

## 7. ORNITHOLOGY

### 7.1 INTRODUCTION

This chapter presents an ornithological Impact Assessment of the proposed Ballincor Wind Farm development (herein referred to as the 'proposed project'). This chapter describes the assessment methodology and relevant existing ornithological baseline, assesses the likely significant effects, prescribes measures for their reduction and/or avoidance, and appraises the persistence of any potential residual effects.

This chapter should be read in conjunction with Chapter 2 Description of the Proposed Project and Chapter 6 Biodiversity (Flora and Fauna), which respectively include detailed information on the description of the proposed project, and the assessment of likely significant effects on biodiversity resources.

The potential impacts of the proposed project on European sites (sites designated as Special Areas of Conservation [SACs] or Special Protection Areas [SPAs] that form part of the Natura 2000 network) within the Zone of Influence (Zoi) of the proposed project have been assessed. This assessment is presented in the form of a standalone Appropriate Assessment Screening Report and Natura Impact Statement (AA NIS) which forms part of the Planning Application. An abridged version of the AA NIS is included as Appendix 6-1 of Chapter 6 Biodiversity (Flora and Fauna).

#### 7.1.1 Statement of Authority

This chapter has been prepared by John Sherry (B.Sc. [Hons]), Senior Ornithologist and Ecologist at TOBIN. This chapter has undergone senior review by Senior Ecologist Joao Martins (B.E. [Hons], M.Sc.) and Senior Ecologist Dr. James Forde (B.Sc. [Hons], M.Sc., Ph.D., MCIEEM). All of the above are qualified, experienced and competent ecologists.

Ornithological data collection was carried out by competent and suitably qualified ornithologists from Ecology Ireland and TOBIN. The collision risk model for this proposed project, was carried out by Dr. Tom Gittings (B.Sc. [Hons], Ph.D)

##### *John Sherry*

John Sherry is a Senior Ecologist with TOBIN, with over six years' post-graduate experience in ecology and environmental consultancy. He specialises in ornithological surveying and impact assessment for large-scale renewable energy projects and has prepared Appropriate Assessment (AA) Screening Reports, Natura Impact Statement (NIS) reports, Environmental Impact Statements (EIARs), and Ecological Management Plans. John has extensive field experience, contributing to the planning and execution of ornithological, habitat, mammal, and bat surveys, with a particular focus on wintering and breeding bird surveys for renewable energy and infrastructure developments.

##### *Jarek Majkusiak*

Jarek is an Ornithologist with TOBIN. Jarek's role at TOBIN involves carrying out Ornithological surveys such as Wintering Birds (IWebs), Vantage Point, Transect, Raptors, Woodcock, and Habitat surveys (general and designated habitats); Jarek has strong GIS mapping software skills (QGIS & ArcGIS) which contributes greatly to his report writing. Jarek has experience in data



management and data modelling, allowing him to oversee complex survey records. Jarek's contributed to many projects since he started with TOBIN and his main tasks involved producing and reviewing interim baseline bird reports and impact assessment. Other tasks involved reviews of field surveys such as breeding bird surveys, winter transects surveys, raptor, and wader surveys.

### ***Eoghan Phelan***

Eoghan holds the position of Project Ecologist/Ornithologist within TOBIN's Environment and Planning Division. Eoghan has four years' experience in the environmental sector and has conducted National Ornithological surveys for Chough, Curlew and Red Grouse as well as being part of Ornithological impact assessment surveys for large-scale developments including wind farms, flood relief schemes and housing developments.

### ***Joao Martins***

Joao is an Ecologist with 16 years' experience. His career started in freshwater ecology, monitoring of both lotic and lentic systems in the context of the EU Water Framework Directive (WFD), e.g. macroinvertebrates, habitat/hydromorphology, and on other freshwater projects of scientific nature, in Germany, Portugal and Ireland. Joao has prepared AA Screening Reports, NISs, EIARs, and Ecological Impact Assessments (EclA), and ecological surveys reports (e.g. bats, birds). Joao's has acted as lead ecologist on two large-scale wind energy projects currently in pre-planning. His role includes the design and management of ornithological, botanical/habitat, aquatic, and protected species surveys, as well as ecological data analysis to inform the respective EIAR and AA processes.

### ***Dr. James Forde***

James is a Senior Ecologist and Technical Director of the TOBIN E&P division. James holds a B.Sc. (Hons) and M.Sc. degrees in marine ecology, and a Ph.D. in ecology. James is also a full member of CIEEM. James has almost 20 years' academic and environmental consultancy experience. He has an extensive understanding of ecology and appreciation of the objectives and mechanisms of national and international environmental legislation and policy. He has significant experience in preparing and reviewing ecological reports including Screenings for AA, NIS, Ecological Impact Assessment (EclA) reporting, and EIAR. James has provided strategic technical and environmental advice for developments across a wide range of sectors, including onshore and offshore renewables, telecommunications, flood relief schemes, port and harbour developments, energy generation and transmission.

### ***Ecology Ireland***

Ecology Ireland was founded in 2011 by Dr. Gavin Fennessy. Ecology Ireland brings together specialist ecologists to deliver the full range of field surveys and reporting to best meet each project's particular requirements. Gavin is a professional ecologist with over 25 years of experience in consultancy. He is a specialist in ornithology and terrestrial ecology with a particular specialism in bats and non-volant mammals. Gavin has contributed to, and project managed numerous EclA, EIA, AA, Strategic Environmental Assessments (SEA) etc. Gavin is also an experienced Expert Witness having presented expert testimony at several An Coimisiún Pleanála (ACP) Oral Hearings. He is also an experienced lecturer and has regularly contributed to B.Sc. Env. Sc. courses at UCC.



*Dr. Tom Gittings*

The Collision Risk Assessment for the proposed wind farm was undertaken by ecological consultant Dr. Tom Gittings. Tom is an independent ecological consultant with 28 years' experience in professional ecological consultancy work and research. He has specific expertise in ornithological assessments for wind energy projects. A major focus of his work is collision risk modelling. He sees the large datasets that are collected during vantage point surveys as providing a variety of opportunities for sophisticated data analyses and has been developing collision risk modelling techniques that extend the standard model used for onshore wind energy projects.

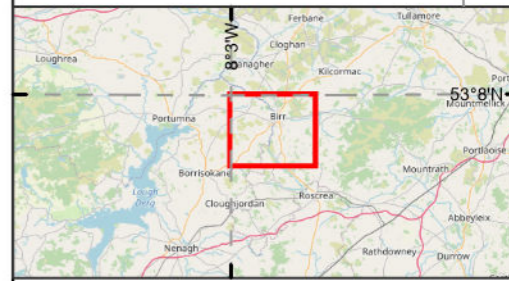
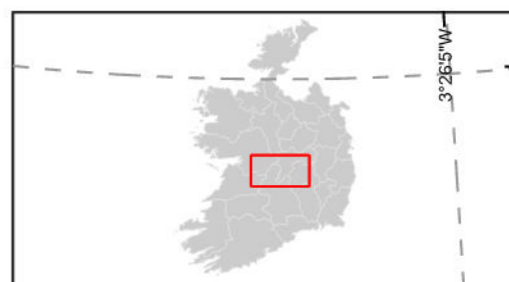
**TOBIN**

In addition, TOBIN ecologists, John Sherry, Sinead O'Reilly (B.Sc. [Hons], M.Sc. Res.), Úna Butler (B.A. [Hons], M.Sc.), Joe Freisfer (B.A. [Hons], Dipl. Eng., M.Sc.), and Jaroslaw Majkusiak (B.Sc. [Hons], M.Sc. Res.), undertook habitat, protected flora and fauna, and aquatic surveys to inform the proposed project. These surveys have been taken into account in the ornithological assessment, ensuring that bird-related considerations are fully integrated. Full details of the surveys and their findings are provided in Chapter 6: Biodiversity (Flora and Fauna).

**7.1.2 Site Location**

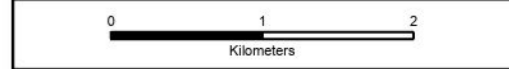
The proposed wind farm site is located approximately 5 km southwest of Birr, Co. Offaly, between Sharavogue, Co. Offaly, and Carrig, Co. Tipperary (see Figure 7-1). The wind farm site, which measures approximately 355 hectares (ha), lies west of the Little Brosna River, with elevations ranging from 45 to 65 m OD, in a predominantly low-lying peatland, agricultural, and forested landscape, except for Knockshigowna Hill to the southwest. The site comprises raised and cutover bog, wet grassland, mixed broadleaved woodland, oak-birch-holly woodland, bog woodland, and scrub. Full detail of the habitats at the wind farm site is included in Chapter 6 Biodiversity (Flora and Fauna).





**Legend**

- Planning Application Boundary
- Proposed Grid Connection Route



**Spatial Reference**  
 Datum: IRENET95  
 EPSG: 2157

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D01	16/09/2025	Draft issue	K.K	J.S
Rev	Date	Description	By	Chkd.

Client: 

Project: **Ballincor Wind Farm**

Title: **Figure 7-1:  
Site Location for proposed  
Ballincor wind farm**

Scale @ A3: 1:50,000

Prepared by: K.Kale      Checked by: J.Sherry      Date: September 2025

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Map Ref: 11333-022-AE-P.App.BO-TOB-D01      Draft: **D01**

### 7.1.3 Overview of the Proposed Project

The proposed project will consist of the development of 11 no. wind turbines and all associated infrastructure including turbine foundations, hardstanding areas, borrow pits, access tracks. The proposed project also includes the proposed grid connection route (GCR), which extends approximately 12.23 km from the northern edge of the wind farm site to the existing Dallow 110kV substation in the townland of Clondallow, Co. Offaly, and works along the road network for the proposed turbine delivery route (TDR), more details of which can be found in Chapter 2.

The key aspects of the Construction, Operational, and Decommissioning phases of the proposed project that, in the absence of mitigation, may result in ornithological impacts are summarised in the following Sections. In the context of this proposed project the following definitions have been included in this chapter:

- The 'proposed project' refers to an 11 turbine Wind Farm, 110kV Substation, Battery Energy Storage System (BESS), Grid Connection Route (GCR) and Turbine Delivery Route (TDR)/ Haul Route.
- The 'proposed wind farm site' refers specifically to the area enclosed within the red line boundary, containing 11 turbines, 110kV Substation and BESS.
- The 'proposed project site' refers to the lands where the proposed project will take place, inclusive of the proposed wind farm site, the GCR and TDR/ Haul Route

#### *7.1.3.1 Construction Phase (timeframe ca. 24 months)*

The following outlines the key activities associated with the construction of the proposed project and the potential impacts these activities may have on bird species and their habitats.

- Site preparation and enabling works:
  - Site clearance, including forestry felling: loss of nesting, roosting, and foraging habitats for woodland and scrub-dependent birds.
  - Excavation of soils, peat, and rock: disturbance of ground-nesting birds and disturbance of foraging habitat.
  - Associated drainage works: potential alteration of wetland habitats affecting waterbirds.
  - Management, storage, and re-use of excavated material: disturbance to birds due to movement and storage of materials.
  - All related site works and landscaping: temporary displacement of birds from disturbed areas; potential habitat modification.
- Construction of infrastructure:
  - Installation of turbines and turbine hardstanding areas, access tracks, temporary compounds, BESS, substation, meteorological mast, grid connection, bridges,



- and culverts: permanent loss of habitat; collision risk once turbines are operational.
- Use of concrete and other potentially harmful substances: potential contamination of watercourses affecting birds indirectly.
- Trenching and in-road work including water crossings along the GCR: disturbance of habitats along the route; temporary loss of foraging areas; potential impacts on waterbirds from watercourse crossings.
- Enabling works associated with TDR: disturbance to birds along transport corridors; potential habitat loss.
- Operational considerations during construction:
  - Use of heavy machinery and associated disturbance: displacement of birds from foraging, roosting, or nesting areas due to noise and movement.
  - Potential release of sediment-laden water, nutrients, and/or pollutants: degradation of aquatic habitats, affecting waterbirds.
  - Noise and general disturbance: temporary avoidance of the area by sensitive bird species.

#### ***7.1.3.2 Operational Phase (timeframe: 35 years)***

The operational phase of the proposed project will include the following key activities, which could potentially cause significant effects on ornithological receptors:

- Rotating blades of operating turbines: collision risk for flying birds within the wind farm envelope and potential displacement from preferred flight paths or foraging areas
- Maintenance and operational activities: routine maintenance, site infrastructure works, and associated noise and disturbance may temporarily displace birds from nearby habitats. throughout the lifetime of the proposed project.

#### ***7.1.3.3 Decommissioning Phase (timeframe ca. 6 months)***

The decommissioning phase of the development will involve activities that could result in environmental effects similar in type and magnitude to those anticipated during the construction phase, although they are expected to occur over a shorter duration.

Key activities associated with the decommissioning phase that may have potential ornithological impacts include:

- Dismantling of infrastructure, and excavation works could lead to the release of sediment-laden water or pollutants into nearby watercourses. These discharges may cause indirect impacts on local bird populations through habitat degradation.



- Disturbance effects may also occur due to the presence and activity of construction vehicles and personnel on site, generating noise and movement that could result in temporary disturbance to local bird species.

## 7.2 METHODOLOGY

### 7.2.1 Assessment Approach

This chapter evaluates the likely significant effects of the proposed project on bird species at the proposed project site which includes the wind farm site and GCR, and TDR/ Haul Route.

The assessment includes identifying target species, establishing baseline ecological conditions, assessing ecological value and sensitivity, evaluating potential impacts, and guiding mitigation and management across the entire project area and throughout all project phases.

Survey approaches:

- Proposed wind farm site: Monthly vantage point (VP) and transect surveys over multiple breeding and non-breeding seasons to monitor bird activity, species presence, habitat use etc.
- GCR and TDR/ Haul Route: Targeted walkover surveys conducted on two occasions to identify bird species, habitat conditions.

### 7.2.2 Legislation, Plans, Policies and Guidance

The following legislation (as amended) has been considered in this chapter of the EIAR where relevant:

- European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011), as amended. With particular reference to the Third Schedule of the European Communities Regulations 2011 (S.I. No. 477 of 2011) which deals with invasive species
- The EIA Directive 2011/92/EU, as amended by Directive 2014/52/EU
- European Union (EU) (Environmental Impact Assessment and Habitats) (No. 2) Regulations 2015 (S.I. No. 320/2015);
- Environmental Liabilities Directive (2004/35/EC);
- Planning and Development (Amendment) Act 2010 (as amended);
- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, herein referred to as the Habitats Directive;
- Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds, herein referred to as the Birds Directive;
- The EU Water Framework Directive (2000/60/EC);
- The Wildlife Act 1976 (as amended), herein referred to as the Wildlife Acts



- The Flora (Protection) Order 2022 (S.I. No. 235 of 2022)
- Relevant fisheries legislation up to and including the Inland Fisheries Acts 1959-2017, as amended.

The following plans and their objectives and policies have also been considered in this chapter, where relevant:

- The Offaly County Development Plan 2021-2027<sup>1</sup>
- Ireland 4th National Biodiversity Action Plan, 2023 – 2030<sup>2</sup>
- Climate Action Plan 2025 (CAP25) (DoECC 2025)<sup>3</sup>
- River Basin Management Plan 2018-2021 (DoHPLG, 2018)<sup>4</sup>
- Water Action Plan (DHLGH, 2024)<sup>5</sup>
- National Peatlands Strategy 2015 to 2025 (DoAHG 2015)<sup>6</sup> and a mid-term review and implantation plan of this strategy (DoAHG n.d.)<sup>7</sup>

All relevant policies and objectives relevant to biodiversity from the abovementioned plans have been considered within this assessment.

The potential for effects on nature conservation interests was assessed, taking into consideration the habitats and species that are likely to be affected by the proposed project. This approach included consideration (as appropriate) of the following guidance documents:

- Gilbert *et al*, (2021). Bird Species of Medium and High Conservation Concern Listed in the Publication Birds of Conservation Concern in Ireland (BoCCI) 2020 – 2026
- SNH (2016). Assessing Connectivity with Special Protection Areas (SPAs)
- Fossitt (2000). A Guide to Habitats in Ireland. The Heritage Council
- Environmental Protection Agency (EPA) (2022). Guidelines on the Information to be Contained in Environmental Impact Assessment Reports
- Chartered Institute of Ecology and Environmental Management (CIEEM) (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.3. Chartered Institute of Ecology and Environmental Management, Winchester

<sup>1</sup> Accessed August 2025] via: <https://www.offaly.ie/draft-offaly-county-development-plan-2021-2027/>

<sup>2</sup> Accessed [August 2025] via <https://www.npws.ie/legislation/national-biodiversity-action-plan>

<sup>3</sup> Accessed [September 2025] via: <https://www.gov.ie/en/department-of-climate-energy-and-the-environment/publications/climate-action-plan-2025/>

<sup>4</sup> Accessed [September 2025] via: <https://www.gov.ie/en/department-of-housing-local-government-and-heritage/publications/river-basin-management-plan-2018-2021/>

<sup>5</sup> Accessed [September 2025] via: <https://www.gov.ie/en/department-of-housing-local-government-and-heritage/policy-information/river-basin-management-plan-2022-2027/>

<sup>6</sup> Accessed [September 2025] via: <https://www.npws.ie/sites/default/files/publications/pdf/NationalPeatlandsStrategy2015EnglishVers.pdf>

<sup>7</sup> Accessed [October 2025] via: <https://assets.gov.ie/static/documents/national-peatlands-strategy-mid-term-review-and-implementation-plan.pdf>



- NRA (2008). Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes
- NRA (2009). Guidelines for Assessment of Ecological Impacts of National Road Schemes. (Revision 2, National Roads Authority)
- Transport Infrastructure Ireland (TII) (2020) The Management of Invasive Alien Plant Species on National Roads – Technical Guidance
- Smith, G *et al.*, (2011). Best Practice Guidance for Habitat Survey and Mapping. Ireland’s Heritage Council: Kilkenny, Ireland

### 7.2.3 Consultations

Consultation with various state agencies and environmental Non-Governmental Organisations (NGOs) was undertaken in February 2022 to inform this EIAR. Ecologically associated state agencies and NGO’s, relevant to the proposed project, were contacted in order to obtain any additional information and data, which may be useful in informing this assessment. The following organisations were contacted:

- An Coimisiún Pleanála (formally An Bord Pleanála)
- An Taisce – The National Trust for Ireland
- BirdWatch Ireland (BWI)
- Development Application Unit (DAU)- via the Department of Housing, Local Government and Heritage
- Irish Raptor Study Group
- Irish Red Grouse Conservation Trust
- Irish Wildlife Trust (IWT)
- National Parks and Wildlife Service (NPWS);
- Offaly County Council – Environment
- Tipperary County Council - Environment

Table 7-1 below details the responses received in relation to ornithology from the above consultees. Further information on consultation responses is provided in Chapter 1 (Introduction) of this EIAR.

**Table 7-1: Summary of Key Responses From Consultees**

Consultee	Consultation response	EIAR section
An Coimisiún Pleanála	Recommended to consider the following in relation to ornithology:	Details on flights were obtained via VP surveys (see section 7.2.7.1) and a detailed collision risk model was prepared (see 7.2.7.1.3 and Appendix 7-2).



