations to the plan.

Additional monitoring measures will include:

- **Habitat scoring** The enhancement lands will be scored based on the Hen Harrier Project scorecards for Bog and Heath (Areas A, B, C and 6) and Wet Grassland (Areas 1, 2, 3, 4 and 5). Scoring will be carried out based on the methods outlined in the Hen Harrier Project guidance documents for each habitat type. Scoring will be carried out between May 15th and August 31st as per these methods.
- **Vegetation sampling** A number of fixed relevé sites (i.e. permanent quadrats) will be set up in the proposed enhancement lands. Data will be recorded prior to the commencement of the enhancement plan activities. The character of each relevé will be recorded (e.g. species proportions present using Domin scale, vegetation structure) and photographs will be taken of each relevé from a fixed point. These relevés will then be re-examined annually following the commencement of the enhancement plan in place to establish the extent of habitat improvement resulting from management practices.

Reports detailing the monitoring works carried out, the results obtained and a review of their success, along with any suggestions for amendments to the plan will be prepared and submitted to the planning authority yearly following commencement of the plan. The farm plan agreements and enhancement area plan agreements will provide for such amendments.

3. TIMEFRAME OF PROPOSED MONITORING WORKS

It is proposed to undertake bird monitoring surveys at the Proposed Wind Farm during years 1, 2, 3, 5, 10 and 15 and at the compensation and enhancement lands every year of the wind farm operation.

Error! Reference source not found. below describes the proposed bird monitoring work schedule for each monitoring year for the Proposed Project.

Table 7-7-2 Proposed bird monitoring work schedule for each monitoring year

Survey Type	Phase	Period	No. of Visits	Survey Method
Vantage Point Surveys	Year 1, 2, 3, 5, 10 and 15	January - December	1 visits/ VP / month for each monitoring year	Four fixed, 6-hour, Vantage Point Surveys
Corpse Searches (Bird Casualties)	Year 1, 2, 3, 5, 10 and 15	January - December	1 visit/month for each monitoring year	Targeted corpse searches at turbine bases
Enhancement Land Hen Harrier Surveys	Every Year	March - August	6 visits / monitoring year	9 fixed, 6-hour, Vantage Point Surveys. One at each enhancement land area.
Passerine Surveys	Every Year	April - September	6 visits / monitoring year	Country-side bird survey methodology at each of the 9 enhancement land areas
Habitat Mapping, Habitat Scoring and Vegetation Sampling	Every Year	Annually	Once per monitoring year for each area	As described in Section 2.4

4. REPORTING

A report summarising the findings of the bird monitoring surveys will be submitted to the Planning Authority, where required, within three months of each monitoring year. This will provide details of the various methods employed, the results of field surveys (vantage point watches, corpse searches, distribution and abundance surveys), potential effects/impacts on birds and any recommendations that may inform additional mitigation measures during the operational phase of the wind farm project.

For consistency with the Birds Chapter of the EIAR, the results section of the report will include the following information, the average number of flights per hour, the average flock size and the peak counts for each observed target species. This approach is in line with best practise and will facilitate an analysis of results following a before-after experimental designed.

This report will also include the results of monitoring of all compensation and enhancement lands.

Maps outlining flight lines of key target species will be produced using GIS software applications to accompany the final report at the end of each monitoring year.

4.1 Sharing Ecological Data

As a measure to support conservation research and policy, it is proposed to submit the monitoring survey data and information to the National Biodiversity Data Centre (NBDC) and to BirdWatch Ireland to contribute to the upcoming bird atlas (2027) on relevant ecological records, for example, information on

the location of breeding territories and nest sites of bird species of conservation concern (e.g. Red-List Species (as per the most recent BoCCI)). The submission of the data will follow relevant standards and will be provided in the preferred NBDC excel template. This measure will be fulfilled within three months of each monitoring year, as relevant, in the event of a successful application.

This commitment ensures the project is contributing to the aims of Objective Four, Outcome 4B of the Ireland's 4th National Biodiversity Action Plan².

² https://www.npws.ie/sites/default/files/files/4th_National_Biodiversity_Action_Plan.pdf

BIBLIOGRAPHY

Duffy, K. and Steward, M. (2008). *Turbine Search Methods and Carcass Removal Trials at the Braes of Doune Windfarm*. Natural Research Information Note 4. Natural Research Ltd, Banchory, UK.

Edkins, M.T. (2014). Impacts of wind energy developments on birds and bats: looking into the problem. Report to FPL Energy, Florida, USA.

Forestry Commission Scotland (2006). Forest operations and birds in Scottish forests - the law and good practice. FCS Guidance Note 32, Forestry Commission Scotland, Inverness, Scotland.

Goodship, N.M. and Furness, R.W. (2022). Disturbance distances review: An updated literature review of disturbance distances of selected bird species. NatureScot Research Report 1283.

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, Edinburgh.

Hen Harrier Project (2021) Hen Harrier Programme Field Guidance for scoring Bog and Heath. Oranmore, Co. Galway.

Hen Harrier Project (2021) Hen Harrier Programme Field Guidance for scoring Species Rich Grassland. Oranmore, Co. Galway.

NatureScot (2025). Recommended Bird Survey Methods to Inform Impact Assessment of Onshore Wind Farms. Report by NatureScot, Inverness, Scotland.

Meredith, C., Venosta, M. and Resson, R. (2002). Cordington *Wind Farm Avian Avoidance Behaviour Report 2002*. Biosis Research Project.

Ruddock, M., & Whitfield, D. P. (2007). A review of disturbance distances in selected bird species. *A report from Natural Research (Projects) Ltd to Scottish Natural Heritage, 181*, 114-125.

Scottish Natural Heritage (2009). Monitoring the Impact of Onshore Wind Farms on Birds. Report by Scottish Natural Heritage, Inverness, Scotland.

Scottish Natural Heritage (2017). Recommended Bird Survey Methods to Inform Impact Assessment of Onshore Wind Farms. Report by Scottish Natural Heritage, Inverness, Scotland.