

Appendix 7-8 Ardderroo Wind Farm

Post-construction Bird Monitoring Programme



Planning & Environmental Consultants

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1 INTRODUCTION

This Bird Monitoring Programme has been prepared by McCarthy Keville O’Sullivan for the proposed Ardderroo Wind Farm , Co. Galway.

This document provides a timeframe and monitoring schedule for the bird population of the study area during the post-construction phase of the project. Core field surveys were undertaken during the survey period March 2016 - March 2018. Supplementary survey data from the 2013-2015 period was also utilised to provide contextual information.

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

Table 1.1 Key Ornithological Receptors identified during field surveys undertaken at the proposed Ardderroo Wind Farm

Common Name	Latin Name	Conservation Status
Golden Plover	<i>Pluvialis apricaria</i>	BoCCI Red List; Annex I, EU Birds Directive, (SCI of Connemara Bog Complex SPA)
Cormorant	<i>Phalacrocorax carbo</i>	Annex I, EU Birds Directive (SCI of Connemara Bog Complex SPA)
Common Gull	<i>Larus canus</i>	Annex I, EU Birds Directive (SCI of Connemara Bog Complex SPA)
Whooper Swan	<i>Cygnus cygnus</i>	Annex I, EU Birds Directive
White-tailed eagle	<i>Haliaeetus albicilla</i>	Annex I, EU Birds Directive
Hen Harrier	<i>Circus cyaneus</i>	Annex I, EU Birds Directive
Merlin	<i>Falco columbaris</i>	Annex I, EU Birds Directive (SCI of Connemara Bog Complex SPA)
Red Grouse	<i>Lagopus lagopus</i>	BoCCI Red List
Woodcock	<i>Scolopax rusticola</i>	BoCCI Red List
Kestrel	<i>Falco tinnunculus</i>	BoCCI Green List
Sparrowhawk	<i>Accipiter nisus</i>	BoCCI Green List

1.2 Objectives

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

- 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 & 15 of the life time of the wind farm).

2 METHODOLOGY

Survey methods employed for post-construction monitoring will be in line with guidelines issued by the Scottish Natural Heritage (SNH, 2009). Post-construction monitoring will be undertaken in Years 1, 2, 3, 5, 10 and 15 of the life time of the wind farm.

Post-construction monitoring will include ongoing breeding bird surveys, winter 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 types:

- Breeding Bird Surveys
- Vantage Point Surveys (with an emphasis on migratory waterfowl during the autumn migration/wintering survey period)
- Targeted bird collision surveys (corpse searches)

2.1 Breeding Bird Surveys

Post-construction breeding bird surveys will incorporate a combination of Adapted Brown & Shepherd surveys and transect surveys (Bibby et al., 2000) similar to those methods employed for baseline EIAR surveys and allow a comparison of data to be made for each monitoring year. A total of four visits will be undertaken during the bird breeding season for each monitoring year and timed to coincide with the survey 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.

In addition, shortened vantage point watches will be incorporated into the survey for breeding raptors in line with Hardey et al., (2009). Aural and visual registrations will be recorded during field surveys. Evidence of breeding birds and associated breeding territories (with an emphasis on birds of conservation concern) will be recorded.

2.2 Wintering Bird Surveys

2.2.1 Vantage Point Surveys

The SNH (2009) guidelines recommend undertaking a standardised area base search as the most appropriate method of post-construction monitoring of wintering birds. To determine post-construction effects on wintering birds, vantage point watches will be undertaken at the proposed development site. Vantage point surveys will be timed to coincide with the winter survey period (September to March inclusive) with an emphasis on wintering/migratory waterfowl (i.e. migratory swans, geese, golden plover, etc.) for each monitoring year. Methodology for vantage point watches will follow guidelines issued by the SNH (2009) & SNH (2017). Survey work will be distributed over the autumn migration (September to November inclusive) and winter survey (October to March inclusive) period. The proposed vantage point watches will adhere to a minimum of 36 hours/VP during the autumn migration/winter survey season as per guidelines issued by SNH. Monthly visits will be undertaken between September and March inclusive. During each visit, six hour vantage point watches will be undertaken from a 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 were undertaken (i.e. 10 VP locations). Vantage point surveys will be

timed to encompass periods of dawn and dusk when bird activity is highest. Behavioural categories for the observation of bird interactions with operational wind farms will be in line with terminology outlined by Meredith et al., (2002).

2.3 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. During each visit, searches will be undertaken at each operating turbine location by a team of two surveyors. A plot measuring 130m x 130m from the centre of each turbine location 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.

Alternatively, a trained dog and handler may be used where possible to locate any carcasses.

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 patch (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.

Results of bird casualties will be issued in a final report at the end of each monitoring year.

3 TIMEFRAME OF PROPOSED MONITORING WORKS

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

Table 3.1 below describes the proposed bird monitoring work schedule for each monitoring year for the proposed wind farm development

Table 3.1 Proposed bird monitoring work schedule for each monitoring year for the proposed wind farm development at Ardderroo, Co. Galway.

Survey Type	Phase	Period	No. of Visits	Survey Method
Breeding Bird Survey	Year 1, 2, 3, 5, 10 & 15	April - July	4 visits / monitoring year	Adapted Brown & Shepherd Survey/Walked transect/Raptor Survey
Autumn Migration/Wintering Birds Survey	Year 1, 2, 3, 5, 10 & 15	September - March	7 visits / monitoring year	Vantage Point Surveys
Corpse Searches (Bird Casualties)	Year 1, 2, 3, 5, 10 & 15	January - December	1 visit/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, where required, at the end of each monitoring year. This will provide details of the various methods employed, the results of field surveys (vantage point watches, corpse searches, wildfowl feeding and roost distribution 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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