Consultee	Consultation response	EIAR section
	<ul style="list-style-type: none"> <li>- Consider migratory flight paths between nearby SPAs and to carry out a detailed collision risk.</li> <li>- Liaison with the NPWS to seek opinions and recommendations in relation to surveys and reports.</li> <li>- That other windfarms occur or are proposed in the area, and these should be considered in any cumulative assessment.</li> </ul>	<p>Consultation between the NPWS and the DAU was undertaken.</p> <p>A detailed cumulative assessment was undertaken regarding nearby wind farms (see section 7.12).</p>
An Taisce – The National Trust for Ireland	Did not have the capacity to respond to consultation.	N/A
BirdWatch Ireland (BWI)	No response received	N/A
Development Application Unit (DAU)- via the Department of Housing, Local Government and Heritage	Requested at least two years of bird surveys, following best practice and including full raw data, environmental conditions, and context, with results assessed against wider population levels. Also, as the site is noted as sensitive for barn owls, detailed barn owl surveys must be carried out and mitigation measures included if impacts are identified.	<p>Details of surveys have been outlined in 7.2.7.</p> <p>Details of raw data have been included in Appendix 7-1.</p> <p>Details of barn owl have been noted in section 7.4.</p>
Irish Raptor Study Group	No response received	N/A
Irish Red Grouse Conservation Trust	No response received	N/A
Irish Wildlife Trust (IWT)	Did not have the capacity to respond to consultation.	N/A
National Parks and Wildlife Service (NPWS)	Information on sensitive faunal species was obtained following a data request. The information received did not contain relevant data relating to ornithology.	N/A
Offaly County Council – Environment Department	No response received	N/A
Tipperary County Council – Environment Department	No response received	N/A

### 7.2.4 Zone of Influence

The zone of influence (Zol) is determined by reviewing all ornithological receptors (e.g., bird species, breeding sites, migratory pathways, designated habitats) that may be affected by a



proposed project through a source-pathway-receptor linkage. CIEEM guidance on ecological assessments (CIEEM, 2018) states that:

*“The ‘zone of influence’ for a project is the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities. This is likely to extend beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries” and that “The zone of influence will vary for different ecological features depending on their sensitivity to an environmental change.”*

The National Roads Authority (NRA) Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009) provide a framework for evaluating ecological receptors and determining their importance within the impact assessment process. These guidelines introduce the concept of Key Ecological Receptors (KERs), defined as ecological features of sufficient value to influence decision-making and for which significant impacts may occur. They emphasise that only receptors above a defined ecological value threshold should be subject to detailed assessment, stating:

*“In the context of national road projects, ecological resources of below ‘Local Importance (higher value)’ should not be selected as ‘key ecological receptors’ for which detailed assessment is required” (NRA, 2009b)”*

In this assessment, the same approach is applied specifically to ornithological receptors, herein referred to as Key Ornithological Receptors (KORs). The criteria used for the classification of KORs follow the NRA (2009) methodology for valuing KERs. Accordingly, avian receptors are defined as features of Local (Higher Value), County, National, or International Importance, while features of Local (Lower Value) importance are not considered to require detailed impact assessment having regard to the nature of the project and the identified impact pathways, no likely significant effects are predicted.

The Zol over which significant impacts may occur will vary for different KORs, depending on the specific impact pathways involved. Significant impacts are deemed to be those resulting in a likely change in conservation status of a KOR. According to the National Roads Authority (NRA) guidelines (NRA 2009), KORs will be features of sufficient value to be material in the decision-making process for which potential impacts are likely.

The first step in determining the Zol is to analyse the characteristics of the proposed project and identify the range of potential effects using the source-pathway-receptor conceptual model. The mechanism for defining the Zol is summarised as follows:

- The nature, size and location of the proposed project were considered
- The sensitivities of the relevant ornithological receptors were considered
- The potential impact sources and pathways were identified

The Zol for various ornithological receptors for which the proposed project could have potential impacts on is outlined in Table 7-2 below. The Zol has therefore been defined through a desk-based assessment which accounts for the sensitivity of species possibly present/previously recorded in the locality of the proposed wind farm site, as well as areas along the GCR, and the



TDR with connectivity (physical, hydrological or ecological) and potential impacts which may arise.



Table 7-2: Zone of Influence Informing the Ecological Assessment

Ecological Feature	Potential Source(s) of Impact from Proposed project	Potential Effect	Zol (metres from proposed project site)	Rationale
Internationally Designated Sites (European Sites)	All activities during the construction, operational and decommissioning phases	<ul style="list-style-type: none"> <li>Habitat loss</li> <li>Disturbance</li> <li>Changes to key elements of the site (e.g., water quality)</li> <li>Changes to population density and distribution</li> </ul>	Sites individually assessed using the Source-Pathway-Receptor Model (OPR, 2021)	Sites individually assessed using the Source-Pathway-Receptor (SPR) model, which identifies impacts (the source), potential pathways (hydrological, physical, or ecological), and receptors (qualifying interests and/or special conservation interests) that may be affected (OPR, 2021)
Nationally Designated Sites				
All breeding and wintering birds (all species likely occur within the site)	Construction activities	<ul style="list-style-type: none"> <li>Habitat loss</li> </ul>	0 m (site footprint)	Habitat loss will only occur within the construction boundary.
	Construction, operational and decommissioning phases	<ul style="list-style-type: none"> <li>Disturbance, displacement</li> </ul>	300 m	A 300 m buffer distance is commonly applied in practice as a conservative benchmark to minimise disturbance to breeding and wintering birds. This approach is supported by multiple studies and guidance including, Ruddock & Whitfield (2007), Cutts et al. (2013), SNH (2017) and Goodship & Furness (2022), which highlight



Ecological Feature	Potential Source(s) of Impact from Proposed project	Potential Effect	Zol (metres from proposed project site)	Rationale
				variability among species but acknowledge that 300 m broadly covers typical disturbance distances for many sensitive bird species. Species-specific considerations are applied where relevant.
Large waterbirds and migratory species (e.g., swans, geese, herons)		<ul style="list-style-type: none"> <li>Disturbance, displacement</li> <li>Collision Risk</li> </ul>	5 km	Reflects typical foraging, roosting, and flight distances for large, highly mobile species. Examples include Whooper Swan and Greenland White-fronted Goose.
Raptors and wide-ranging birds (e.g., owls, buzzards, kestrels)			2 km	Based on typical foraging ranges and sensitivity to disturbance for species that may nest nearby or use the site for hunting (SNH 2016).



## 7.2.5 Identification of Target Species and Key Ornithological Receptors.

The initial identification and classification of target bird species (i.e., species most likely to be affected by the proposed project) was informed primarily by the findings of the desk study, followed by insights from scoping and consultation responses. In line with guidance from, NRA (2009) and SNH (2017), particular attention was given to:

- Species afforded a high level of legislative protection, such as those listed under Annex I of the EU Birds Directive.
- Special Conservation Interests (SCI) of SPAs that occur within the Zol of likely significant effects.
- Species classified as Red-listed under the Birds of Conservation Concern Ireland (BoCCI) by Gilbert et al. (2021), indicating a high conservation concern.
- Species sensitive to wind farm development, including raptors (particularly soaring birds of prey), water birds (including migratory waterfowl), gulls and waders (Powlesland, 2009).
- Species which do not fall under the above criteria but are of local importance were also considered, such as those on migration or which occurred rarely or as vagrants.

In general, passerines species are not significantly affected by wind farms, as per SNH (2017), however, some of these species (e.g. ground nesters or those sensitive to disturbance) red-listed under BoCCI (Gilbert et al., 2021), have been considered in this assessment.

Following analysis of the collated bird survey data, it was possible to refine the list of target species to identify KORs and exclude species that were not recorded during the extensive surveys and those for which pathways for a significant effect could not be identified.

## 7.2.6 Desk Study

An ornithological desktop study of the proposed project was undertaken to inform the ornithological assessment. This included the following steps using principal sources of information for the desktop assessment:

- Identification of KORs and ornithological sites designated for nature conservation within the Zol of the proposed project. Rationale for establishing the Zol included, inter alia, distance from the site (refer to Section 7.2.4 above).
- A species list for the proposed project site was generated using the National Biodiversity Data Centre map viewer (NBDC, 2025). Species recorded within the 10 km grid squares (hectad) S09 and N00, which encompass the proposed project, were evaluated.
- Existing relevant mapping and databases, e.g. species and habitat distribution from the following sources:
  - National Parks and Wildlife Services [NPWS] website via; <https://www.npws.ie/> (Accessed May 2025)



- National Biodiversity Data Centre [NBDC] website via:  
<https://biodiversityireland.ie> (Accessed May 2025)
- Environmental Protection Agency [EPA] website via:  
<https://gis.epa.ie/EPAMaps/> (Accessed May 2025)
- Published and unpublished ornithological reports on bird species including Irish Wildlife Manual Reports, Species Action Plans, Conservation Management Plans and targeted species reports.
- Review of all NPWS designated site and their site synopses for sites within the Zol of the proposed project.
- Conservation Status Assessment Reports (CSARs), Backing Documents and Maps prepared in accordance with Article 17 of the Habitats Directive.
- Review of Ordnance Survey maps and aerial photography in order to determine the broad habitats that occur within the study area and thus typical bird communities.
- Review of nearby approved developments and their associated ecological reports.
- Review of other plans and projects which may potentially cause cumulative impacts.

### 7.2.7 Field Surveys

A range of ornithological field surveys were undertaken by Ecology Ireland within the study area between 2020 and 2024, except the breeding season 2022 (April to September 2022), when no surveys were carried out. In addition, one season of ornithological field surveys was carried out during the winter season 2025/2026 by TOBIN. In addition, habitat surveys were also undertaken by qualified and experienced TOBIN ecologists, the results of which will be used in conjunction with ornithological data. Details on the habitat survey can be found in Chapter 6 – Biodiversity. All ornithological field surveys carried out to inform the proposed project are listed in Table 7-3. The data collected allowed TOBIN to draw accurate, definitive and coherent conclusions for the characterisation of the receiving ornithological environment, and on the possible impacts of the proposed project on ornithological receptors. A description of the surveys undertaken is provided hereunder. Further details of the survey methodologies are presented in the subsequent sections.

**Table 7-3: Overview of Ornithological and Ecological Field Surveys Undertaken at the Proposed Project Site**

Surveys	Survey Dates	Personnel
Vantage Point surveys (VP1 to VP5) <sup>8</sup>	April 2020 – August 2020	Ecology Ireland
	October 2020 – March 2021	
	April 2021 – August 2021	

<sup>8</sup> Ongoing Bird Surveys in Winter 2025



Surveys	Survey Dates	Personnel
	November 2021 – March 2022	
Vantage Point surveys (VP1 to VP5, VP6 and VP7)	November 2022 – March 2023	Ecology Ireland
	May 2023 – September 2023	
	October 2023 – March 2024	
	May 2024 – September 2024	
Vantage Point Surveys (updated VP1 to VP5)	October 2025 – March 2026	TOBIN
Transect Surveys (T1 to T4)	May 2020 and June 2020	Ecology Ireland
	December 2020 and February 2021	
Transect Surveys (T1 to T6)	November 2022 and February 2023	Ecology Ireland
	May 2023 x 2	
	November 2023 and January 2024	
	May 2024 and June 2024	
Transect Surveys (updated T1 to T6)	October 2025 – March 2026	TOBIN
Hen Harrier Roost Surveys (HHVP1 – HHVP2)	October 2025 – March 2026	TOBIN
Wetland Bird Surveys (I-WeBS)	October 2025 – March 2026	TOBIN
Multi-disciplinary surveys (botanical, aquatic, invertebrate, and mammal surveys)	February and May 2022	TOBIN
	June 2023	
	August 2024	

### 7.2.7.1 Vantage Point Surveys

Standard VP field surveys were undertaken with due regard to guidance by Scottish Natural Heritage (SNH 2017). The surveys aim to quantify the level of flight activity for bird species and their distribution over the survey area. The primary purpose of the surveys is to provide data to inform a Collision Risk Model (CRM), which makes predictions of mortality from collisions with operational turbines.

#### 7.2.7.1.1 Survey Methods

Vantage points are fixed locations, which are strategically positioned to provide a maximum viewshed of the survey area from a minimum number of locations. The surveyed area included the entire wind farm site where turbines may be positioned and extended to a 500m radius from the outermost turbines (Figure 7-2 and Figure 7-4). The viewshed of a given VP extended to a



distance no greater than 2km, and include an arc no greater than 180 degrees, as per SNH (2017).

Ecology Ireland Vantage Point Survey from April 2020 to March 2022, inclusive, five vantage point locations (VP1 to VP5) were in place for the VP surveys at the application site. Due to changes in the extent of the site boundary, two additional VP locations, VPA and VPB, were included for VP surveys commencing from November 2022 until the completion of VP surveys at the wind farm site in September 2024.

Vantage Point surveys were carried out across four breeding seasons (2020, 2021, 2023 and 2024), and four winter seasons (2020/2021, 2021/2022, 2022/2023 and 2023/2024).

All bird species heard or seen during the VP watches were noted. Detailed field records were taken of target species (heard or seen) with as much of the following information recorded as possible:

- Species and estimated number
- Time first observed; Duration of observation; Estimated time on-site; Estimated time off-site (note that the change to the site boundary from November 2022 was used for estimations of on and off-site times in all survey seasons including 2020 and 2021).
- Flight-line – drawn on a field map and numbered to link with associated field notes
- Estimated flight height – initial height band estimates and any marked change noted during period of observation: 0-5m AGL (Close to ground); 5-25m AGL (Low Flight); 25-100m AGL (Medium Flight height); >100m AGL (High Flight Height). Observers also provided more detailed estimates of flight height (above-ground level).
- Any other observations of note: behaviour, association or interaction with other species, etc.

Field surveys were undertaken using appropriate survey equipment as required (e.g. GPS units, binoculars, scope, notebooks, etc.) and during suitable weather conditions. All field observers communicated with two-way radios/mobile phones to allow co-ordination in the event of noteworthy species (e.g. Annex I) were observed at, or close to the site.

A record was maintained of all other non-target bird species seen or heard at each VP location on each survey visit.

#### ***7.2.7.1.1.1 TOBIN Vantage Point Surveys***

Vantage Point Surveys were carried out by TOBIN during the Winter Season 2025/2026 between (October to February), at five vantage point locations (VP1 to VP5), to further strengthen the data for the Collision Risk Model. The VP methodology followed guidelines issued by the SNH (2017). The minimum requirement of 36 hours per VP per season was achieved, totalling 222 hours of VP surveys during the Winter Season 2025/2026.

The timing of watches was tailored to the ecology of the target species present on site, including dawn, day and dusk surveys, to include the full coverage from before sunrise to after sunset. Field information recorded included: dates, VP location, weather, survey start and end time, species observed, time of observation, number of individuals per observation, height of flight (at five bands: 0-25 m, 26-50 m, 51-150 m, 151-200 m, and > 201 m, duration of flight (in seconds),



reference number to flight line. All flight lines of target species were mapped on field sheets. Behavioural observations were also recorded.

#### **7.2.7.1.2 Viewshed analysis**

The viewshed analysis was carried out using custom R scripts (version 4.4.1; R Core Team, 2024) and location data provided by Ecology Ireland and TOBIN. The purpose was to determine which areas would be visible from specific locations at two heights above ground level: 17 metres and 30 metres. These heights reflect the clearance of the wind turbines being considered for the project.

Two types of landscape data were used to inform this analysis: Digital Terrain Model (DTM), which shows the bare ground surface, and Digital Surface Model (DSM), which includes features such as trees and buildings. This distinction allowed the analysis to take account of any obstacles that might block visibility from the vantage points. The effective viewshed of each VP used by Ecology Ireland and TOBIN during VP surveys can be seen in Figure 7-3 and Figure 7-5.

Further technical details on the viewshed analysis process can be found in Appendix 7-2.

#### **7.2.7.1.3 Collision Risk Model**

Collision risk modelling (CRM) uses statistical methods to estimate the likelihood of birds colliding with wind turbines. It relies on flight activity data collected before the wind farm is constructed, which helps to assess the level of risk once the turbines are in operation.

This flight activity data is used to calculate how often birds are likely to fly at turbine height within the risk area of the wind farm. From this, estimates can be made of how many times birds are expected to pass through the area swept by the turbine blades, known as the rotor swept volume, based on how much of the overall airspace this volume occupies.

However, most of these passes do not result in a collision. This is because the blades only occupy a small part of the rotor swept volume at any given moment. A key part of the modelling involves calculating the chance that a bird flying through this space will actually come into contact with a moving blade.

In addition, many birds actively avoid turbines, either by steering clear of the area entirely, or by taking evasive action if they get too close. The model accounts for this by applying an avoidance rate, which reflects the proportion of birds expected to avoid a collision.

The final collision risk is calculated by multiplying the number of expected flights through the rotor swept area by the probability of a collision during a single pass and then adjusting for the avoidance rate and other relevant factors.

A CRM was prepared for the proposed project and can be found in Appendix 7-2. The CRM followed guidance set out by NatureScot (2024) which provides details for carrying out collision risk modelling for onshore wind farm projects. This guidance was informed by Band (2024) from the original Scottish collision risk model (SNH, 2000), and the refinement of this model by Band (2012).

#### **7.2.7.2 Transect Surveys**

Both winter and breeding transect surveys were undertaken at the proposed project site to compliment the data obtained during VP surveys. The transect survey followed the method



outlined in Bibby et al. (2000), whereby defined linear routes are set through a specific area (i.e. the proposed project).

#### ***7.2.7.2.1.1 Ecology Ireland Transect Surveys***

Transect surveys were carried out by Ecology Ireland across three summer seasons (2020, 2023 & 2024) and three winter periods (2020/2021, 2022/2023 and 2023/2024).

Several 1 km transects were used to achieve maximum coverage of locally representative habitat and bird activity. The transects were walked twice in each survey season, at a standard speed. On each transect, all bird species encountered (seen or heard) within two distance bands (<100m, >100m) from the observer were recorded and their abundance noted.

Notes on aural and visual registrations of bird species were recorded during field surveys. Visual registrations were recorded with the aid of binoculars. See table 7-3 for transect timings. Due to changes in the extent of the site boundary, two additional 1 km transects, T5 and T6, were included for transect surveys commencing from November 2022 until the completion of VP surveys at the application site in September 2024.

The location of each transect can be found in Figure 7-2.

#### ***7.2.7.2.1.2 TOBIN Transect Surveys***

Transect surveys were carried out by TOBIN during the Winter Season 2025/2026 between (October to March), along updated transects (T1 to T6), to further strengthen the data for the ornithological assessment.

The location of each transect can be found in Figure 7-4

#### ***7.2.7.3 Hen Harrier Roost Surveys***

Hen Harrier roost surveys were undertaken monthly by TOBIN between October 2025 to March 2026 and were aimed to identify active winter Hen Harrier roosts. Hen harrier may roost communally in winter, generally in rank ground vegetation (Clarke and Watson 1997). Suitable roosting habitat is typically restricted to dense vegetation such as heath/bog, plantation forests that had not reached thicket stage, scrub, grassland, crops, dunes, marshes and reedbeds (O'Donoghue, 2021). Although this species breeds in upland areas, wintering birds disperse widely and can frequently be found in lowland areas of the midlands of Ireland.

The Hen Harrier Roost Survey methods followed those set out by Gilbert et al. (1998) and the Irish Hen Harrier Winter Roost Survey recommendations from O'Donoghue (2019). Two potential areas for roosting Hen Harrier were identified and each of the locations was surveyed at a vantage point, six times during the wintering season (once per month). Surveyors were in place at least an hour before sunset and recorded all observations of hen harrier until last visible light. Information recorded by surveyors from the vantage points included the number of Hen Harrier entering or exiting a roost, the time, age, and sex, where it was possible to discern.

The Hen Harrier roost vantage points can be found in Figure 7-4.

#### ***7.2.7.4 Wetland Bird Surveys (I-WeBS)***

The Wetland Bird Survey (I-WeBS) involve conducting monthly counts in wetland habitat locations within the proposed wind farm site and a 10 km buffer. The surveys aimed to assess the distribution and abundance of wintering water birds within the wider surroundings of the



Proposed Project and to determine if populations of species were of national or international importance. I-WeBS surveys were undertaken by TOBIN between October 2025 to March 2026 and included a monthly count at each wetland habitat site. Counts were conducted at 'look-see' basis (Bibby et al. 2000), which involved scanning across the survey area and counting all the birds seen. Birds were recorded on a count form according to their species code developed by the British Trust for Ornithology. Information collected included; numbers of wildfowl or wader species, the presence of marked birds (leg-ringed or neck-collared), weather conditions and habitat types.

Survey locations can be found in Figure 7-6.

### **7.2.7.5 Habitat and Botanical Surveys**

Habitat and botanical surveys were carried out within the proposed project site, along the grid connection route, and on sections of the turbine delivery route during the optimal survey periods in February and May 2022, June 2023, and August 2024. Further details on the survey methodology are provided in Chapter 6 – Biodiversity. The surveys were undertaken in accordance with the NRA Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna on National Road Schemes (NRA, 2009). All habitats within the proposed project were recorded and classified according to the Heritage Council's *Guide to Habitats in Ireland* (Fossitt, 2000). The information on habitat composition and mapping will be used in this ornithological assessment in relation to habitat loss. Incidental observations of birds and other fauna were also recorded during the site visits.

## **7.2.8 Survey Limitation**

Access was granted in all areas of the proposed project site, which were subsequently surveyed by a team of third-party ornithologists under the guidance of Ecology Ireland as well as follow up visits by TOBIN Ecologist to conduct habitat and botanical surveys. However, the following limitations were identified over the survey period:

- The methodology used by the Ecology Ireland survey team for the vantage point surveys in this project is provided in Appendix 7-2. In summary, flight activity was not systematically classified by height band and a proportion of records lacked complete flight height, flight duration and/or mapped flightline data. In addition, some records included mixed flight and non-flight behaviour or were recorded at higher taxonomic groupings, requiring interpretation and standardisation of the dataset prior to collision risk modelling.

