APPENDIX 7-7

BIRD MONITORING PROGRAMME

Appendix 7-7 – Bird Monitoring Programme

Clonberne Wind Farm

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1. INTRODUCTION

This Bird Monitoring Programme has been prepared by MKO for the proposed Clonberne Wind Farm, Co. Galway.

This document provides a timeframe and monitoring schedule for the bird population of the study area during the construction, operational and decommissioning phases of the project. Breeding and wintering bird surveys were undertaken during the period October 2017 to March 2020 and October 2022 to September 2023, encompassing three full breeding seasons and four 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). 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

Table 1 lists the Key Ornithological Receptors recorded within the study area during field surveys.

Table 1 Key Ornithological Receptors identified during field surveys undertaken at the Clonberne Wind Farm

Common Name	Latin Name	Conservation Status
Golden Plover	*Pluvialis apricaria*	Annex I EU Birds Directive; BoCCI Red Listed (Breeding & Wintering Populations)
Hen Harrier	*Circus cyaneus*	Annex I EU Birds Directive
Merlin	*Falco columbarius*	Annex I EU Birds Directive
Peregrine	*Falco peregrinus*	Annex I EU Birds Directive
Whooper Swan	*Cygnus cygnus*	Annex I EU Birds Directive
Kestrel	*Falco tinnunculus*	BoCCI Red Listed (Breeding Populations)
Lapwing	*Vanellus vanellus*	BoCCI Red Listed (Breeding & Wintering Populations)
Snipe	*Gallinago gallinago*	BoCCI Red Listed (Breeding & Wintering Populations)
Buzzard	*Buteo buteo*	Raptor species sensitive to wind farm developments
Sparrowhawk	*Accipiter nisus*	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.
- 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).

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

Monitoring will be undertaken by a suitably qualified ornithologist. The survey will include a thorough walkover survey to a 500m radius of the development footprint and/or all works areas. The survey period will include one visit before construction starts and four visits between April and July during each breeding season during construction. If winter roosts or breeding activity of birds of high conservation concern is identified, the roost or nest site will be located and earmarked for monitoring at the beginning of the first winter or breeding season of the construction phase. If the roost/nest is found to be active during the construction phase no works shall be undertaken, works will cease within a species-specific buffer of this location (Forestry Commission Scotland, 2006; Goodship and Furness, 2022; Ruddock and Whitfield, 2007) in line with best practice. No works shall be permitted within the buffer until it can be demonstrated that the roost or nest is no longer occupied.

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 and SNH, 2017). Operational monitoring will be undertaken in Years 1, 2, 3, 5, 10 and 15 of the wind farm's lifetime.

Operational monitoring will include vantage point surveys, breeding bird surveys, winter distribution and abundance 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
- Breeding bird surveys: O'Brien & Smith methodology.
- Winter distribution and abundance surveys: hen harrier roost surveys
- Targeted bird collision surveys (corpse searches) will be undertaken by a trained dog and handler. 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 NatureScot (2009) and NatureScot (2017). The proposed vantage point watches will adhere to a minimum of 36 hours/VP per season as per guidelines issued by NatureScot (2017). During monitoring years,

monthly visits will be undertaken for twelve months commencing at the beginning of the breeding or non-breeding season: depending on which comes first. 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 development (i.e., VPs 1 & 2). The adequacy of the vantage point viewsheds will be monitored throughout the lifetime of the wind farm. 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 Breeding Bird Surveys

During monitoring years, operational phase distribution and abundance surveys will consist of O'Brien & Smith walkover surveys. Survey methodology will be similar to methods employed for baseline EIAR surveys which will allow a comparison of data to be made for each monitoring year.

The timing of visits will follow the recommendations of Calladine *et al.* (2009). Transects should ensure all areas of suitable breeding/ foraging habitat are approached to within 100m. Target species will include waders, raptors, waterbirds, gulls and other birds of conservation concern. Along with target species, all additional species observed will be recorded to inform the evaluation of supporting habitat. These surveys will follow the same routes that were followed during pre-planning surveys.

A total of four site visits will be undertaken during the bird breeding season for each monitoring year and timed to coincide with the core breeding period April - July. Notes will be recorded on nesting and territorial behaviour and breeding signs using standard BTO codes. Non-breeding behaviour such as birds flying over the site will also be recorded.

2.2.3 Winter Distribution and Abundance Surveys

During monitoring years, operational phase winter distribution and abundance surveys will consist of hen harrier roost surveys. Survey methodology will be similar to methods employed for baseline EIAR surveys which will allow a comparison of data to be made for each monitoring year.

Suitable habitat for roosting hen harrier within 500m of the Wind Farm Site (as per NatureScot, 2017) will be surveyed for the presence of hen harrier during the winter season. Survey work will be undertaken in accordance with the methodology devised by Gilbert *et al.* (1998) and the 'Irish Hen Harrier Winter Roost Survey' (unpublished document coordinated by members of NPWS).

2.2.4 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).

It is proposed to undertake a minimum of one visit per month during each survey year by a trained dog and handler. 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 180m the search area surrounding the base of the turbine would be taken as a radius of 90m 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.

Decommissioning surveys will be undertaken prior to the initiation of works at the Wind Farm Site. The survey will aim to identify sensitive sites (e.g., nests or roosts). Any requirement for decommissioning works to run into the subsequent breeding seasons following commencement will be subject to a repeat of the bird surveys to confirm the absence of breeding birds of conservation concern once per month during the breeding season (April to July). The survey will aim to identify sensitive sites e.g., nests or roosts depending on the season in question.

Monitoring will be undertaken by a suitably qualified ornithologist. The survey will include a thorough walkover survey to a 500m radius of the development footprint and/or all works areas. If winter roosts or breeding activity of birds of high conservation concern is identified, the roost or nest site will be located and earmarked for monitoring at the beginning of the first winter or breeding season of the decommissioning phase. If the roost/nest is found to be active during the construction phase no works shall be undertaken, works will cease within a species-specific buffer of this location (Forestry Commission Scotland, 2006; Goodship and Furness, 2022; Ruddock and Whitfield, 2007) in line with best practice. No works shall be permitted within the buffer until it can be demonstrated that the roost or nest is no longer occupied.

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.

3. TIMEFRAME OF PROPOSED MONITORING WORKS

It is proposed to undertake bird monitoring surveys during years 1, 2, 3, 5, 10 and 15 of the wind farm operation.

Table 2 below describes the proposed bird monitoring work schedule for each monitoring year for the proposed wind farm development.

Table 2 Proposed bird monitoring work schedule for each monitoring year at the Clonberne Wind Farm

Survey Type	Phase	Period	No. of Visits	Survey Method
Vantage Point Surveys	Year 1, 2, 3, 5, 10 and 15	January - December	1 visits per VP per month for each monitoring year	Two fixed, 6-hour, Vantage Point Surveys
Distribution and Abundance Survey (Breeding Season)	Year 1, 2, 3, 5, 10 and 15	April - July	4 visits / monitoring year	O'Brien & Smith Surveys
Distribution and Abundance Survey (Winter Season)	Year 1, 2, 3, 5, 10 and 15	October – March	4 visit per month for each monitoring season	Hen harrier roost surveys
Corpse Searches (Bird Casualties)	Year 1, 2, 3, 5, 10 and 15	January - December	1 visit per turbine per month for each monitoring year	Targeted corpse searches at turbine bases

4. REPORTING

A report summarising the findings of the bird monitoring surveys will be submitted to the Planning Authority, 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.

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.

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