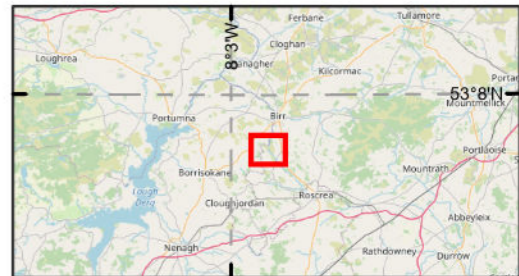
To address the potential impacts of these methodological differences, a number of conservative assumptions were applied within the collision risk model. These included treating all flights with incomplete or uncertain height data as occurring at potential collision height; applying standard precautionary avoidance rates in line with NatureScot guidance; applying precautionary flight height distributions where site-specific height band data were incomplete; and applying no reductions to account for potential over-recording or spatial uncertainty.



Each of these assumptions acts to increase predicted collision risk relative to a central or best-estimate scenario. The modelling approach therefore biases the assessment towards over-prediction of mortality rather than under-prediction.

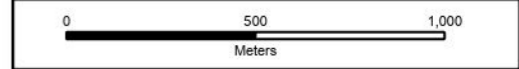
- On that basis, while methodological differences are acknowledged, they have been addressed through the systematic application of conservative assumptions at each stage of the modelling process, each of which operates in the direction of overstating rather than understating collision risk, the assessment conclusions are considered robust and, likely to overestimate rather than underestimate predicted mortality.
- The viewshed analysis was based on shapefiles of vantage point locations and viewshed arcs provided by Ecology Ireland, but the original arcs did not align precisely with the recorded vantage points. To improve spatial accuracy, new arcs were generated using the directional angles of the original arc boundaries, and a 10m buffer was applied to smooth the viewshed edges and maintain coverage (detailed description included in Appendix 7-2). These refinements were technical corrections to ensure spatial consistency between vantage point locations and mapped visibility. The revised viewsheds maintain, and in places marginally extend, the original coverage and do not reduce the surveyed area or bias the assessment towards lower activity estimates. The resulting viewsheds are therefore considered a reasonable and spatially robust representation of visibility from each vantage point.
- Barn Owl is known to occur in the wider surroundings of the proposed project, based on consultation with the DAU, a review of the NBDC and a report by Lusby et al. (2022), however limited evidence of breeding or regular use of the project site was identified during field surveys conducted by Ecology Ireland. This absence of direct observations during the original surveys means that some aspects of the species' use of the site may not be fully captured.
- To address the limited survey records, additional consultation was carried out with BirdWatch Ireland (via Dr John Lusby), who provided information on known barn owl breeding sites in the wider area surrounding the proposed project site. This information, together with a review of available desk-study sources, habitat appraisal of the site and surrounding lands, and published literature on barn owl ecology and sensitivity to disturbance, informed the assessment. While some inherent uncertainty is associated with assessing a predominantly nocturnal species, the combination of consultation, desk study and habitat evaluation provides a sufficient and proportionate basis for the conclusions reached; crucially, the conservative assumptions applied throughout the assessment ensure that this uncertainty has not been resolved in favour of the project.





**Legend**

- Planning Application Boundary
- Site Layout
- ▲ VPs
- Transects



**Spatial Reference**  
 Datum: IRENET95  
 EPSG: 2157

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Rev	Date	Description	By	Chkd.
D01	15/09/2025	Draft issue	K.K	J.S

Client:

Project: **Ballincor Wind Farm**

Title: **Figure 7-2:  
 Location of vantage points  
 and transects used over the ornithology  
 survey period  
 March 2020 to September 2024**

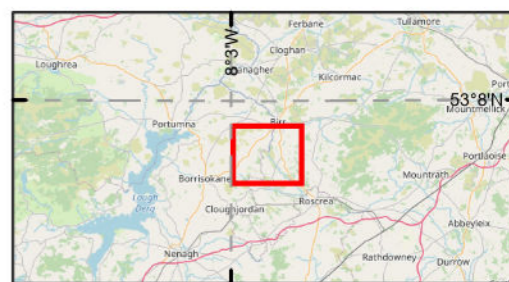
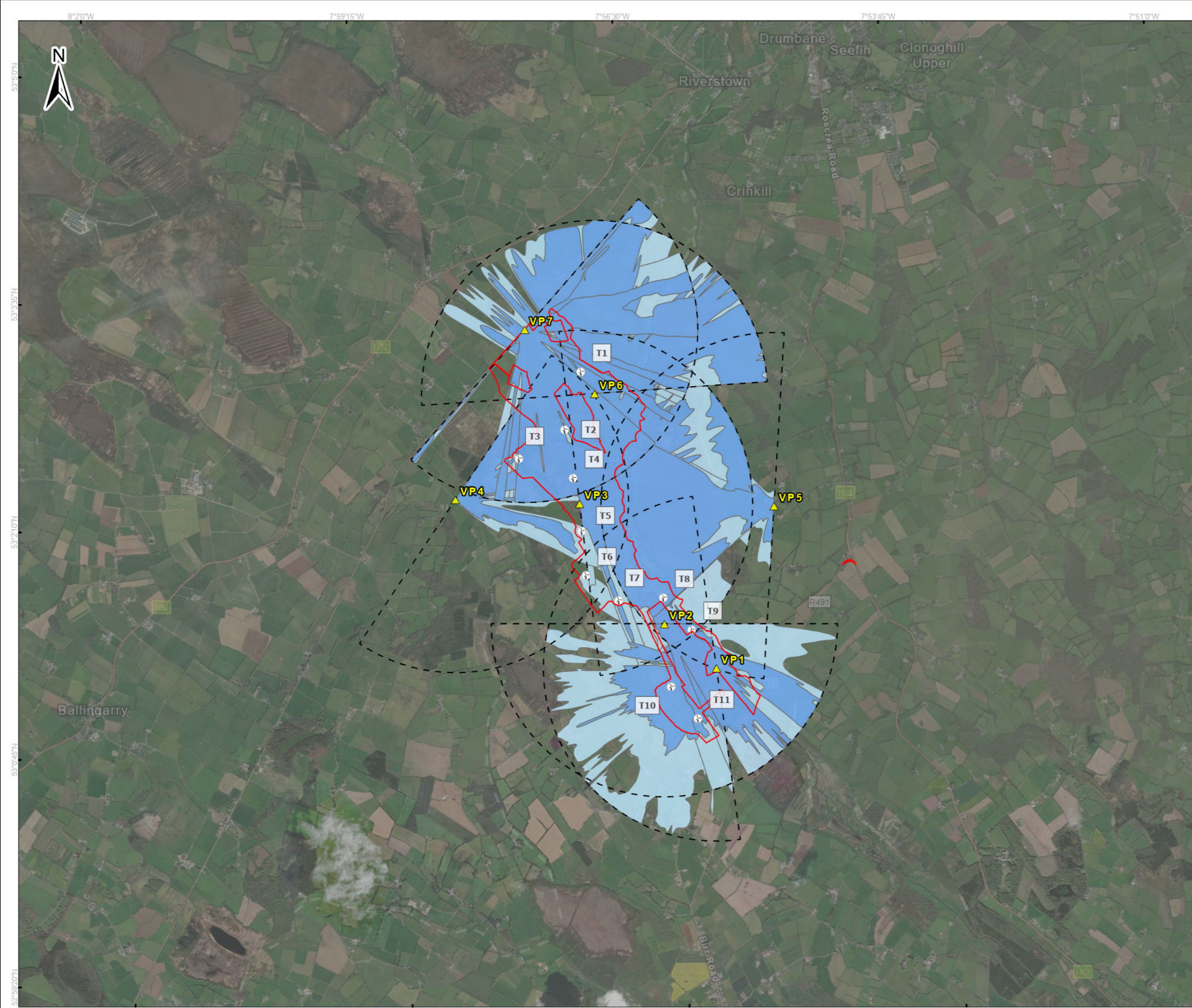
Scale @ A3: 1:20,000

Prepared by: K.Kale      Checked by: J.Sherry      Date: September 2025

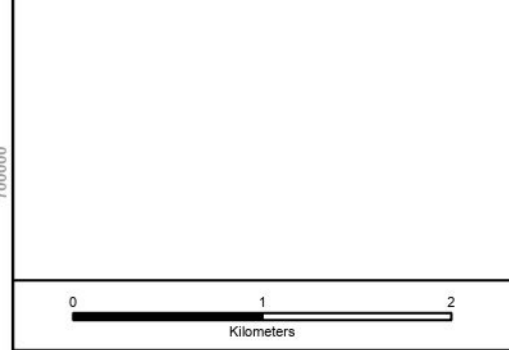
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Map Ref: 11333-013-VP-TR-TOB-D01      Draft: **D01**



- Legend**
- Planning Application Boundary
  - Proposed Turbine locations
  - Viewshed (visibility)
- Viewshed Analysis**
- 30m
  - 17m
  - VPs



**Spatial Reference**  
 Datum: IRENET95  
 EPSG: 2157

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Rev	Date	Description	By	Chkd.
D01	31/03/2026	Draft issue	K.K	J.S

Client:

Project: **Ballincor Wind Farm**

Title: **Figure 7-3:  
 Overview of VP Viewshed Analysis  
 (March 2020 - September 2024)**

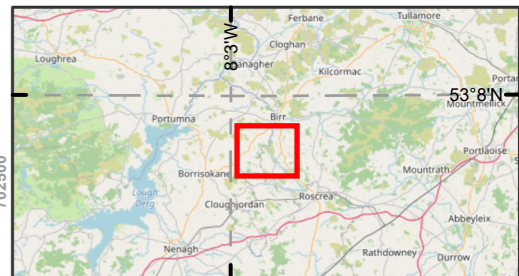
Scale @ A3: 1:40,000

Prepared by: K.Kale      Checked by: J.Sherry      Date: March 2026

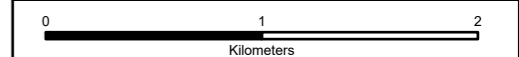
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Map Ref: 11333-014-VP-VS.A-TOB-D01      Draft: **D01**



- Legend**
- Planning Application Boundary
  - Site Layout
  - Transects
  - ▲ VP's
  - ▲ HHVP



**Spatial Reference**  
 Datum: IRENET95  
 EPSG: 2157

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Rev	Date	Description	By	Chkd.
D01	13/04/2026	Draft Issue	K.K	J.S

Client:

Project: **Ballincor Wind Farm**

Title: **Figure 7-4:  
 Location of VP's, Transects and  
 Hen Harrier  
 VP's during survey period  
 October 2025 to March 2026**

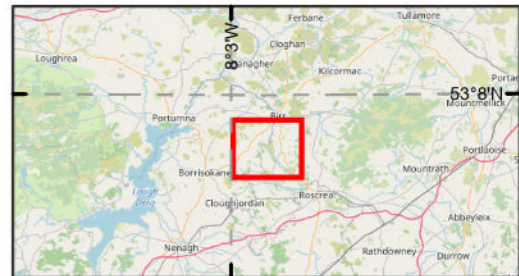
Scale @ A3: 1:35,000

Prepared by: K.Kale      Checked by: J.Sherry      Date: April 2026

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Map Ref: 11333-024-VP-VS.A-TOB-D01      Draft: **D01**

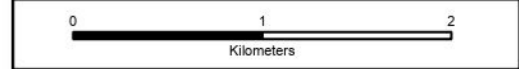


**Legend**

- Planning Application Boundary
- Proposed Turbine locations
- ▲ VPs
- Viewshed Analysis : 17m
- Viewshed Analysis : 30m

**VP Buffers**

- VP1
- VP2
- VP3
- VP4
- VP5



**Spatial Reference**  
 Datum: IRENET95  
 EPSG: 2157

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Rev	Date	Description	By	Chkd.
D01	02/04/2026	Draft issue	K.K	J.S

Client:

Project: **Ballincor Wind Farm**

Title: **Figure 7-5:  
 Overview of VP Viewshed Analysis  
 October 2025 to March 2026**

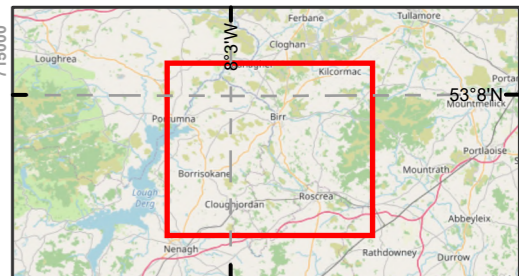
Scale @ A3: 1:40,000

Prepared by: K.Kale      Checked by: J.Sherry      Date: April 2026

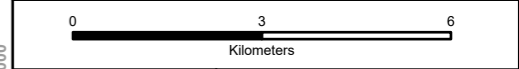
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Map Ref: 11333-026-VP-VS.A-TOB-D01      Draft: **D01**



- Legend**
- Planning Application Boundary
  - 10km Buffer
  - △ Water Bird Site Locations



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Rev	Date	Description	By	Chkd.
D01	13/04/2026	Draft Issue	K.K	J.S

Client:

Project: **Ballincor Wind Farm**

Title: **Figure 7-6:  
 Wetland Bird Surveys (I-WeBS)  
 locations during  
 October 2025 to March 2026**

Scale @ A3: 1:120,000

Prepared by: K.Kale      Checked by: J.Sherry      Date: April 2026

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Map Ref: 11333-025-WBS-P.App.BO-TOB-D01      Draft: **D01**

### 7.3 ORNITHOLOGICAL LIKELY SIGNIFICANT EFFECTS ASSESSMENT

#### 7.3.1 Baseline Evaluation Criteria

Ecological resources/receptors are evaluated following the criteria set in NRA (2009) guidelines (Table 7-4), which assigns the importance of the ecological resource/receptor in a geographic context. This criterion is consistent with the approach recommended in CIEEM guidance (CIEEM, 2018).

The information gathered from desk studies and field surveys was used to carry out an impact assessment of the proposed project on ornithological receptors classified in accordance with an ecological importance valuation scale ranging from International, National, County Importance, Local importance (higher value) and Local Importance (lower value).

Those ornithological receptors identified as being of high local importance or greater, are then given particular mention in the ecological valuation as KORs when considering the potential for likely significant effects and subsequent requirement for appropriate mitigation.

In addition, all potential likely significant effects were assessed and characterised in accordance with the guidance produced by the EPA, *Guidelines on the information to be contained in Environmental Impact Assessment Report* (EPA, 2022 - Table 7-5). Via this approach, a scientific and consistent method was applied whereby all aspects of a potential likely significant effect were considered.

Table 7-4: Examples of Ecological Valuation Criteria

Importance	Ecological Valuation
International Importance	<ul style="list-style-type: none"> <li>• European sites including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA), proposed Special Area of Conservation (pSAC), proposed Special Protection Area (pSPA), and/or Site that fulfils the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended)</li> <li>• Features essential to maintaining the coherence of the Natura 2000 Network</li> <li>• Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive</li> <li>• Resident or regularly occurring populations (assessed to be important at the national level) of the following:               <ul style="list-style-type: none"> <li>○ Species of bird listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or</li> <li>○ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive</li> </ul> </li> <li>• Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971)</li> <li>• World Heritage Site (Convention for the Protection of World Cultural &amp; Natural Heritage, 1972)</li> <li>• Biosphere Reserve (UNESCO Man &amp; The Biosphere Programme)</li> <li>• Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979)</li> </ul>



Importance	Ecological Valuation
	<ul style="list-style-type: none"> <li>• Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979)</li> <li>• Biogenetic Reserve under the Council of Europe.</li> <li>• European Diploma Site under the Council of Europe</li> <li>• Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988)</li> </ul>
<b>National Importance</b>	<ul style="list-style-type: none"> <li>• Site designated or proposed as a Natural Heritage Area (NHA)</li> <li>• Statutory Nature Reserve</li> <li>• Refuge for Fauna and Flora protected under the Wildlife Acts</li> <li>• National Park</li> <li>• Undesignated site fulfilling the criteria for designation as an NHA, Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Acts; and/or a National Park.</li> <li>• Resident or regularly occurring populations (assessed to be important at the national level) of the following:               <ul style="list-style-type: none"> <li>○ Species protected under the Wildlife Acts; and/or</li> <li>○ Species listed on the relevant Red Data list</li> </ul> </li> <li>• Site containing 'viable areas' of the habitat types listed in Annex I of the Habitats Directive</li> </ul>
<b>County Importance</b>	<ul style="list-style-type: none"> <li>• Area of Special Amenity</li> <li>• Area subject to a Tree Preservation Order</li> <li>• Area of High Amenity, or equivalent, designated under the County Development Plan</li> <li>• Resident or regularly occurring populations (assessed to be important at the County level) of the following:               <ul style="list-style-type: none"> <li>○ Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</li> <li>○ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</li> <li>○ Species protected under the Wildlife Acts; and/or</li> <li>○ Species listed on the relevant Red Data list.</li> </ul> </li> <li>• Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance</li> <li>• County important populations of species or viable areas of semi-natural habitats or natural heritage features identified in the National or Local Biodiversity Action Plan (BAP), if these have been prepared</li> <li>• Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county</li> <li>• Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level</li> </ul>
<b>Local Importance (Higher Value)</b>	<ul style="list-style-type: none"> <li>• Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared</li> <li>• Resident or regularly occurring populations (assessed to be important at the Local level) of the following:               <ul style="list-style-type: none"> <li>○ Species of bird listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</li> </ul> </li> </ul>



Importance	Ecological Valuation
	<ul style="list-style-type: none"> <li>○ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</li> <li>○ Species protected under the Wildlife Acts; and/or</li> <li>○ Species listed on the relevant Red Data list.</li> <li>● Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality</li> <li>● Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value</li> </ul>
<b>Local Importance (Lower Value)</b>	<ul style="list-style-type: none"> <li>● Sites containing small areas of semi-natural habitat that are of some local importance for wildlife</li> <li>● Sites or features containing non-native species that are of some importance in maintaining habitat links</li> </ul>

Table 7-5: Description of Effects

Description of Effect	Definition
Quality of Effects	<p><b>Positive Effects</b></p> <p>A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem).</p>
	<p><b>Neutral Effects</b></p> <p>No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.</p>
	<p><b>Negative/Adverse Effects</b></p> <p>A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem).</p>
Significance of Effects	<p><b>Imperceptible</b></p> <p>An effect capable of measurement but without significant consequences.</p>
	<p><b>Not significant</b></p> <p>An effect which causes noticeable changes in the character of the environment but without significant consequences.</p>
	<p><b>Slight Effects</b></p> <p>An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.</p>
	<p><b>Moderate Effects</b></p> <p>An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends</p>
	<p><b>Significant Effects</b></p> <p>An effect which, by its character, magnitude, duration or intensity, alters a sensitive aspect of the environment</p>



Description of Effect	Definition
	<p><b>Very Significant</b></p> <p>An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.</p>
	<p><b>Profound Effects</b></p> <p>An effect which obliterates sensitive characteristics</p>
Describing the Extent and Context of Effects	<p><b>Extent</b></p> <p>Describe the size of the area, the number of sites and the proportion of a population affected by an effect</p>
	<p><b>Context</b></p> <p>Describe whether the extent, duration or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)</p>
Describing the probability of Effects	<p><b>Likely Effects</b></p> <p>The effects that can reasonably be expected to occur because of the planned project if all mitigations measures are properly implemented.</p>
	<p><b>Unlikely Effects</b></p> <p>The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented</p>
Duration and Frequency of Effects	<p><b>Momentary Effects</b></p> <p>Effects lasting from seconds to minutes</p>
	<p><b>Brief Effects</b></p> <p>Effects lasting less than a day</p>
	<p><b>Temporary Effects</b></p> <p>Effects lasting less than a year</p>
	<p><b>Short-term Effects</b></p> <p>Effects lasting one to seven years</p>
	<p><b>Medium-term Effects</b></p> <p>Effects lasting seven to fifteen years.</p>
	<p><b>Long-term Effects</b></p> <p>Effects lasting fifteen to sixty years.</p>
	<p><b>Permanent Effects</b></p> <p>Effects lasting over sixty years</p>
	<p><b>Reversible Effects</b></p> <p>Effects that can be undone, for example through remediation or restoration</p>
	<p><b>Frequency of Effects</b></p> <p>Once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually</p>



### 7.3.2 Potential Impact Sources Affecting Bird Receptors

The potential effects on avian fauna from wind farm developments have been well documented in the literature, including Percival (2003) and Scottish Natural Heritage (SNH, 2017), highlighting primary risk categories associated with wind farm developments. In the context of the proposed project, a range of potential impact sources have been identified that could affect bird species and their habitats. The nature and significance of these effects are influenced by factors such as the timing and location of activities, the sensitivity of the species present, and the extent of habitat disturbance or modification.

#### 7.3.2.1 Construction Phase

During construction, several activities at the proposed project site, TDR, and/or the GCR may, directly or indirectly, significantly affect bird populations and their habitats. These include:

- **Direct habitat loss due to installation of infrastructure:** The construction of turbine foundations, access tracks, crane hardstands, and other infrastructure may result in the temporary or permanent loss of habitats used by birds for nesting, foraging, or roosting.
- **Indirect habitat loss due to water quality degradation, dust impacts and the spread of non-native invasive species:** Earthworks and site runoff may degrade aquatic or riparian habitats through sedimentation or pollution. Excavation activities may also result in the temporary generation of dust in the locality of the works area, which could lead to dust deposition on vegetation which can inhibit plant growth. While the spread of non-native invasive species has the potential to outcompete other native floral species, reducing the diversity and/or altering habitats conditions or structure (e.g. changing soil chemistry).
- **Disturbance and Displacement:** The presence of machinery, vehicles, and personnel, along with construction noise, may disturb birds and lead to their temporary or permanent displacement from sensitive habitats, particularly during the breeding season.
- **Direct Mortality and Destruction of Eggs/Nests:** The Court of Justice of the European Union (CJEU), in Case C-784/23, Vööre Mets (2025), clarified the interpretation of Article 5 of the Birds Directive, particularly in relation to the foreseeability of harm and disturbance to bird species. The judgment confirms that vegetation clearance or groundworks in habitat suitable for breeding birds may constitute deliberate destruction of nests, eggs or fledglings where such harm is foreseeable and the works proceed without appropriate avoidance or mitigation measures, particularly during the nesting season.
- **Habitat Loss at POIs along the TDR):** Infrastructure intersecting key ecological features such as hedgerows or wetlands may cause localised habitat degradation, which can disproportionately affect specialist or territorial bird species.



### 7.3.2.2 Operational Phase

Following construction, the operational phase presents ongoing risks to bird populations, including:

- **Disturbance/Displacement due to Barrier Effect:** Wind turbines may disrupt flight paths or foraging behaviour, particularly for species sensitive to movement or visual disturbances. This can lead to the avoidance of formerly suitable habitats, effectively reducing their availability.
- **Collision Risk:** Birds, particularly those that fly at rotor-swept height or follow migratory paths through the site, may be at risk of colliding with turbine blades. This risk increases under poor visibility or adverse weather conditions and may result in injury or mortality for affected species. There is also the risk of collision with other built structures, such as meteorological masts, and buildings. Although stationary, these structures can present obstacles to birds in flight, especially during poor weather.

### 7.3.2.3 Decommissioning Phase

The Decommissioning Phase of the proposed project may involve either the replacement of turbines (subject to planning permission) or the full removal of above-ground turbine infrastructure, with retention of the substation, associated cabling, and access tracks. The activities associated with decommissioning are expected to be similar in nature to those undertaken during construction (e.g. site access, use of machinery, removal of infrastructure), and may lead to:

- **Temporary Habitat Disturbance or Loss:** Limited and localised habitat disturbance or loss may occur as turbine components are removed and groundworks are reinstated. However, this is expected to be significantly lower in scale and duration compared to the original construction phase.
- **Short-Term Disturbance and Displacement:** There may be periods of disturbance to bird species due to noise and human activity, but these are expected to be of low intensity and duration.

## 7.3.3 Evaluating Sensitivity

A sensitivity evaluation procedure is used for breeding and wintering birds. It is based on sensitivity of populations and the magnitude of possible effects. This approach has been developed to specifically address the Irish context and follows standard assessment criteria based on Percival (2003). For this assessment, this procedure has been adapted to include a 'very low' sensitivity (Table 7-6) to allow better alignment with the definitions of significant effects, as outlined in EPA (2022).

The sensitivity of a species is defined by Percival (2003) as '*its ecological importance and nature conservation interest at the site being assessed*'. A number of factors are used to determine this sensitivity:

- Whether the species is on Annex I of the Birds Directive



- Whether the species is particularly ecologically sensitive: this includes larger birds of prey and rare breeding birds (including divers, common scoter, hen harrier, lapwing, woodcock and curlew)
- Whether the site contains species at internationally important numbers (where a site regularly supports >1% of the ‘flyway’ population, i.e. a route between breeding and wintering areas taken by concentrations of migrating birds) or nationally important numbers (>1% of Irish population)
- Whether the site contains species at regionally important numbers (>1% of regional population, with the region usually taken as the county)
- Whether the species is subject to special conservation measures, e.g. as Red, Amber or Green species on BWI’s list of Birds of Conservation Concern (Gilbert *et al.* 2021).

The sensitivity is further affected by any nature conservation designations in the area. The determination of sensitivity needs to take into account whether a species contributes to the overall objectives of the designation (including whether the species is designated as a qualifying feature of the site), and specifically for internationally important SPAs, it needs to consider whether the species contributes to the overall integrity of the site (Percival, 2003). The determination of sensitivity is summarised in Table 7-6.

**Table 7-6: Determination of Sensitivity**

Sensitivity	Determining Factor
Very High	Species that form the cited interest of SPAs and other statutorily protected nature conservation areas. Cited means mentioned in the citation text for the site as a species for which the site is designated.
High	Species that contribute to the conservation objectives of an SPA (and/or SAC) but which are not cited as species for which the site is designated Ecologically sensitive species including the following: divers, common scoter, hen harrier, golden eagle, red-necked phalarope ( <i>Phalaropus lobatus</i> ), roseate tern ( <i>Sterna dougalli</i> ) and chough ( <i>Pyrrhocorax pyrrhocorax</i> ) Species present in nationally important numbers (>1% Irish population).
Medium	Species on Annex I of the EC Birds Directive Species present in regionally important numbers (>1% regional (county) population) Other species on BirdWatch Ireland’s Red List of Birds of Conservation Concern.
Low	Any other species of conservation interest, including species on BirdWatch Ireland’s Amber List of Birds of Conservation Concern not covered above.
Very Low*	Receptors with no apparent connectivity with designated populations or important population concentrations



Sensitivity	Determining Factor
	Other species on BirdWatch Ireland's Green List of Birds of Conservation Concern.

\*= An additional sensitivity category, *Very Low*, has been introduced in addition to those defined by Percival (2003). This refinement allows for improved alignment with the definitions of significance of effects set out in EPA (2022)

### 7.3.4 Determining the Magnitude of the Possible Impact

Once the species/population(s) in the study area were evaluated in terms of their sensitivity, the magnitude of possible impacts on ornithological receptors was determined following the methods outlined by Percival (2003). The descriptions of the magnitude of possible impacts are provided in Table 7-7.

**Table 7-7: Determination of Magnitude of Impact**

Magnitude	Description
Very High	Total loss or very major alteration to key elements/features of the baseline conditions such that the post development character/composition/attributes would be fundamentally changed and may be lost from the site altogether Guide: < 20% of population/habitat remains.
High	Major loss or major alteration to key elements/features of the baseline (pre-development) conditions such that post development character/composition/attributes would be fundamentally changed Guide: 20-80% of population/habitat lost.
Medium	Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/composition/attributes of baseline would be partially changed Guide: 5-20% of population/habitat lost.
Low	Minor shift away from baseline conditions. Change arising from the loss/alteration would be discernible but underlying character/composition/attributes of baseline condition would be similar to pre-development circumstances/patterns Guide: 1-5% of population/habitat lost.
Negligible	Very slight change from baseline condition. Change barely distinguishable, approximating to the 'no change' situation Guide: < 1% population/habitat lost.

Note: Source of information: Percival (2003)

### 7.3.5 Assessment of the Effect Significance

To assess the significance of the potential effect, the relationship between sensitivity and magnitude must be understood. This is achieved by cross-tabulating magnitude with the sensitivity to provide a prediction of the significance of each effect on bird species (Table 7-8).



This matrix has been adapted from Percival (2003) to correspond with the definitions for significance of effects, in accordance with EPA (2022).

**Table 7-8: Significance Matrix: Combining Magnitude and Sensitivity to Assess Significance**

Significance		Sensitivity				
		Very High	High	Medium	Low	Very Low
Magnitude	Very High	Profound	Very Significant	Significant	Moderate	Slight
	High	Very Significant	Significant	Significant	Slight	Not Significant
	Medium	Significant	Significant	Moderate	Slight	Imperceptible
	Low	Moderate	Slight	Slight	Not Significant	Imperceptible
	Negligible	Slight	Not Significant	Imperceptible	Imperceptible	Imperceptible

Note: Source of information: Percival (2003) and EPA (2022)

The significance of any one effect is a product of the sensitivity of the receptor, the magnitude of the impact and the probability of that impact occurring. Percival (2003) states ‘*the test of significance of an impact would be whether the [development] impact is causing a significant change to the population, its range or distribution*’. The population against which the extent of the effect is felt should be quantified. Percival (2003) defines this population as a local ecological unit of sufficient size. This population provides a baseline against which the possible effect can be assessed. A key point in the assessment is whether the proposed project would result in a reduction in the carrying capacity of the local area. The availability of alternative habitat in the wider area is also an important consideration.

### 7.3.6 Interpretation of Significance Levels

For the purposes of this EIAR, thresholds adapted from Percival (2003) are applied to determine whether an effect is significant in EIA terms:

- **Profound, Very Significant, and Significant effects** are considered significant in EIA terms and may require mitigation, compensation, or alterations to the project design.
- **Moderate effects** are considered borderline and are assessed on a case-by-case basis. These may or may not be significant in EIA terms, depending on ecological context and professional judgement. A clear rationale for these determinations is provided in the relevant assessment sections.



- **Slight, Not Significant, and Imperceptible effects** are not considered significant in EIA terms, though good practice mitigation may still be recommended to reduce residual impacts.

## 7.4 EXISTING ENVIRONMENT

The following sections detail the desk studies and field surveys conducted to establish the ecological conditions of the existing environment at the proposed wind farm site, which were used to form the basis of the ornithological impact assessment.

### 7.4.1 Desktop Assessment Results

This desktop assessment included an assessment of designated sites, data from ecological stakeholders and a review of ecological assessments from nearby projects. The findings of the desktop assessment are detailed hereunder.

#### *7.4.1.1 Important Conservation Sites*

The Birds Directive (2009/147/EC) and the Habitats Directive (92/42/EEC) put an obligation on EU Member States to establish the Natura 2000 network. The Natura 2000 network comprises sites of the highest biodiversity importance for rare and threatened habitats and species across the EU. In Ireland, the Natura 2000 network of European sites comprises SACs and SPAs, where SACs are selected for the conservation of Annex I habitats (including priority types, which occurrence is considered threatened) and Annex II species (other than birds). SPAs are selected for the conservation of Annex I birds and other regularly occurring migratory birds and their habitats.

Natural Heritage Areas (NHA) are the basic wildlife designation in Ireland. These areas are considered nationally important for the habitats present, or which hold species of plants and animals designated for protection. Under Irish legislation in the form of the Wildlife Acts (as amended), NHAs are legally protected from damage from the date they are formally proposed for designation.

Proposed Natural Heritage Areas (pNHA) were published on a non-statutory basis in 1995 and have not since been statutorily designated. Prior to statutory designation, pNHAs are subject to limited protection, including recognition of the ecological value of pNHAs by Planning and Licensing Authorities.

In this ornithological assessment, the focus is on sites of importance for bird species, including those where birds are a primary or secondary feature. For more information on non-ornithology related designated sites, refer to Chapter 6 – Biodiversity (Flora and Fauna).

As an initial approach, all European and nationally protected sites within a 15 km radius of the proposed project, or where a hydrological link exists, were considered, to ensure a robust assessment. Additionally, the Source-Pathway-Receptor model (OPR, 2021) was then used to determine whether viable pathways for effects exists.

### 7.4.1.1.1 Sites of International Importance

There are a range of European sites (SPAs) within the vicinity of the proposed project site. These European sites and their Special Conservation Interest are listed in Table 7-9 and illustrated on Figure 7-7. There is also a Ramsar site located 14.3 km east of the proposed project site.

### 7.4.1.1.2 Sites of National Importance

There are a range of national sites (NHAs and pNHAs) within the vicinity of the proposed project site. These national sites and their features of interest are listed in Table 7-10 and illustrated on Figure 7-7.

**Table 7-9: Internationally Designated Conservation Sites Potentially Connected with the Proposed project in relation to ornithology.**

Name	Qualifying Interests / Special Conservation Interests / Feature of Interest	Approximate Distance from the proposed project (km)	Source-Pathway-Receptor Link (Yes or No)
<b>International Sites (European Sites and Ramar Site)</b>			
Dovegrove Callows SPA (004137)	<ul style="list-style-type: none"> <li>Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]</li> </ul>	Located approximately 6 km north of the proposed project site and approximately 200m from the Dallow 110kV substation, associated with the GCR.	Yes – The core foraging range for Greenland white-front goose is 5 to 8km (SNH, 2016). As the wind farm site of the proposed project lies approximately 6 km from the SPA and areas of works associated with the GCR occur closer (approximately 200m from the Dallow 110kV substation), the site occurs within the potential foraging range of this SCI species. There is also hydrological connectivity via the Little Brosna_040 river water body, connecting the proposed project and the SPA.
River Little Brosna Callows SPA (004086)	<ul style="list-style-type: none"> <li>Whooper Swan (<i>Cygnus cygnus</i>) [A038]</li> <li>Wigeon (<i>Anas penelope</i>) [A050]</li> <li>Teal (<i>Anas crecca</i>) [A052]</li> <li>Pintail (<i>Anas acuta</i>) [A054]</li> </ul>	Located approximately 7.5 km north of the proposed project site.	Yes – This SPA supports a number of wintering bird species that may occur, or have been recorded, within the proposed project site during the bird survey period. The wind farm area of the proposed project lies



Name	Qualifying Interests / Special Conservation Interests / Feature of Interest	Approximate Distance from the proposed project (km)	Source-Pathway-Receptor Link (Yes or No)
	<ul style="list-style-type: none"> <li>Shoveler (<i>Anas clypeata</i>) [A056]</li> <li>Golden Plover (<i>Pluvialis apricaria</i>) [A140]</li> <li>Lapwing (<i>Vanellus vanellus</i>) [A142]</li> <li>Black-tailed Godwit (<i>Limosa limosa</i>) [A156]</li> <li>Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179]</li> <li>Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]</li> <li>Wetland and Waterbirds [A999]</li> </ul>		<p>within the core foraging range of some species, such as Greenland White fronted Goose, which can forage up to 5–8 km from roosting areas (SNH, 2016). For other species, such as Golden Plover, core foraging ranges during the winter period are less well defined. Therefore, taking a precautionary approach, records of these species within the proposed project site may be associated with the SPA. There also is hydrological connectivity via the Little Brosna_040 river water body, connecting the proposed project and the SPA.</p> <p>The SPA is designated for a number of waterbirds and waders which are sensitive to water quality impacts.</p>
All Saints Bog SPA (004103)	<ul style="list-style-type: none"> <li>Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]</li> </ul>	Located approximately 9.1 km north of the proposed project and approximately 3.4m from the Dallow 110kV substation, associated with the GCR.	<p>No - The core foraging range of the Greenland White fronted Goose is approximately 5 to 8 km (SNH, 2016). As the wind farm site of the proposed project lies approximately 9.1 km from the SPA, it occurs outside the potential foraging range of this SCI species.</p> <p>The areas of works associated with the GCR occur closer to the SPA (approximately 3.4 km from the Dallow 110</p>



Name	Qualifying Interests / Special Conservation Interests / Feature of Interest	Approximate Distance from the proposed project (km)	Source-Pathway-Receptor Link (Yes or No)
			<p>kV substation). However, there will be little to no habitat loss within these areas, and suitable foraging habitat for this species is also limited or absent.</p> <p>There is also no hydrological connectivity between the proposed project and this SPA.</p>
<p>Slieve Bloom Mountains SPA (004160)</p>	<ul style="list-style-type: none"> <li>Hen Harrier (<i>Circus cyaneus</i>) [A082]</li> </ul>	<p>Located approximately 10 km east of the proposed project site</p>	<p>No - The core foraging range of Hen Harrier is approximately 5 km but can extend to a maximum of 10 km (SNH, 2016). As the proposed wind farm site of the proposed project lies approximately 10 km from the SPA, it occurs outside the core foraging range of this SCI species and at the limit of its maximum foraging range. Considering this, the availability of suitable alternative foraging habitat within closer proximity to the SPA and that the Slieve Bloom Mountains SPA is designated specifically for breeding Hen Harrier, with conservation objectives reflecting this. Survey data for the proposed project site recorded limited activity during the breeding season (a small number of observations in July 2023), with no evidence of nesting, territorial behaviour,</p>



Name	Qualifying Interests / Special Conservation Interests / Feature of Interest	Approximate Distance from the proposed project (km)	Source-Pathway-Receptor Link (Yes or No)
			or roosting. No source pathway receptor linkage can be established.
Lough Derg (Shannon) SPA (004058)	<ul style="list-style-type: none"> <li>• Cormorant (<i>Phalacrocorax carbo</i>) [A017]</li> <li>• Tufted Duck (<i>Aythya fuligula</i>) [A061]</li> <li>• Goldeneye (<i>Bucephala clangula</i>) [A067]</li> <li>• Common Tern (<i>Sterna hirundo</i>) [A193]</li> <li>• Wetland and Waterbirds [A999]</li> </ul>	Located approximately 12.9 km northwest of the proposed project site.	<p>Yes - This SPA supports a number of breeding and wintering bird species, of which only one, Cormorant, was recorded within the proposed project site during the bird survey period. According to Woodward et al. (2019), the mean foraging range for cormorant is approximately 7 km, although ranges of up to 35 km have been recorded. As the wind farm area of the proposed project lies within the maximum foraging range of this SCI species, there is potential that records of this species within the proposed project site may be associated with the SPA. On this basis, a source pathway receptor linkage cannot be excluded.</p> <p>There is also hydrological connectivity via the Little Brosna_040 river water body, connecting the proposed project and the SPA.</p> <p>The SPA is designated for a number of waterbirds and waders which are sensitive to water quality impacts.</p>



Name	Qualifying Interests / Special Conservation Interests / Feature of Interest	Approximate Distance from the proposed project (km)	Source-Pathway-Receptor Link (Yes or No)
Middle Shannon Callows SPA (004096)	<ul style="list-style-type: none"> <li>• Whooper Swan (<i>Cygnus cygnus</i>) [A038]</li> <li>• Wigeon (<i>Anas penelope</i>) [A050]</li> <li>• Corncrake (<i>Crex crex</i>) [A122]</li> <li>• Golden Plover (<i>Pluvialis apricaria</i>) [A140]</li> <li>• Lapwing (<i>Vanellus vanellus</i>) [A142]</li> <li>• Black-tailed Godwit (<i>Limosa limosa</i>) [A156]</li> <li>• Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179]</li> <li>• Wetland and Waterbirds [A999]</li> </ul>	Located approximately 14 km north of the proposed project site.	<p>Yes – This SPA supports a number of wintering and one breeding bird species that may occur, or have been recorded, within the proposed project site during the bird survey period. The wind farm area of the proposed project lies outside the core foraging range of some species, such as whooper swan, which can forage up to 5 km from roosting areas (SNH, 2016). However, for other species, such as golden plover and lapwing, core foraging ranges during the winter period are less well defined. Therefore, taking a precautionary approach, records of these species within the proposed project site may be associated with the SPA. There is also hydrological connectivity via the Little Brosna_040 river water body, connecting the proposed project and the SPA.</p> <p>The SPA is designated for a number of waterbirds and waders which are sensitive to water quality impacts.</p>
Slieve Bloom Mountains Ramsar site (335)	<ul style="list-style-type: none"> <li>• Hen Harrier (<i>Circus cyaneus</i>)</li> <li>• Merlin (<i>Falco columbarius</i>)</li> <li>• Peregrine (<i>Falco peregrinus</i>)</li> <li>• Red Grouse (<i>Lagopus lagopus</i>)</li> </ul>	Located approximately 14.3 km east of the proposed project site	No – no viable pathway between the proposed project and the Ramsar site.



Name	Qualifying Interests / Special Conservation Interests / Feature of Interest	Approximate Distance from the proposed project (km)	Source-Pathway-Receptor Link (Yes or No)
	<ul style="list-style-type: none"> <li>Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010]</li> <li>Blanket bogs (* if active bog) [7130]</li> </ul>		

Table 7-10: Nationally Designated Conservation Sites Potentially Connected with the Proposed project in relation to ornithology

Name	Brief Description	Approximate Distance from the proposed project (km)	Source-Pathway-Receptor Link (Yes or No)
Killeen Bog NHA (000648)	Killeen Bog NHA is a small area of raised bog situated approximately 4 km southwest of Birr, Co. Offaly. The site is comprised of areas of high bog and cutover bog. Small areas of pools and hollows are within the site, and it is surrounded by roads to the west and north and a mineral ridge with a birch woodland to the east.	Located approximately 3.7 km north of the proposed project site	No – no viable pathway between the proposed project and the NHA in terms of ornithological effects.  The site is not designated for a specific bird species and there is no hydrological or hydrogeological connectivity.
Arragh More Bog NHA (000640)	Arragh More Bog NHA is an area of raised bog situated 9.5 km northeast of Borrisokane, Co. Tipperary. The site is comprised of high bog and cutover bog. The Arragh More Bog NHA is split by mineral ridges between the areas of raised bog. An area of coniferous forestry is planted within a flush to the north of the site. Hen Harrier ( <i>Circus cyaneus</i> ) have been recorded on this bog.	Located approximately 5.5 km northeast of the proposed project site	No – no viable pathway between the proposed project and the NHA in terms of ornithological effects. The site is not designated for a specific bird species and there is no hydrological or hydrogeological connectivity.



Name	Brief Description	Approximate Distance from the proposed project (km)	Source-Pathway-Receptor Link (Yes or No)
Cangort Bog NHA (000890)	Cangort Bog NHA is an area of raised bog situated 1 km north of Shinrone, Co. Offaly. The site is comprised of high bog and cutover bog. The site has hummocks and pools throughout the high bog which is surrounded by cutover bog. The cutover bog has coniferous forestry in the south of the site.	Located approximately 2.5 km southwest of the proposed project site	No – no viable pathway between the proposed project and the NHA in terms of ornithological effects. The site is not designated for a specific bird species and there is no hydrological or hydrogeological connectivity.
Scohaboy Bog NHA (000937)	Scohaboy Bog NHA is a large area of raised bog situated 4 km southeast of Borrisokane, Co. Tipperary. The site is comprised of high bog and cutover. The high bog is relatively flat with an area of coniferous forestry to the north, and the bog is dry with limited hummocks and hollows throughout. Cutover bog occurs surrounding the high bog.	Located approximately 8.5 km southwest of the proposed project site	No – no viable pathway between the proposed project and the NHA in terms of ornithological effects. The site is not designated for a specific bird species and there is no hydrological or hydrogeological connectivity.
Lorrha Bog NHA (001684)	Lorrha Bog NHA is situated approximately 1 km northeast of Lorrha Co. Tipperary. The site is comprised of a raised bog which includes areas of high bog and cutover bog. The bog contains areas of hummocks throughout and a small flush in the centre of the bog. Coniferous forestry is within the cutover bog on the south of the site.	Located approximately 11.6 km northwest of the proposed project site	No – no viable pathway between the proposed project and the NHA in terms of ornithological effects. The site is not designated for a specific bird species and there is no hydrological or hydrogeological connectivity.



Name	Brief Description	Approximate Distance from the proposed project (km)	Source-Pathway-Receptor Link (Yes or No)
<p>River Little Brosna Callows NHA (000564)</p>	<p>The River Little Brosna Callows NHA is situated 5 km southwest of Banagher Co. Offaly and stretches 9 km along the River Shannon. The site comprises of low-lying callows on floodplains which are subject to flooding in the winter and early spring. There is also raised bog habitats present within the site and an area of mixed deciduous woodland east of Cloghan Demesne. This site is an internationally important site for wintering waterfowl and important for breeding waders including Common Redshank (<i>Tringa totanus</i>), Common Snipe (<i>Gallinago gallinago</i>) and Northern Lapwing (<i>Vanellus vanellus</i>).</p>	<p>Located approximately 7.5 km northwest of the proposed project site.</p>	<p>Yes – This NHA supports a number of wintering and breeding bird species that may occur, or have been recorded, within the proposed project site during the bird survey period. The wind farm area of the proposed project lies within the core foraging range of some species, such as Greenland White fronted Goose, which can forage up to 5–8 km from roosting areas (SNH, 2016). For other species, such as Golden Plover, core foraging ranges during the winter period are less well defined. Therefore, taking a precautionary approach, records of these species within the proposed project site may be associated with the NHA. There also is hydrological connectivity via the Little Brosna_040 river water body, connecting the proposed project and the NHA.</p> <p>The NHA is designated for a number of waterbirds and waders which are sensitive to water quality impacts.</p>
<p>Sharavogue Bog pNHA (000585)</p>	<p>No Site Synopsis for this pNHA, however a description can be found using the associated SAC.</p> <p>This site is an area of two raised bogs 8 km south of Birr Co. Offaly. This site contains areas of</p>	<p>Located 10m adjacent to the proposed project site.</p>	<p>Yes – viable pathway via hydrogeological physical and ecological connectivity identified between the pNHA and the proposed project</p>



Name	Brief Description	Approximate Distance from the proposed project (km)	Source-Pathway-Receptor Link (Yes or No)
	Annex I habitats including [7110] Raised Bog (Active), [7120] Degraded Raised Bog and [7150] Rhynchosporion Vegetation.		
Derrykeel Meadows pNHA (000897)	This site is located in Derrykeel, Co. Offaly. The site is comprised of areas of wet meadows with a stream running through a calcium rich substratum.	Located approximately 12.7 km northeast of the proposed project site	No – no viable pathway between the proposed project and the pNHA in terms of ornithological effects. The site is not designated for a specific bird species and there is no hydrological or hydrogeological connectivity.
Woodville Woods pNHA (000927)	This site is a deciduous native woodland located 3 km north of Birr Co. Offaly. It contains areas of mature oak and hazel with a small, accreted lake in the east.	Located approximately 8.3 km north of the proposed project site	No – no viable pathway between the proposed project and the pNHA in terms of ornithological effects. The site is not designated for a specific bird species and there is no hydrological or hydrogeological connectivity.
Dovegrove Callows pNHA (000010)	<p>No Site Synopsis for this pNHA, however a description can be found using the associated SPA.</p> <p>This site is an area of callows beside the Little Brosna River and is an important feeding area for Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>).</p>	Located approximately 7.3 km north of the proposed project site	Yes – The core foraging range for Greenland white-front goose is 5 to 8km (SNH, 2016). As the wind farm site of the proposed project lies approximately 6 km from the pNHA and areas of works associated with the GCR occur closer (approximately 200m from the Dallow 110kV substation), the site occurs within the potential foraging range of this species associated with this site. There is also



Name	Brief Description	Approximate Distance from the proposed project (km)	Source-Pathway-Receptor Link (Yes or No)
			hydrological connectivity via the Little Brosna_040 river water body, between the pNHA and the proposed project.
Lough Coura pNHA (000909)	Lough Coura is a small in-filled lake situated about 10 km west of Kilcormac Co. Offaly and 10 km east of Banagher, Co. Offaly. The site has a long history of botanical recording and its character has been described as progressing from "an extensive swamp" in 1899, "an extensive limy marsh" in 1934, "a dry fen" in 1969 to "very few damp areas were found" in 1972.	Located approximately 14.2 km northeast of the proposed project site	No - no viable pathway between the proposed project and the pNHA in terms of ornithological effects. The site is not designated for a specific bird species and there is no hydrological or hydrogeological connectivity.
Ross And Glens Eskers pNHA (000920)	This site is a gravel esker ridge and a cutaway bog located 5 km northwest of Birr Co. Offaly. The esker contains a hazel scrub and uncommon plants including Buckthorn ( <i>Rhamnus catharticus</i> ) and Bee Orchid ( <i>Ophrys apifera</i> ). Within the south of the site is a birch woodland.	Located approximately 9.3 km north of the proposed project site	No - no viable pathway between the proposed project and the pNHA in terms of ornithological effects. The site is not designated for a specific bird species and there is no hydrological or hydrogeological connectivity.
Ballyduff/Clonfinane Bog pNHA (000641)	No Site Synopsis for this pNHA, however a description can be found using the associated SAC.  This site is located 6 km southwest of Birr Co. Offaly. The site is an area of lowland raised bog and contains Annex I habitats including	Located approximately 4.9 km northwest of the proposed project site	No - no viable pathway between the proposed project and the pNHA in terms of ornithological effects. The site is not designated for a specific bird species and there is no hydrological or hydrogeological connectivity.



Name	Brief Description	Approximate Distance from the proposed project (km)	Source-Pathway-Receptor Link (Yes or No)
	<p>[7110] Raised Bog (Active)*, [7120] Degraded Raised Bog, [7150] Rhynchosporion Vegetation and [91D0] Bog Woodland.</p>		
<p>Redwood Bog pNHA (000654)</p>	<p>No Site Synopsis for this pNHA, however a description can be found using the associated SAC.</p> <p>This site is located 7 km southwest of Banagher Co. Offaly. The site is an area of raised bog with areas of high bog and cutover bog. Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) has been recorded within the site.</p>	<p>Located approximately 14 km northwest of the proposed project site</p>	<p>No – no viable pathway between the proposed project and the pNHA in terms of ornithological effects. The site is not designated for a specific bird species and there is no hydrological or hydrogeological connectivity.</p>
<p>Friar's Lough pNHA (000933)</p>	<p>This site is located near the village of Lorrha Co. Tipperary. The site contains a small lake which is surrounded by reed beds along its shore and areas of dry broadleaved woodland to the east of the lake and a species-rich wet woodland to the west of the lake.</p>	<p>Located approximately 14.2 km northwest of the proposed project site</p>	<p>No – no viable pathway between the proposed project and the pNHA in terms of ornithological effects. The site is not designated for a specific bird species and there is no hydrological or hydrogeological connectivity.</p>
<p>Kilcarren-Firville Bog pNHA (000647)</p>	<p>No Site Synopsis for this pNHA, however a description can be found using the associated SAC.</p> <p>This site is located 2 km east of Carrigahorig Co. Tipperary. The site is an area of lowland raised bog containing Annex I habitats including [7110]</p>	<p>Located approximately 8 km northwest of the proposed project site</p>	<p>No – no viable pathway between the proposed project and the pNHA in terms of ornithological effects. The site is not designated for a specific bird species and there is no hydrological or hydrogeological connectivity.</p>



Name	Brief Description	Approximate Distance from the proposed project (km)	Source-Pathway-Receptor Link (Yes or No)
	<p>Raised Bog (Active), [7120] Degraded Raised Bog and [7150] Rhynchosporian Vegetation.</p>		
<p>Liskeenan Fen pNHA (001683)</p>	<p>No Site Synopsis for this pNHA, however a description can be found using the associated SAC.</p> <p>This site is located 10 km northwest of Borrisokane Co. Tipperary. The site is an area of turlough-like calcareous <i>Cladium</i> fen with a swallow-hole at its centre. The fen includes a small area dry inactive raised bog with mixed woodland and areas of flooded cutaway bog. Also within the site is areas of species-rich dry grassland.</p>	<p>Located approximately 7 km west of the proposed project site</p>	<p>No – no viable pathway between the proposed project and the pNHA in terms of ornithological effects. The site is not designated for a specific bird species and there is no hydrological or hydrogeological connectivity.</p>
<p>Fiagh Bog pNHA (000932)</p>	<p>This site is situated 4 km northeast of Borrisokane Co. Tipperary. This site is an area of calcium-rich fen, and an area of lowland raised bog. The Round-mouthed Whorl Snail (<i>Vertigo geyerii</i>) has been recorded within this site.</p>	<p>Located approximately 8.2 km west of the proposed project site</p>	<p>No – no viable pathway between the proposed project and the pNHA in terms of ornithological effects. The site is not designated for a specific bird species and there is no hydrological or hydrogeological connectivity.</p>
<p>Spring Park Wetlands pNHA (000941)</p>	<p>This site is located 5 km north of Borrisokane Co. Tipperary. The site contains an area of reed beds and in the east of the site is a turlough-like lake. At least 20 Whooper swans and other waterbirds including Eurasian Teal (<i>Anas</i></p>	<p>Located approximately 12.5 km west of the proposed project site</p>	<p>No – no viable pathway between the proposed project and the pNHA in terms of ornithological effects.</p>



Name	Brief Description	Approximate Distance from the proposed project (km)	Source-Pathway-Receptor Link (Yes or No)
	<p><i>crecca</i>), Mallard (<i>Anas platyrhynchos</i>), Common Pochard (<i>Aythya ferina</i>), Tufted Duck (<i>Aythya fuligula</i>) and Gadwall (<i>Anas strepera</i>) have been recorded within the lake.</p>		
<p>Lough Nahinch (Tipperary) pNHA (000936)</p>	<p>This site is located 9 km east of Borrisokane Co. Tipperary. The site is a lake with a peaty basin and surrounded by a sparse Common Club-rush swamp. This site is an important breeding area for Common Redshank (<i>Tringa totanus</i>), Common Snipe (<i>Gallinago gallinago</i>) and Water Rail (<i>Rallus aquaticus</i>) and used as a wintering site for migratory bird species. There is also an area mature woodland to the north.</p>	<p>Located approximately 4.9 km southwest of the proposed project site</p>	<p>No - no viable pathway between the proposed project and the pNHA in terms of ornithological effects.</p> <p>With the exception of Common Snipe, breeding species referenced in the pNHA description were not recorded within the project site during the breeding season. Although Common Snipe was confirmed breeding, the species is largely sedentary during nesting and there is no evidence of functional connectivity with the pNHA.</p> <p>The pNHA description notes increased bird interest during winter due to migratory species, although specific taxa are not identified. The project site contains areas of wetland habitat and wintering waterfowl (ducks, swans and geese) have been recorded. However, survey results indicate that use of the site is typical of the wider agricultural landscape and there is no evidence that it supports significant</p>



Name	Brief Description	Approximate Distance from the proposed project (km)	Source-Pathway-Receptor Link (Yes or No)
			<p>concentrations, regularly occurring aggregations, or populations that form part of or are dependent upon the pNHA.</p> <p>No source pathway receptor linkage can be established.</p>
<p>Ballintemple Bog pNHA (000882)</p>	<p>This site is located 13 km southwest of Roscrea Co. Tipperary and contains areas of wet meadows, small pools. Outside of the wetter areas contains areas of colonising Gorse.</p>	<p>Located approximately 14 km southwest of the proposed project site</p>	<p>No - no viable pathway between the proposed project and the pNHA in terms of ornithological effects. The site is not designated for a specific bird species and there is no hydrological or hydrogeological connectivity.</p>
<p>Drumakeenan, Eagle Hill And Perry's Mill pNHA (000900)</p>	<p>This site contains three separate areas of low esker ridges 4 km northwest of Roscrea Co. Tipperary. Vegetation within these esker ridges include areas of calcareous grassland, spring-flushed slopes, wet calcareous fen and herb-rich wet meadows. Legally protected species including Green-winged Orchid (<i>Orchis morio</i>) and Nettle-leaved Bellflower (<i>Campanula trachelium</i>) may be present here.</p>	<p>Located approximately 7.8 km south of the proposed project site</p>	<p>No - no viable pathway between the proposed project and the pNHA in terms of ornithological effects. The site is not designated for a specific bird species and there is no hydrological or hydrogeological connectivity.</p>
<p>Golden Grove Woods pNHA (000903)</p>	<p>This site is located to the northwest of Roscrea Co. Tipperary. The site is an area of planted Beech woodland with an</p>	<p>Located approximately 8.8 km southeast of the proposed project site</p>	<p>No - no viable pathway between the proposed project and the pNHA in terms of ornithological effects. The site is not designated for a specific bird species</p>

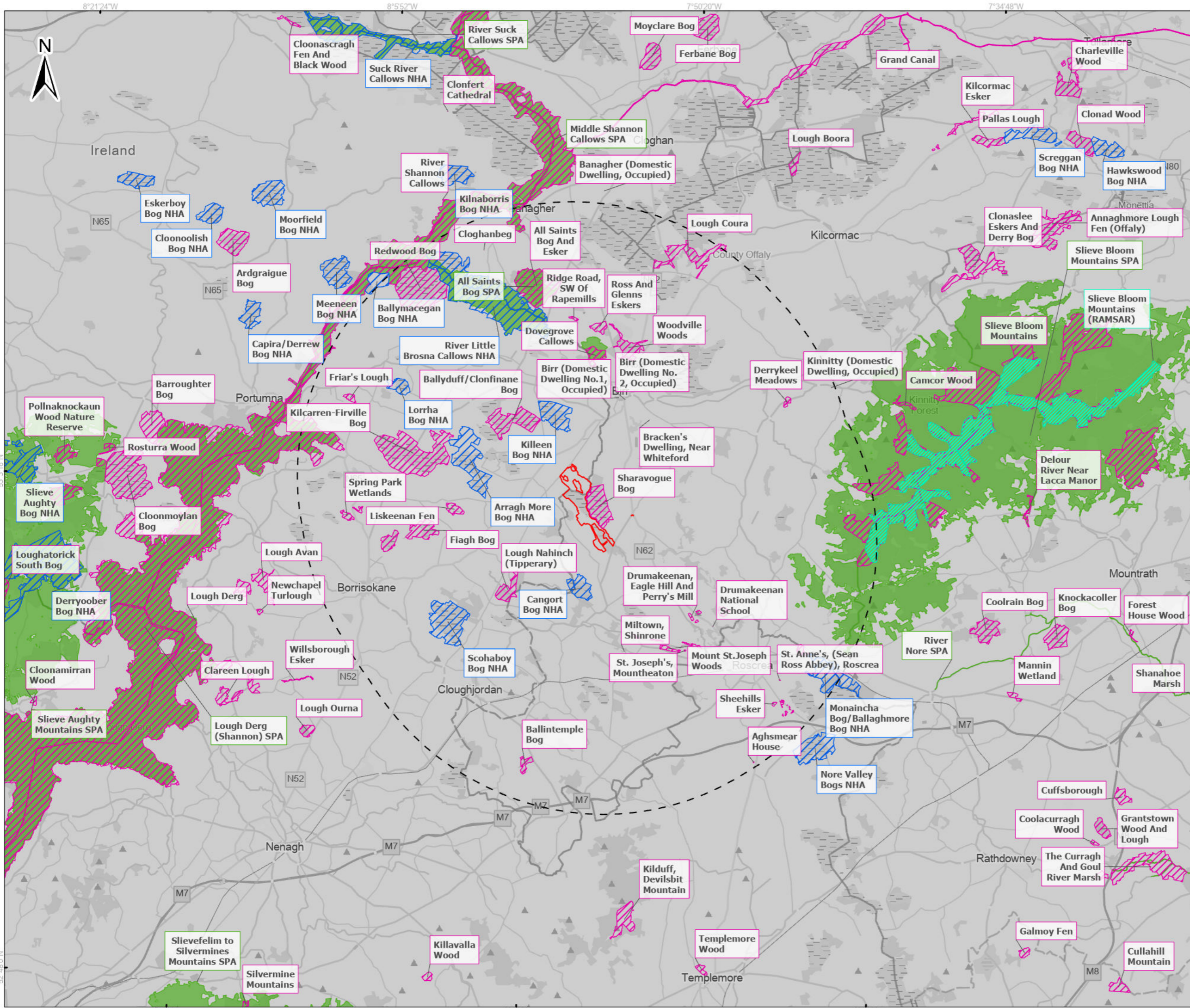


Name	Brief Description	Approximate Distance from the proposed project (km)	Source-Pathway-Receptor Link (Yes or No)
	impoverished ground flora.		and there is no hydrological or hydrogeological connectivity.
Roscrea Bog pNHA (000583)	<p>This site is a fen on poorly drained glacial drift located 3 km west of Roscrea Co. Tipperary. The site has areas of drained land in the northern section and wetter areas in the centre. To the south of the site is an area of stream and wet woodland. Two rare snail species including <i>Vertigo genesii</i> and <i>Agriolimax laevis</i> have been recorded within the site. Bird species including Eurasian Curlew (<i>Numenius arquata</i>) and Common Snipe (<i>Gallinago gallinago</i>) have been recorded within the site.</p>	Located approximately 13 km southeast of the proposed project site	<p>No – no viable pathway between the proposed project and the pNHA in terms of ornithological effects. The site is not designated for a specific bird species, with the species mentioned in the description only noted as being recorded on the site. Additionally there is no hydrological or hydrogeological connectivity.</p>
Slieve Bloom Mountains pNHA 000412	<p>No Site Synopsis for this pNHA, however a description can be found using the associated SAC and SPA.</p> <p>This site is located along the Offaly-Laois border and contains areas of Annex I habitats including [4010] Wet heath, [7130] Blanket bogs (Active) and [91E0] Alluvial Forests. Bird species including Hen Harrier (<i>Circus cyaneus</i>), Peregrine (<i>Falco peregrinus</i>), Merlin (<i>Falco columbarius</i>) and Red Grouse (<i>Lagopus lagopus</i>) have been</p>	Located approximately 14.5 km southeast of the proposed project site	<p>No – no viable pathway between the proposed project and the pNHA in terms of ornithological effects.</p> <p>The pNHA is noted for breeding Hen Harrier, Peregrine, Merlin and Red Grouse. The core foraging ranges of these species are centred on upland habitats associated with the pNHA and lie outside the proposed project site (SNH, 2016). Survey data for the project site recorded limited or no activity of these species during the breeding season, and no evidence of nesting.</p>

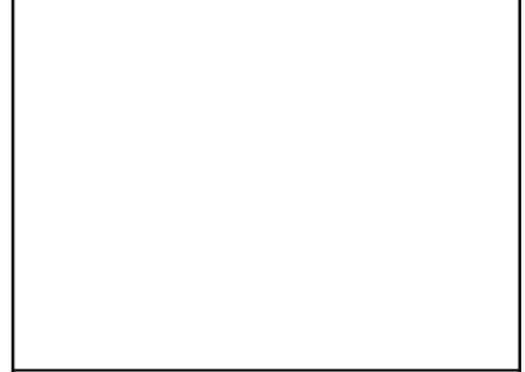


Name	Brief Description	Approximate Distance from the proposed project (km)	Source-Pathway-Receptor Link (Yes or No)
	recorded breeding within the site.		<p>territorial behaviour or regular roosting was identified.</p> <p>Given the absence of breeding activity within the site, the availability of suitable foraging habitat in closer proximity to the pNHA, and the lack of recorded functional use of the project site by the pNHA breeding populations, no source-pathway-receptor linkage is identified.</p>





- Legend**
- Planning Application Boundary
  - Initial 15KM Buffer
  - Designated Sites
    - National Heritage Areas (NHAs)
    - Slieve Bloom Mountains (RAMSAR)
    - Protected National Heritage Areas (pNHAs)
    - Special Protected Areas (SPAs)



<b>Spatial Reference</b>		<b>Copyrights:</b>	
Datum: IRENET95		Map data © OpenStreetMap contributors, Microsoft, Facebook, Google, Esri	
EPSG: 2157		Community Maps contributors, Map layer	

D01	01/04/2026	Draft issue	K.K.	J.S.
Rev	Date	Description	By	Chkd.

Client:

Project: **Ballincor Wind Farm**

Title: **Figure 7-7: Designated International and National Sites within the vicinity of the proposed project**

Scale @ A3: 1:200,000  
 Prepared by: K.Kale  
 Checked by: J.Sherry  
 Date: April 2026

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Map Ref: 11333-023-E.U-P.App.BO-TOB-D01  
 Draft: **D01**

### 7.4.1.2 Data from Ecological Stakeholders/NGO's

The desktop assessment included a review of available data from ecological stakeholders and NGOs and the findings are summarised hereunder.

#### 7.4.1.2.1 National Parks and Wildlife Services

EU Birds Directive Article 12 species datasets, published by NPWS every six years in compliance with the Directive, were downloaded from the NPWS website and overlain on the proposed project site boundary using GIS software to examine the recorded presence of relevant bird species within the site. Following this review, no data of ornithological relevance specific to the proposed project site was identified.

EU Habitats Directive Annex I habitat datasets published by NPWS every 6 year period, in compliance with Article 17 of the EU Habitats Directive, were downloaded from the NPWS website<sup>9</sup> and overlain on the proposed project site boundary using GIS software to examine the recorded presence of Annex I habitats within the boundary of the proposed project site.

#### 7.4.1.2.2 National Biodiversity Data Centre

A review of the National Biodiversity Data Centre website for the S09, N00 10x10 km Irish Grid Squares, in which the proposed wind farm is located, revealed records of 65 bird species, along with their conservation status, i.e. listed in either the Annex I of the Birds Directive, or in the BoCCI (Gilbert et al., 2021) (see Table 7-11).

**Table 7-11: Previous Records of Ornithological Species recorded within the 10 km Grid Squares (S09, N00)**

Species	Designation	Last Recorded	Grid Square
Barn Owl ( <i>Tyto alba</i> )	WA, BoCCI Amber Listed	24/09/2024	N00, S09
Black-headed Gull ( <i>Larus ridibundus</i> )	WA, BoCCI Amber Listed	26/05/2017	N00, S09
Black-tailed Godwit ( <i>Limosa limosa</i> )	WA, BoCCI Amber Listed	26/02/2024	N00, S09
Common Buzzard ( <i>Buteo buteo</i> )	WA, BoCCI Green Listed	18/03/2024	N00, S09
Common Coot ( <i>Fulica atra</i> )	WA, BOCCI Amber Listed	26/02/2024	N00, S09
Common Greenshank ( <i>Tringa nebularia</i> )	WA, BoCCI Green Listed	26/02/2019	N00
Common Kestrel ( <i>Falco tinnunculus</i> )	WA, BoCCI Red Listed	12/03/2023	N00, S09
Common Kingfisher ( <i>Alcedo atthis</i> )	WA, EU BD Annex I, BoCCI Amber Listed	24/09/2024	N00, S09

<sup>9</sup> Accessed [October 2022] via: <https://www.npws.ie/maps-and-data/habitat-and-species-data/article-17>



Species	Designation	Last Recorded	Grid Square
Common Pochard ( <i>Aythya ferina</i> )	WA, BoCCI Red Listed	27/12/2019	N00
Common Redshank ( <i>Tringa totanus</i> )	WA, BoCCI Red Listed	12/03/2023	N00, S09
Common Sandpiper ( <i>Actitis hypoleucos</i> )	WA, BoCCI Amber Listed	31/07/1991	N00
Common Snipe ( <i>Gallinago gallinago</i> )	WA, BoCCI Red Listed	20/03/2022	N00, S09
Corn Crake ( <i>Crex crex</i> )	WA, EU BD Annex I, BoCCI Red Listed	31/07/1991	N00, S09
Dunlin ( <i>Calidris alpina</i> )	WA, EU BD Annex I, BoCCI Red Listed	26/02/2019	N00
Eurasian Curlew ( <i>Numenius arquata</i> )	WA, BoCCI Red Listed	31/12/2011	N00, S09
Eurasian Hobby ( <i>Falco subbuteo</i> )	WA	19/05/1996	N00
Eurasian Sparrowhawk ( <i>Accipiter nisus</i> )	WA, BoCCI Green Listed	08/05/2024	N00, S09
Eurasian Teal ( <i>Anas crecca</i> )	WA, BoCCI Amber Listed	29/02/2024	N00, S09
Eurasian Wigeon ( <i>Anas penelope</i> )	WA, BoCCI Amber Listed	26/02/2024	N00
Eurasian Woodcock ( <i>Scolopax rusticola</i> )	WA, BoCCI Amber Listed	18/03/2024	N00, S09
European Golden Plover ( <i>Pluvialis apricaria</i> )	WA, EU BD Annex I, BoCCI Red Listed	21/08/2021	N00, S09
European Nightjar ( <i>Caprimulgus europaeus</i> )	WA, EU BD Annex I, BoCCI Red Listed	31/07/1972	N00
Gadwall ( <i>Anas strepera</i> )	WA, BoCCI Amber Listed	26/02/2024	N00
Great Black-backed Gull ( <i>Larus marinus</i> )	WA, BoCCI Amber Listed	29/02/1984	N00
Great Cormorant ( <i>Phalacrocorax carbo</i> )	WA, BoCCI Amber Listed	23/02/2019	N00, S09
Great Egret ( <i>Ardea alba</i> )	WA, EU BD Annex I	31/12/2011	N00



Species	Designation	Last Recorded	Grid Square
Greater White-fronted Goose ( <i>Anser albifrons</i> )	WA, EU BD Annex I, BoCCI Amber Listed	27/12/2019	N00
Greenland White-fronted Goose ( <i>Anser albifrons subsp. flavirostris</i> )	WA, EU BD Annex I, BoCCI Amber Listed	31/12/2011	N00
Grey Heron ( <i>Ardea cinerea</i> )	WA, BoCCI Green Listed	08/06/2024	N00, S09
Grey Partridge ( <i>Perdix perdix</i> )	WA, BoCCI Red Listed	31/07/1972	N00
Grey Wagtail ( <i>Motacilla cinerea</i> )	WA, BoCCI Red Listed	01/04/2024	N00, S09
Greylag Goose ( <i>Anser anser</i> )	WA, BoCCI Amber Listed	27/12/2019	N00
Hen Harrier ( <i>Circus cyaneus</i> )	WA, EU BD Annex I, BoCCI Amber Listed	29/11/2017	N00, S09
Herring Gull ( <i>Larus argentatus</i> )	WA, BoCCI Amber Listed	29/02/1984	N00
Little Egret ( <i>Egretta garzetta</i> )	WA, EU BD Annex I, BoCCI Green Listed	08/06/2024	N00
Little Grebe ( <i>Tachybaptus ruficollis</i> )	WA, BoCCI Green Listed	26/02/2024	N00
Long-eared Owl ( <i>Asio otus</i> )	WA, BoCCI Green Listed	06/03/2020	N00, S09
Mallard ( <i>Anas platyrhynchos</i> )	WA, BoCCI Amber Listed	12/03/2023	N00, S09
Meadow Pipit ( <i>Anthus pratensis</i> )	WA, BoCCI Red Listed	27/12/2019	N00, S09
Merlin ( <i>Falco columbarius</i> )	WA, EU BD Annex I, BoCCI Amber Listed	31/12/2011	N00, S09
Common Gull ( <i>Larus canus</i> )	WA, BoCCI Amber Listed	27/12/2019	N00
Mute Swan ( <i>Cygnus olor</i> )	WA, BoCCI Amber Listed	26/02/2024	N00, S09
Northern Lapwing ( <i>Vanellus vanellus</i> )	WA, BoCCI Red Listed	26/02/2024	N00, S09
Northern Pintail ( <i>Anas acuta</i> )	WA, BoCCI Amber Listed	26/02/2024	N00



Species	Designation	Last Recorded	Grid Square
Northern Shoveler ( <i>Anas clypeata</i> )	WA, BoCCI Red Listed	26/02/2024	N00
Peregrine Falcon ( <i>Falco peregrinus</i> )	WA, EU BD Annex I, BoCCI Green Listed	15/01/2024	N00, S09
Pink-footed Goose ( <i>Anser brachyrhynchus</i> )	WA, BoCCI Green Listed	31/12/2011	N00
Red Grouse ( <i>Lagopus lagopus</i> )	WA, BoCCI Red Listed	31/07/1972	N00
Red Kite ( <i>Milvus milvus</i> )	WA, EU BD Annex I, BoCCI Red Listed	18/03/2024	N00
Ruff ( <i>Philomachus pugnax</i> )	WA, EU BD Annex I, BoCCI Amber Listed	31/12/2011	N00, S09
Short-eared Owl ( <i>Asio flammeus</i> )	WA, EU BD Annex I, BoCCI Amber Listed	03/05/2016	N00
Sky Lark ( <i>Alauda arvensis</i> )	WA, BoCCI Amber Listed	21/02/2018	N00, S09
Tufted Duck ( <i>Aythya fuligula</i> )	WA, BoCCI Amber Listed	26/02/2024	N00, S09
Water Rail ( <i>Rallus aquaticus</i> )	WA, BoCCI Green Listed	21/12/2019	N00, S09
Whooper Swan ( <i>Cygnus cygnus</i> )	WA, EU BD Annex I, BoCCI Amber Listed	20/03/2022	N00, S09
Yellowhammer ( <i>Emberiza citrinella</i> )	WA, BoCCI Red Listed	14/05/2021	N00, S09

**Note:** EU BD = European Union Birds Directive, WA = Wildlife Acts, BoCCI = Birds of Conservation Concern Ireland 2020-2026.

### 7.4.1.2.3 Bird Sensitivity to Wind Energy Mapping Tool

A Bird Sensitivity to Wind Energy Mapping Tool was reviewed in May 2025 via the NBDC Map Viewer ([www.biodiversityireland.ie](http://www.biodiversityireland.ie)). This tool, developed by BirdWatch Ireland and McGuinness *et al.* (2015) provides spatial data indicating where bird species are likely to be sensitive to wind energy developments in Ireland. Sensitivity is classified on a scale of Highest, High, Medium, and Low, based on species-specific behavioural, distributional, and ecological data as outlined in McGuinness *et al.* (2015).

The proposed project site lies within a designated sensitivity zone. The entire area of overlap with the proposed project is classified as having ‘Low’ sensitivity for Barn Owl.



## 7.4.2 Field Survey Results

Bird abundances and assemblages for the proposed project were determined from the results of the surveys outlined in section 7.2.7. A total of 98 species were recorded during the breeding and wintering bird surveys conducted within the study areas between 2020 and 2026. Of this, a total of 38 species were identified as target species following the criteria set out in section 7.2.5. All recorded species, the season in which they were recorded, and their protection and conservation status is provided in Table 7-12 for target species and Table 7-13 for non-target species. The data and locations of all species observed over the survey period are plotted and presented on tables and figures within Appendix 7-1. Species account of all target species recorded over the survey period are discussed below.

In this assessment, the terms regular, occasional, irregular, and rare are used to describe the frequency of species occurrence within and around the proposed wind farm site. These categories are based on the number and consistency of observations recorded during baseline surveys, informed by professional judgment and established good practice. The following general definitions apply:

- Regular – Species recorded consistently across seasons or years, typically observed in >50% of relevant surveys.
- Occasional – Species recorded less frequently, typically in 10–50% of surveys.
- Irregular – Species with no discernible seasonal or annual pattern, and whose presence is unpredictable.
- Rare – Species recorded only once or twice during the full survey period.

These classifications follow principles of transparent, evidence-based ecological assessment, and the use of professional judgment, as outlined in CIEEM (2018) and SNH (2017).

**Table 7-12: Full target species list of birds recorded within the Ballincor study area during the breeding and wintering surveys between 2020 and 2026.**

Target Species	Survey Season*		Protection and Conservation Status**
	Breeding	Winter	
Barn Owl ( <i>Tyto alba</i> )	2023*** 2025***	2025/2026	WA, BoCCI Red List
Black-headed Gull ( <i>Larus ridibundus</i> )	2020 2021 2023 2024	2020/2021 2021/2022 2022/2023 2023/2024 2025/2026	WA, BoCCI Amber List
Black-Tailed Godwit ( <i>Limosa limosa</i> )	-	2023/2024 2025/2026	WA, BoCCI Red List
Common Buzzard ( <i>Buteo buteo</i> )	2020	2020/2021	WA, BoCCI Green List



Target Species	Survey Season*		Protection and Conservation Status**
	Breeding	Winter	
	2021 2023 2024	2021/2022 2022/2023 2023/2024 2025/2026	
Common Gull ( <i>Larus canus</i> )	2023	2020/2021 2021/2022 2022/2023	WA, BoCCI Amber List
Coot ( <i>Fulica atra</i> )	-	2025/2026	WA, BoCCI Amber List
Cormorant ( <i>Phalacrocorax carbo</i> )	2020 2021 2023 2024	2020/2021 2021/2022 2022/2023 2023/2024 2025/2026	WA, BoCCI Amber List
Curlew ( <i>Numenius arquata</i> )	2023	2020/2021	WA, BoCCI Red List
Golden Plover ( <i>Pluvialis apricaria</i> )	2021 2023 2024	2020/2021 2021/2022 2022/2023 2023/2024 2025/2026	WA, Annex I Birds Directive, BoCCI Red List
Great Black-backed Gull ( <i>Larus marinus</i> )	2024	-	WA, BoCCI Amber List
Green Sandpiper ( <i>Tringa ochropus</i> )	-	2025/2026	WA, BoCCI Green List
Grey Heron ( <i>Ardea cinerea</i> )	2020 2021 2023 2024	2020/2021 2021/2022 2022/2023 2023/2024 2025/2026	WA, BoCCI Green List
Hen Harrier ( <i>Circus cyaneus</i> )	2023	2020/2021 2022/2023 2023/2024 2025/2026	WA, Annex I Birds Directive, BoCCI Amber List
Herring Gull ( <i>Larus argentatus</i> )	2023	-	WA, BoCCI Amber List
Jack Snipe ( <i>Lymnocyptes minimus</i> )	-	2023/2024 2025/2026	WA, BoCCI Green List



Target Species	Survey Season*		Protection and Conservation Status**
	Breeding	Winter	
Kestrel ( <i>Falco tinnunculus</i> )	2020 2021 2023 2024	2020/2021 2021/2022 2022/2023 2023/2024 2025/2026	WA, BoCCI Red List
Kingfisher ( <i>Alcedo atthis</i> )	-	2020/2021 2025/2026	WA, Annex I Birds Directive, BoCCI Amber List
Northern Lapwing ( <i>Vanellus vanellus</i> )	2023	2020/2021 2021/2022 2022/2023 2023/2024 2025/2026	WA, BoCCI Red List
Lesser Black-backed Gull ( <i>Larus fuscus</i> )	2020 2021 2023 2024	2020/2021 2021/2022 2022/2023 2023/2024 2025/2026	WA, BoCCI Amber List
Little Egret ( <i>Egretta garzetta</i> )	2023 2024	2020/2021 2021/2022 2022/2023 2023/2024 2025/2026	WA, BoCCI Green List, Annex I Birds Directive
Little Grebe ( <i>Tachybaptus ruficollis</i> )	2023	2022/2023	WA, BoCCI Amber List
Mallard ( <i>Anas platyrhynchos</i> )	2020 2021 2023 2024	2020/2021 2021/2022 2022/2023 2023/2024 2025/2026	WA, BoCCI Amber List
Merlin ( <i>Falco columbarius</i> )	2023 2024	2020/2021 2021/2022 2022/2023 2023/2024 2025/2026	WA, Annex I Birds Directive, BoCCI Amber List
Mute Swan ( <i>Cygnus olor</i> )	2020	2020/2021	WA, BoCCI Amber List



Target Species	Survey Season*		Protection and Conservation Status**
	Breeding	Winter	
	2021 2023 2024	2021/2022 2022/2023 2023/2024 2025/2026	
Peregrine Falcon ( <i>Falco peregrinus</i> )	2021 2023 2024	2020/2021 2021/2022 2022/2023 2023/2024 2025/2026	WA, BoCCI Green List, Annex I Birds Directive
Pintail ( <i>Anas acuta</i> )	-	2023/2024 2025/2026	WA, BoCCI Amber List
Shoveler ( <i>Spatula clypeat</i> )	-	2023/2024 2025/2026	WA, BoCCI Red List
Snipe ( <i>Gallinago gallinago</i> )	2020 2021 2023 2024	2020/2021 2021/2022 2022/2023 2023/2024 2025/2026	WA, BoCCI Red List
Sparrowhawk ( <i>Accipiter nisus</i> )	2020 2021 2023 2024	2020/2021 2021/2022 2022/2023 2023/2024 2025/2026	WA, BoCCI Green List
Redshank ( <i>Tringa tetanus</i> )	-	2025/2026	WA, BoCCI Red List
Teal ( <i>Anas crecca</i> )	-	2021/2022 2023/2024 2025/2026	WA, BoCCI Amber List
Tufted Duck ( <i>Aythya fuligula</i> )	-	2025/2026	WA, BoCCI Amber List
Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> )	-	2022/2023 2025/2026	WA, Annex I Birds Directive, BoCCI Amber List
Whooper Swan ( <i>Cygnus cygnus</i> )	-	2020/2021 2021/2022 2022/2023 2023/2024	WA, Annex I Birds Directive, BoCCI Amber List



Target Species	Survey Season*		Protection and Conservation Status**
	Breeding	Winter	
		2025/2026	
White-tailed Eagle ( <i>Haliaeetus albicilla</i> )	-	2025/2026	WA, Annex I Birds Directive, BoCCI Red List
Wigeon ( <i>Mareca penelope</i> )	-	2022/2023 2023/2024	WA, BoCCI Amber List
Woodcock ( <i>Scolopax rusticola</i> )	-	2025/2026	WA, BoCCI Red List
Unknown Swan Species	-	2020/2021 2021/2022 2023/2024	WA
Unknown Gull Species	2020 2021 2023 2024	-	WA
Unknown Goose Species	-	2020/2021 2022/2023	WA
Unknown Wader Species	-	2022/2023 2023/2024	WA

\* [-] = a species was not recorded over the survey season.

\*\* EU BD = European Union Birds Directive, WA = Wildlife Acts, BoCCI = Birds of Conservation Concern Ireland 2020-2026.

\*\*\* = Incidental observation, recorded during a multi-disciplinary survey.



Table 7-13: Full list of non-target birds recorded within the Ballincor study area during the breeding and wintering surveys between 2020 and 2024.

Non-target Species	Survey Season*		Protection and Conservation Status**
	Breeding	Winter	
Blackbird ( <i>Turdus merula</i> )	Present	Present	WA, BoCCI Green List
Blackcap ( <i>Sylvia atricapilla</i> )	Present	-	WA, BoCCI Green List
Blue Tit ( <i>Sylvia atricapilla</i> )	Present	Present	WA, BoCCI Green List
Bullfinch ( <i>Pyrrhula pyrrhula</i> )	Present	Present	WA, BoCCI Green List
Carrion Crow ( <i>Corvus corone</i> )	-	Present	WA, BoCCI Green List
Chaffinch ( <i>Fringilla coelebs</i> )	Present	Present	WA, BoCCI Green List
Chiffchaff ( <i>Phylloscopus collybita</i> )	Present	Present	WA, BoCCI Green List
Coal Tit ( <i>Periparus ater</i> )	Present	Present	WA, BoCCI Green List
Collared Dove ( <i>Streptopelia decaocto</i> )	Present	Present	WA, BoCCI Green List
Crossbill ( <i>Loxia curvirostra</i> )	Present	Present	WA, BoCCI Green List
Cuckoo ( <i>Cuculus canorus</i> )	Present	-	WA, BoCCI Green List
Dipper ( <i>Cinclus cinclus</i> )	-	Present	WA, BoCCI Green List
Dunnock ( <i>Prunella modularis</i> )	Present	Present	WA, BoCCI Green List
Feral Pigeon ( <i>Columba livia</i> )	Present	Present	WA, BoCCI Green List
Fieldfare ( <i>Turdus pilaris</i> )	-	Present	WA, BoCCI Green List
Goldcrest ( <i>Regulus regulus</i> )	Present	Present	WA, BoCCI Amber List
Goldfinch ( <i>Carduelis carduelis</i> )	Present	Present	WA, BoCCI Green List
Great Spotted Woodpecker ( <i>Dendrocopos major</i> )	Present	Present	WA, BoCCI Green List
Great Tit ( <i>Parus major</i> )	Present	Present	WA, BoCCI Green List
Greenfinch ( <i>Chloris chloris</i> )	Present	Present	WA, BoCCI Amber List
Grey Wagtail ( <i>Motacilla cinerea</i> )	Present	Present	WA, BoCCI Red List
Hooded Crow ( <i>Corvus cornix</i> )	Present	Present	WA, BoCCI Green List
House Martin ( <i>Delichon urbicum</i> )	Present	Present	WA, BoCCI Amber List
House Sparrow ( <i>Passer domesticus</i> )	Present	Present	WA, BoCCI Amber List



Non-target Species	Survey Season*		Protection and Conservation Status**
	Breeding	Winter	
Jackdaw ( <i>Corvus monedula</i> )	Present	Present	WA, BoCCI Green List
Jay ( <i>Garrulus glandarius</i> )	Present	Present	WA, BoCCI Green List
Linnet ( <i>Linaria cannabina</i> )	Present	Present	WA, BoCCI Amber List
Long-tailed Tit ( <i>Aegithalus caudatus</i> )	Present	Present	WA, BoCCI Green List
Magpie ( <i>Pica pica</i> )	Present	Present	WA, BoCCI Green List
Meadow Pipit ( <i>Anthus pratensis</i> )	Present	Present	WA, BoCCI Red List
Mistle Thrush ( <i>Turdus viscivorus</i> )	Present	Present	WA, BoCCI Green List
Moorhen ( <i>Gallinula chloropus</i> )	Present	Present	WA, BoCCI Green List
Pheasant ( <i>Phasianus colchicus</i> )	Present	Present	WA, BoCCI Green List
Pied Wagtail ( <i>Motacilla alba</i> )	Present	Present	WA, BoCCI Green List
Raven ( <i>Corvus corax</i> )	Present	Present	WA, BoCCI Green List
Redpoll ( <i>Acanthis flammea</i> )	Present	Present	WA, BoCCI Green List
Redwing ( <i>Turdus iliacus</i> )	Present	Present	WA, BoCCI Red List
Reed Bunting ( <i>Emberiza schoeniclus</i> )	Present	Present	WA, BoCCI Green List
Robin ( <i>Erithacus rubecula</i> )	Present	Present	WA, BoCCI Green List
Rock Dove ( <i>Columba livia</i> )	Present	-	WA, BoCCI Green List
Rook ( <i>Corvus frugilegus</i> )	Present	Present	WA, BoCCI Green List
Sand Martin ( <i>Riparia riparia</i> )	Present	Present	WA, BoCCI Amber List
Sedge Warbler ( <i>Acrocephalus schoenobaenus</i> )	Present	-	WA, BoCCI Green List
Siskin ( <i>Spinus spinus</i> )	Present	Present	WA, BoCCI Green List
Skylark ( <i>Alauda arvensis</i> )	Present	Present	WA, BoCCI Amber List
Song Thrush ( <i>Turdus philomelos</i> )	Present	Present	WA, BoCCI Green List
Spotted Flycatcher ( <i>Muscicapa striata</i> )	Present	-	WA, BoCCI Amber List
Starling ( <i>Sturnus vulgaris</i> )	Present	Present	WA, BoCCI Amber List
Stock Dove ( <i>Columba oenas</i> )	Present	Present	WA, BoCCI Red List



Non-target Species	Survey Season*		Protection and Conservation Status**
	Breeding	Winter	
Stonechat ( <i>Saxicola rubicola</i> )	Present	Present	WA, BoCCI Green List
Swallow ( <i>Hirundo rustica</i> )	Present	Present	WA, BoCCI Amber List
Swift ( <i>Apus apus</i> )	Present	-	WA, BoCCI Red List
Tree Sparrow ( <i>Passer montanus</i> )	Present	Present	WA, BoCCI Amber List
Treecreeper ( <i>Certhia familiaris</i> )	Present	Present	WA, BoCCI Green List
Wheatear ( <i>Oenanthe Oenanthe</i> )	Present	-	WA, BoCCI Amber List
Whitethroat ( <i>Sylvia communis</i> )	Present	-	WA, BoCCI Green List
Willow Warbler ( <i>Phylloscopus trochilus</i> )	Present	Present	WA, BoCCI Amber List
Woodpigeon ( <i>Columba palumbus</i> )	Present	Present	WA, BoCCI Green List
Wren ( <i>Troglodytes troglodytes</i> )	Present	Present	WA, BoCCI Green List
Yellowhammer ( <i>Emberiza citronella</i> )	Present	Present	WA, BoCCI Red List

\* [-] = a species was not recorded over the survey season.

\*\* EU BD = European Union Birds Directive, WA = Wildlife Acts, BoCCI = Birds of Conservation Concern Ireland 2020-2026

### 7.4.2.1 Target Species

Recorded target species for this proposed project, which have been selected based on the guidance described in section 7.2.5 are this discussed hereunder. The full dataset collected for the field study informing the present assessment, as well as the mapping of the records is included in Appendix 7-1.

#### 7.4.2.1.1 Barn Owl

Barn Owl (*Tyto alba*) is a scarce but widespread resident species in Ireland and is of particular conservation interest due to population declines associated with habitat loss and road mortality. It is Red listed on the BoCCI (Gilbert *et al.*, 2021) list. It is estimated that there are currently 562 to 702 breeding pairs of barn owl in Ireland (Expert Opinion: BWI, NPWS, 2019). This species breeds primarily in the cavities of ruined structures, such as derelict buildings and castles. Although scarce in Ireland, the south and midlands of the country is a stronghold for the species. Its breeding population has undergone both a long-term and short-term decline in the last 25 years (Gilbert *et al.* 2021).

The species was not directly recorded during targeted ornithological surveys within the study area. However, evidence of Barn Owl presence in the wider landscape was identified through incidental records while conducting other ecological surveys in the area (notably multi-disciplinary and habitat surveys).



The available incidental records suggest that Barn Owls are likely to use the wider area for breeding foraging and potentially roosting, particularly in habitats such as rough grassland, hedgerows, and field margins that support small mammal prey. Although no signs of nesting or roosting were identified within the proposed project site, indications of probable nesting areas were identified within the immediate surroundings, with a potential nest site found within 160 m of a turbine in an old farm building, where feathers, vocalisations and a deceased barn owl were recorded and a second location within 450m of the proposed project boundary involving a nest box which is known to have been occupied in the past.

A recent survey of Barn owl in county Offaly by Lusby *et al.* (2022) showed the species is recovering and the number of breeding sites has increased in the county in the last 50 years, with west county Offaly containing the highest density of breeding barn owls in Ireland. Within that survey report, the 10 km Irish Grid square containing the majority of the proposed project site (S09), contain at least six confirmed breeding pairs of barn owl, indicating a regional abundance of suitable nesting and foraging habitat. Following an information request to BirdWatch Ireland, a total of eight known Barn Owl nests occur within 5 km of the proposed project site, the nearest confirmed site occurring 600m from the nearest turbine. These records indicate that the species is present within the broader zone of influence, although its direct use of the proposed project site remains unconfirmed.

The proposed project site is considered to provide foraging, commuting and sheltering habitat for this species. Based on the recorded level of activity, frequency of occurrence, and the results from the desktop survey, the local population of barn owl using the site is considered to be of **National importance**.

#### 7.4.2.1.2 Black-headed Gull

The Black-headed Gull (*Chroicocephalus ridibundus*) is a common resident small gull species in Ireland, found both along the coast and inland. The winter population of this species is bolstered by winter migration. It is Amber-listed on the BoCCI list (Gilbert et al., 2021), and it is estimated that there are 7,810 breeding pairs in Ireland (Cummins et al., 2019), while the wintering population size is estimated at 19,165 individuals (Burke et al., 2025). This species is designated as a SCI of the River Little Brosna Callows SPA, located approximately 10 km downstream of the proposed project.

During the survey period, Black-headed Gull was regularly recorded, with a total of 179 observations involving 3,851 individuals. Records were largely concentrated in the northern and northeastern parts of the site, and along the Little Brosna River. The species was typically observed in small to medium flocks ranging from 1 to 60 individuals. However, larger groups were occasionally sighted with flocks up to 250 birds. The majority of sightings occurred during the winter season and typically involved birds commuting or foraging over agricultural fields or wetland habitats.

The site is considered to provide suitable winter foraging habitat for this species. Based on the number of individuals recorded and frequency of observations, the population using the site is assessed to be of **local importance (higher value)**.

### 7.4.2.1.3 Black-Tailed Godwit

Black-tailed Godwit (*Limosa limosa*) is a wintering species in Ireland and red-listed on the BoCCI. Ireland supports internationally important numbers of wintering Black-tailed Godwit, with birds commonly associated primarily with estuaries, but large numbers can occur in wetlands, and flooded grasslands inland. The estimated wintering population in the Republic of Ireland is approximately 24,790 individuals (Burke et al., 2025). The species is currently experiencing a sustained increase over time, with an overall average increase rate of 4.6% per year, resulting in a 120% increase in numbers over a 26-year period. This species is designated as a SCI of the River Little Brosna Callows SPA, located approximately 10 km downstream of the proposed project. This SPA regularly exceeds national and internationally important numbers for this species (Burke et al., 2025).

During the baseline surveys, Black-tailed Godwit rarely recorded and was exclusively observed during the winter period. The species was observed on six occasions, with a total of 4,036 individuals recorded. Sightings were concentrated along the eastern section of the proposed project site, particularly within wetlands and flooded areas adjacent to the Little Brosna River, where birds were primarily observed foraging. Notably, two records of very large flocks were observed during winter 2025/2026. In February 2026, a flock of 1750 individuals was recorded flying over the flooded area of the River Little Brosna and within the proposed project site. An additional large flock of 1700 individuals was recorded within 10 km buffer at River Little Brosna Callows SPA during Wetland Bird Surveys (I-WeBS). Black-tailed Godwit was not observed within the site during the breeding season.

The site is considered to provide some suitable winter foraging habitat for Black-tailed Godwit. Based on the low number of observations, the size of the flocks using the site, and that the species is designated as an SCI for a nearby SPA, the local population is assessed to be of **local importance (higher value)**.

### 7.4.2.1.4 Buzzard

Common Buzzard (*Buteo buteo*) is a widespread and resident raptor in Ireland. The species has experienced significant range expansion and population growth over recent decades and is now one of the most commonly observed birds of prey in the country. Buzzard is green listed on the BoCCI.

Buzzard was regularly recorded within the study area throughout the baseline surveys, with observations made in all seasons, indicating year-round use of the site. A total of 938 observations were made, involving 1,150 individual birds. The majority of sightings involved single birds, although groups of up to four individuals were occasionally observed.

Buzzards were typically recorded foraging, soaring, or perching within the study area with no discernible concentrations or import areas identified. Any recorded activity was frequently concentrated around open fields, woodland edges, and along the river corridor throughout the site. While no nest sites were recorded, there was some possible breeding activity recorded at the site, such as of individuals displaying and calling in or near suitable habitat, or birds carrying prey or nest material. These observations indicated that this species is likely to be breeding in the wider area around the proposed project.



Based on the consistent, year-round presence and the frequency of observations, the site is considered to provide suitable foraging and general habitat for Buzzard, and the local population using the site is assessed to be of **local importance (higher value)**.

#### 7.4.2.1.5 Common Gull

Common Gull (*Larus canus*) is a breeding and wintering species in Ireland and is Amber-listed on the BoCCI. The species is typically associated with coastal areas, estuaries, inland wetlands, grasslands, and agricultural land, where it forages in both intertidal and terrestrial habitats. The estimated mean wintering population in the Republic of Ireland is approximately 6,834 individuals, but peaks of 8,625 can occur (Burke et al. 2025). Common Gull is widespread but generally occurs in low densities inland.

During the baseline surveys, Common Gull was rarely recorded within the study area. The species was observed on 12 occasions, involving a total of 22 individuals, with the largest flock consisting of six birds. All sightings were concentrated in the northern section of the site, typically over open grassland, flooded fields, or along the Little Brosna River.

The species was recorded once during the breeding season, in flight. However, there was no evidence of breeding activity within the study area.

Although records indicate relatively low numbers, the site is considered to provide some suitable foraging habitat for Common Gull during the winter period. Additionally, all wild birds are legally protected under the EU Birds Directive (2009/147/EC), and on this basis, the local population using the site is assessed to be of **local importance (higher value)**.

#### 7.4.2.1.6 Coot

Coot (*Fulica atra*) is a common and widespread breeding and wintering species in Ireland, and it is Amber-listed on the BoCCI. The species is typically associated with large inland water bodies, but it can also be found in estuaries and river systems. The species is omnivorous, predominantly foraging on emerging aquatic vegetation, but it would also feed on insects, algae and fish. The estimated wintering population in Republic of Ireland is approximately 14,290 individuals (Burke et al., 2025).

During the baseline surveys, Coot was recorded on four occasions during the 2025/2026 wintering season, each time at Glasderry Woods, and within the 10 km buffer, during Wetland Bird Surveys (I-WeBS).

Considering that there were no records of Coot within the proposed project site and given the low availability of suitable breeding and foraging habitat within and in close proximity to the site, the local population is assessed to be of **local importance (higher value)**.

#### 7.4.2.1.7 Cormorant

Cormorant (*Phalacrocorax carbo*) is a widespread resident and wintering species in Ireland and is Amber-listed on the BoCCI. The species is commonly associated with coastal waters, rivers, lakes, and wetlands, where it forages for fish, while it is known to form communal roosts, particularly during the non-breeding season. The estimated wintering population in the Republic of Ireland is approximately 8,670 individuals (Burke et al., 2025). This species is designated as a SCI of the Lough Derg (Shannon) SPA, located approximately 13km in a straight line or 38km downstream of the proposed project.



Cormorant was regularly recorded within the study area throughout the survey period. A total of 715 observations were made, involving 1,326 individual birds. Sightings were distributed across all seasons, with birds frequently observed foraging along the Little Brosna River and associated wetlands. The species was typically recorded in low numbers or as single individuals however, a communal roost site within the study area was identified, where larger numbers were observed, with the highest count being 40 individuals. These higher numbers of roosting birds predominantly occurred during the winter months (October to March, inclusive). There was no evidence of cormorant breeding within the study area.

The species was typically recorded in flight, foraging in the Little Brosna River, commuting over watercourses, or roosting in groups along the river and surrounding habitats.

The site is considered to provide suitable foraging and roosting habitat for Cormorant. Based on the regular occurrence and the numbers recorded, the local population using the site is assessed to be of **local importance (higher value)**.

#### 7.4.2.1.8 Curlew

Curlew (*Numenius arquata*) is a breeding, wintering, and passage species in Ireland, and is Red listed on the BoCCI due to severe declines in the breeding population. The species is typically associated with coastal estuaries in winter and with wet grasslands, bogs, and agricultural habitats during the breeding season.

Curlew was rarely observed over the survey period, with only two records, each involving a single individual - one bird was observed in March 2021, and the other in June 2023. The timings of these records may indicate birds on passage to breeding grounds, or potential failed breeders from elsewhere, as no evidence of breeding activity was recorded within the study area. Both sightings were isolated, and Curlew was not regularly recorded during the survey period.

Although records indicate relatively low numbers, the site is considered to provide occasional foraging or stopover habitat for Curlew. Additionally, all wild birds are legally protected under the EU Birds Directive (2009/147/EC), and on this basis, the local population using the site is assessed to be of **local importance (higher value)**.

#### 7.4.2.1.9 Golden Plover

Golden Plover (*Pluvialis apricaria*) is a wintering and passage species in Ireland, while a small breeding population is also present, concentrated to the north and west of the country. Golden Plover is red listed on the BoCCI due to significant population declines. Wintering Golden Plover are widely distributed throughout Ireland from coastal regions to the midlands, and large flocks are known to gather on a wide range of habitats, including grassland, cultivated lowlands and coastal mudflats. The estimated wintering population in the Republic of Ireland is approximately 82,190 individuals (Burke et al., 2025). This species is designated as a SCI of the River Little Brosna Callows SPA located approximately 10 km downstream of the proposed project, and which regularly exceeds national important numbers for this species.

Golden Plover was regularly recorded within the study area during the baseline surveys. Over the survey period, a total of 125 observations were made, involving 20,226 individual birds. With the proposed project site flock sizes ranged from four to 700 individuals, with the largest counts occurring in flooded fields to the north of the site near the Little Brosna River. The species was also recorded in other wetland habitats throughout the wider study area, with the



larges flocks of up to 4,000 individuals sighted at the River Little Brosna Callows SPA. The majority of records occurred during the winter season or in the late breeding season (September), which is consistent with the species' known wintering and migratory behaviour in Ireland. There was no breeding activity recorded over the survey period.

Golden Plover was primarily observed foraging, resting, or flying between feeding areas within and around the site.

The site is considered to provide valuable wintering habitat for Golden Plover. Given the high frequency of records, large flock sizes, and the species' Red listed status, the local population using the site is assessed to be of **local importance (higher value)**.

#### 7.4.2.1.10 Great Black-backed Gull

Great Black-backed Gull (*Larus marinus*) is a resident species in Ireland and is Amber listed on the BoCCI. It breeds along the Irish coastline and also utilises inland waterbodies, rivers, and wetlands throughout the year, typically favouring large open areas for foraging and roosting.

During the baseline surveys, Great Black-backed Gull was rarely recorded within the study area. A single observation was made during the breeding season in 2024, involving one individual. There was no evidence of breeding within the site or surrounding area.

Although there was very low levels of activity recorded and the absence of breeding evidence, as all wild birds are protected under the EU Birds Directive (2009/147/EC). On this basis, the local population using the site is assessed to be of **local importance (higher value)**.

#### 7.4.2.1.11 Green Sandpiper

Green Sandpiper (*Tringa ochropus*) is a scarce passage migrant and winter visitor to Irish wetlands, predominantly in the south and east of the country, and it does not breed in Ireland. The species feeds on invertebrates. A single Green Sandpiper was recorded during the study period in October 2025, within the 10 km buffer, during Wetland Bird Surveys (I-WeBS). There were no records of the species within the proposed project site, and on this basis, the local population is assessed to be of **local importance (lower value)**.

#### 7.4.2.1.12 Greenland White-fronted Goose

Greenland White-fronted Goose (*Anser albifrons flavirostris*) is a wintering species in Ireland and is amber-listed on the BoCCI. The species is of high conservation concern due to its restricted wintering range and reliance on a limited number of key wetland sites. The estimated wintering population in the Republic of Ireland is approximated to be between 8,867 and 10,418 individuals. The species is largely site faithful and can be found across wetland sites to the north, west and midlands, however the highest numbers can be found in county Wexford (Fox *et al.*, 2020). This species is designated as a SCI of three SPAs within the ZOI of the proposed project: Dovegrove Callows SPA, All Saints Bog SPA, and the River Little Brosna Callows SPA.

During baseline surveys, the species was rarely recorded, with seven observations within the study area. On three occasions the species was recorded within the proposed project site during the winter season, involving up to two individuals either commuting above or foraging within flooded agricultural fields adjacent to the River Little Brosna. An additional four sightings, involving up to 107 individuals, were recorded within the 10 km buffer at the River Little Brosna Callows SPA during Wetland Bird Surveys (I-WeBS).



Although there was the very low level of activity recorded and absence of site use beyond overflight, as Greenland White-fronted Goose are and SCI of three SPAs within the ZOI of the proposed project and that all wild birds are protected under the EU Birds Directive (2009/147/EC), the species is considered to be of **local importance (higher value)**.

#### 7.4.2.1.13 Grey Heron

Grey Heron (*Ardea cinerea*) is a widespread resident species in Ireland and is currently green listed on the BoCCI. Grey Heron is typically associated with rivers, lakes, wetlands, and coastal areas, where it forages for fish, amphibians, and invertebrates.

Grey Heron was regularly recorded within the study area throughout both the breeding and winter seasons. Over the survey period, a total of 301 observations were made, involving 364 individual birds. The majority of records involved single birds, although groups of up to five individuals were recorded on occasion.

The species was frequently observed commuting along the Little Brosna River and flying over the southern and central sections of the site. Grey Heron was also occasionally recorded foraging within field drains and wetland areas within the site.

Based on the regularity of records and typical behaviour observed, the site is considered to provide foraging and commuting habitat for Grey Heron. The local population using the site is assessed to be of **local importance (higher value)**.

#### 7.4.2.1.14 Hen Harrier

Hen Harrier (*Circus cyaneus*) is a scarce breeder during the breeding season in Ireland, but the species is more widely distributed in winter. It is amber listed on the BoCCI and is designated under the Annex I of the EU Birds Directive. Hen Harrier is typically associated with upland bogs, heath, and rough grassland during the breeding season, and commonly forages over lowland farmland, wetlands, coastal areas and bogs during winter. The Slieve Bloom Mountains SPA, which is designated for breeding Hen Harrier, is located approximately 12 km from the proposed project site.

Hen Harrier was irregularly recorded over the survey period, predominantly in the winter season, with the exception of a small number of records in July 2023. A total of 18 observations in flight were made within the proposed project site, each involving a single bird, typically a female or a ringtail (juvenile), but males were also observed. An additional sighting of female Hen Harrier was made within the 10 km buffer at the Dovegrove Callows SPA during Wetland Bird Surveys (I-WeBS). Observations were typically of birds hunting or commuting over bog habitat and rough grassland within the study area.

No evidence of breeding or winter roost sites was identified within the site or wider study area.

Although there was a low level of recorded activity, absence of breeding or roosting evidence, and the species' occasional use of the site for foraging, following the species designation under Annex I of the EU birds Directive, the local population using the site is valued to be of **local importance (higher value)**.

#### 7.4.2.1.15 Herring Gull

Herring Gull (*Larus argentatus*) is a widespread species in Ireland, present throughout the year. It is amber listed on the BoCCI due to population declines linked to reduced breeding success



and changing food availability. Herring Gull typically breeds along coastal areas but is also commonly recorded inland, particularly around farmland, wetlands, and refuse sites.

During the baseline surveys, Herring Gull was rarely recorded within the study area. A total of nine observations were made, involving 22 individual birds. The largest flock consisted of 12 birds foraging on improved grassland following the spread for slurry. Records were predominantly concentrated to the north of the site, with birds observed flying over grassland or commuting along the Little Brosna River.

There was no evidence of breeding within the site or surrounding area.

Although there was the very low level of activity recorded and the absence of breeding evidence, as all wild birds are protected under the EU Birds Directive (2009/147/EC). On this basis, the local population using the site is assessed to be of **local importance (higher value)**.

#### 7.4.2.1.16 Jack Snipe

Jack Snipe (*Lymnocyptes minimus*) is a scarce winter visitor to Ireland and is amber listed on the BoCCI. The species typically uses wetlands, bogs, wet grassland, and river margins during the winter months, where it is often difficult to detect due to its cryptic behaviour and tendency to only flush at close range.

Jack Snipe was rarely recorded within the study area during the baseline surveys. A total of four observations were made, involving 12 individual birds. Records usually consisted of a single bird flushed by the surveyor, although the largest count involved nine individuals detected using a thermal imaging scope. Observations were confined to the winter season.

The species was found within bog habitats within the site and along the Little Brosna River, typically in wet, marginal areas.

Although there was the very low level of activity recorded and the absence of breeding evidence, as all wild birds are protected under the EU Birds Directive (2009/147/EC). On this basis, the local population using the site is assessed to be of **local importance (higher value)**.

#### 7.4.2.1.17 Kestrel

Kestrel (*Falco tinnunculus*) is a widespread resident species in Ireland and is currently red listed on the BoCCI due to significant population declines, suffering a 53% decline in its breeding population over a 25 year period. Kestrel is typically associated with open habitats such as grassland, farmland, bogs, and field edges, where it forages for small mammals, birds, and invertebrates. The population of kestrel is unknown in Ireland, but an estimated 13,500 individuals are present within the Republic of Ireland (Lewis et al. 2019b). Kestrels are largely sedentary in Ireland, only migrating to lower latitudes during the winter months.

Kestrel was regularly recorded throughout the study area across all seasons. A total of 672 observations were made, involving 718 individual birds. Records typically involved single birds, although pairs or groups of up to three individuals were occasionally observed. These larger groups were associated with a breeding pair and their juveniles, with birds regularly observed commuting to and from a known nest site located approximately 1.5 kilometres from the site boundary.

Kestrel was recorded throughout the site, most frequently foraging along field edges, hedgerows, drains, and other linear habitats, as well as commuting across the site.



Based on the regularity of observations for this declining species, evidence of a nearby breeding pair, and the frequent foraging activity within the site, the local population using the site is assessed to be of **county importance**.

#### 7.4.2.1.18 Kingfisher

Kingfisher (*Alcedo atthis*) is a widespread but localised resident in Ireland. It is amber listed on the BoCCI and is listed on Annex I of the EU Birds Directive. An estimated 368 to 1,031 pairs of Kingfisher are present in the Republic of Ireland (Cummins *et al.* 2010). This species is typically sedentary but may undergo short migrations to the coast during cold weather. This species is widely distributed along canals and rivers of Ireland. Their distribution is largely dependent on the availability of soft sediment banks for breeding.

During the baseline surveys, Kingfisher was rarely recorded within the study area. The species was observed on four occasions, all involving a single bird observation during the winter seasons. Within the proposed project site, the sightings were brief and recorded towards the southern part of the site, along drainage features. An additional record of Kingfisher was made within the 10 km buffer at the River Little Brosna Callows SPA during Wetland Bird Surveys (I-WeBS). There was no evidence of breeding activity over the survey period.

Although there was a low level of recorded activity, following the species designation under Annex I of the EU birds Directive, the local population using the site is valued to be of **local importance (higher value)**.

#### 7.4.2.1.19 Lapwing

Lapwing (*Vanellus vanellus*) is a wintering and breeding species in Ireland and is currently red listed on the BoCCI due to widespread population declines. The species typically uses wetlands, grasslands, and agricultural fields for foraging and is known to breed in open habitats with short vegetation. The estimated wintering population in the Republic of Ireland is approximately 67,700 individuals (Burke *et al.*, 2025). This species is designated as a SCI of the River Little Brosna Callows SPA, located approximately 10 km downstream of the proposed project. This SPA regularly exceeds national important numbers for this species.

Lapwing was occasionally recorded within the study area, with the majority of observations recorded during the winter season. A total of 104 observations were made, involving 8,681 individual birds. Within the proposed project site, records typically involved small flocks of around 10 to 70 individuals, although larger groups of up to 200 birds were recorded. The species was primarily concentrated in the northern and southern parts of the site, particularly in areas of flooded fields and bog, as well as commuting along the Little Brosna River to the east. Additional records of Lapwing were made within the 10 km buffer at the River Little Brosna Callows SPA and Dovegrove Callows SPA during Wetland Bird Surveys (I-WeBS), with flocks reaching up to 2300 individuals.

Only a single observation was made during the breeding season (July 2023), which likely related to failed or non-breeding birds from elsewhere, as no breeding activity was recorded at the site prior to, or after this sighting.

Based on the level of activity, the size of flocks using the site, and the species' status as an SCI for a downstream SPA, the local population using the site is considered to be of **local importance (higher value)**.



#### 7.4.2.1.20 Lesser Black-backed Gull

Lesser Black-backed Gull (*Larus fuscus*) is a widespread species in Ireland and is currently amber listed on the BoCCI, reflecting concerns over declines in parts of its range. The species typically uses a range of habitats, including agricultural land, wetlands, and coastal areas, and is commonly observed foraging over grasslands or commuting to and from inland feeding sites.

Lesser Black-backed Gull was regularly recorded within the study area across all survey seasons. A total of 260 observations were made, involving 3,559 individual birds. Records generally involved small numbers of between one and ten individuals, although larger flocks of up to 231 birds were recorded on several occasions. Sightings were largely concentrated in the northern part of the site, particularly over agricultural grasslands and along the Little Brosna River.

There was no evidence of breeding within the site or the surrounding study area.

Based on the frequency of occurrence, distribution of records, and flock sizes, the local population using the site is considered to be of **local importance (higher value)**.

#### 7.4.2.1.21 Little Egret

Little Egret (*Egretta garzetta*) is a resident species in Ireland and is currently green listed on the BoCCI and is listed on Annex I of the EU Birds Directive. The species is commonly associated with wetlands, estuaries, and river corridors, and has undergone a significant range expansion in Ireland over recent decades. The estimated wintering population in the Republic of Ireland is approximately 1,140 individuals (Burke et al., 2025).

Little Egret was regularly recorded within the study area across all winter survey seasons, with additional records during the 2023 and 2024 breeding seasons. However, there was no evidence of breeding activity within the site or the wider study area. A total of 239 observations were made, involving 687 individual birds. The species typically occurred in small numbers, often as single birds or in groups of less than ten.

Notably, on two separate days in March 2024, a flock of 40 Little Egrets was recorded foraging on flooded agricultural fields along the Little Brosna River to the north of the site boundary. Additionally, a flock of 27 individuals was observed commuting over the Little Brosna River in the southern part the site boundary in March 2026. According to Burke et al. (2025), flocks exceeding 20 individuals are considered to be of national importance. These records represent the largest gatherings of the species observed during the survey period.

Sightings were largely concentrated in the northern section of the proposed project, particularly in association with the Little Brosna River and adjacent flooded fields. Birds were frequently observed commuting along the river corridor.

Based on the frequency of occurrence, the presence of a nationally important flock, and the species' regular use of the site, the local population is considered to be of **county importance**.

#### 7.4.2.1.22 Little Grebe

Little Grebe (*Tachybaptus ruficollis*) is a resident species in Ireland and is currently green-listed on the BoCCI. The species is widespread and typically associated with freshwater wetlands, rivers, lakes, and drainage channels, where it feeds and breeds.



During baseline surveys, Little Grebe was rarely recorded, with two observations involving a total of seven individuals. These records were made in November 2022 and September 2023, related to birds feeding on a flooded section of the Little Brosna River to the northeast of the site. There was no evidence of breeding within the site or the surrounding area.

Although there was the very low level of activity recorded and the absence of breeding evidence, as all wild birds are protected under the EU Birds Directive (2009/147/EC). On this basis, the local population using the site is assessed to be of **local importance (higher value)**.

#### 7.4.2.1.23 Mallard

Mallard (*Anas platyrhynchos*) is a widespread and common resident and wintering species in Ireland. It is currently amber listed on the BoCCI and occurs in a wide range of wetland habitats, including rivers, lakes, ponds, and flooded fields.

Mallard was regularly recorded across all seasons, with the majority of records occurring during the winter months. A total of 255 observations were made, involving 1,050 individuals. The largest single flock recorded consisted of 60 birds, though the species typically occurred in lower numbers. Records were concentrated along the Little Brosna River, particularly in the north-east of the site where birds were observed foraging in flooded agricultural fields. Occasional commuting flights were recorded across the northern sections of the site.

There was no evidence of breeding within the site or the wider study area.

Based on the frequency of records and number of individuals, the local population is considered to be of **local importance (higher value)**.

#### 7.4.2.1.24 Merlin

Merlin (*Falco columbarius*) is a scarce winter visitor and upland breeder in Ireland. It is amber-listed on the BoCCI and is also listed on Annex I of the EU Birds Directive due to its conservation importance at a European level. The species typically favours open moorland, bog, and coastal habitats for hunting. Breeding Merlin typically select open upland habitats, such as blanket bogs and moorland, often in proximity to forest edges or young conifer plantations, which provide suitable hunting and nesting conditions (Lusby et al., 2017).

Merlin was occasionally recorded, with 49 individuals over 47 observations across the survey period. Records were primarily concentrated in the winter season, with a small number of sporadic sightings during the late breeding season. These latter observations are considered to relate to post-breeding dispersal or migrating individuals rather than local breeding activity, due to their timing.

The majority of records were associated with hunting or resting birds, primarily over bog habitats and other marginal areas within the site. However, during March 2026 surveys, a pair of Merlin (male and female) were observed within the southern section of the proposed project site engaging in courtship and mating behaviour. A review of available information from a separate wind farm application (Carrig Wind Farm, An Coimisiún Pleanála reference: 318689) identified a record of a Merlin nest located approximately 4 km north of the proposed project site. Considering this and the availability of potentially suitable breeding habitat for Merlin within the proposed project site and its surroundings, the wider area is capable of supporting breeding Merlin. The observations of Merlin in March 2026 may indicate territorial or



exploratory behaviour; however, no evidence of confirmed breeding (e.g. nesting) was recorded over the survey period.

Based on the low number of individuals and the seasonal, apparent non-breeding use of the site, the local population is considered to be of **local importance (higher value)**.

#### 7.4.2.1.25 Mute Swan

Mute Swan (*Cygnus olor*) is an amber-listed species on the BoCCI and is a widespread resident breeder and winter visitor in Ireland.

It was recorded occasionally during the survey period, with a total of 128 observations comprising 316 birds. Records typically involved single birds or pairs, although flocks of up to seven were occasionally observed.

Observations were concentrated almost entirely along the Little Brosna River and in flooded agricultural fields to the northeast of the site, with some commuting flights over the site itself. The majority of sightings occurred during the winter season and late breeding season (August–September). There was no evidence of breeding within the site or the wider study area.

Based on the frequency and number of records, the local population is considered to be of **local importance (higher value)**.

#### 7.4.2.1.26 Peregrine Falcon

Peregrine Falcon (*Falco peregrinus*) is a green-listed species on the BoCCI and is listed under Annex I of the EU Birds Directive. A widespread but scarce breeder in Ireland, Peregrines typically nest on inaccessible cliff ledges, quarries, and occasionally on tall man-made structures, such as churches or industrial buildings. They require large open landscapes such as estuaries, wetlands, and uplands for foraging. Their distribution and activity are closely linked to the availability of avian prey, particularly waders and waterfowl.

The species was occasionally recorded during the survey period, with a total of 72 observations involving 72 individuals. Records were most frequent in the winter months and the late breeding season (August–September). There was no evidence of breeding or territorial activity within the site or its immediate surroundings. Most records consisted of single birds, although pairs were observed on three occasions – once involving male and female adults, and twice an adult and juvenile. Observations were spread across the site, with activity concentrated in open areas that supported high densities of prey species, particularly along the Little Brosna River and adjacent flooded agricultural fields. Additional sightings occurred over central grassland areas and occasionally across bog habitats, suggesting foraging or commuting behaviour. Additional record of Peregrine was made within the 10 km buffer at the River Little Brosna Callows SPA during Wetland Bird Surveys (I-WeBS),

Based on the distribution of records and level of activity, the local population is considered to be of **local importance (higher value)**.

#### 7.4.2.1.27 Pintail

Pintail (*Anas acuta*) is a wintering species in Ireland and is amber listed on the BoCCI. It is typically found in small numbers in shallow wetlands, flooded grasslands, and coastal habitats during the non-breeding season. The species is listed as a Special Conservation Interest (SCI) for

the River Little Brosna Callows SPA, located approximately 10 km downstream of the proposed project site.

During the surveys, Pintail was rarely recorded, with 16 observations, all during the winter seasons of 2023/2024 and 2025/26, totalling 569 individuals. However, within the proposed development site and its neighbouring Little Brosna River, Pintail was only observed on six occasions, mainly foraging in the flooded agricultural fields. Records typically involved small groups of three to six birds; however, a single flock of 200 birds was recorded in March 2024, foraging in flooded fields to the northeast of the site. In addition, a flock of 34 was observed in the same area in March 2026. These flocks exceeded the national importance threshold of 20 individuals (Burke et al., 2025). No similarly sized flocks were recorded within the proposed development site during the study period.

The remaining ten observations, including large flocks of up to 69 individuals were recorded within the 10 km buffer at the River Little Brosna Callows SPA and Dovegrove Callows SPA during Wetland Bird Surveys (I-WeBS).

Based on the presence of a nationally important flock and its designation as a SCI for an SPA within the Zol of the proposed project, the local population of Pintail using the site is considered to be of **county importance**.

#### 7.4.2.1.28 Redshank

Redshank (*Tringa tetanus*) is a scarce breeder, common winter visitor, and passage migrant to Ireland. The species is currently Red listed on BoCCI. The breeding habitat of Redshank in Ireland is predominantly wet and marshy areas in the midlands, such as Shannon Callows. In the winter the species can be seen all around the coast of Ireland, most commonly in mudflats, estuaries, but also at inland lakes and rivers. It feeds on invertebrates.

During the survey, Redshank was recorded on one occasion with three individuals sighted, during the study period in November 2025, within the 10 km buffer, during Wetland Bird Surveys (I-WeBS). There were no records of the species within the proposed project site, and on this basis, the local population is assessed to be of **local importance (higher value)**.

#### 7.4.2.1.29 Shoveler

Shoveler (*Anas clypeata*) is a wintering dabbling duck in Ireland and is currently red listed on the BoCCI. The species favours shallow wetlands, flooded grasslands, and slow-moving waterbodies with abundant aquatic invertebrates. Shoveler is also a SCI of the River Little Brosna Callows SPA, located approximately 10 km downstream of the proposed project site.

During baseline surveys, Shoveler was rarely recorded within the proposed project site, with two observations involving three individuals foraging in flooded fields to the northeast of the site, adjacent to the Little Brosna River. These records occurred during the winter seasons 2023/2024 and 2025/2026. However, Shoveler was recorded ten times outside of the proposed project site, including in large groups of up to 623 individuals within the 10 km buffer at the River Little Brosna Callows SPA and Dovegrove Callows SPA during Wetland Bird Surveys (I-WeBS).



Although there was the very low level of activity recorded, as Shoveler are an SCI of an SPA within the ZOI of the proposed project the species is considered to be of **local importance (higher value)**.

#### 7.4.2.1.30 Snipe

Snipe (*Gallinago gallinago*) is a widespread resident and winter visitor in Ireland and is red listed on the BoCCI, primarily due to declines in its breeding population. The species favours wet grasslands, bogs, and marshes for both breeding and foraging.

Snipe was occasionally recorded during surveys, with a total of 117 observations involving 474 individuals. Birds typically occurred in small numbers, although flocks of up to 20 individuals were recorded foraging or resting in flooded fields and wetland areas along the Little Brosna River, particularly to the northeast of the site.

The majority of records occurred in the winter season, but the species was also recorded during the breeding season. Some of these records (three observations) included displaying males (drumming), indicative of probable breeding activity, particularly within bog habitats to the north of the site (outside of the proposed project site) and in suitable areas within the wider study area.

Based on the number of birds recorded and the evidence of breeding activity, the site is considered to be of **local importance (higher value)** for Snipe.

#### 7.4.2.1.31 Sparrowhawk

Sparrowhawk (*Accipiter nisus*) is a widespread resident breeder in Ireland and is green listed on the BoCCI. It favours woodland habitats for nesting but regularly hunts in open areas and along field boundaries.

Sparrowhawk was regularly recorded across all seasons, with a total of 185 observations involving 195 individuals. Records typically involved single birds, though pairs were occasionally observed, particularly during the breeding season. The species was frequently seen hunting or commuting across the site, with activity concentrated along hedgerows, near woodland, and in marginal areas.

The species has a probable breeding status within the site, supported by displaying pairs observed early in the breeding seasons of 2021 and 2022. Additionally, a begging juvenile was heard within the proposed development site in 2023. These records were centred in the southern portion of the site, in proximity to suitable breeding woodland habitat.

Based on the frequency of observations and breeding behaviour, the site is considered to be of **local importance (higher value)** for Sparrowhawk.

#### 7.4.2.1.32 Teal

Teal (*Anas crecca*) is a widespread wintering species in Ireland and is amber listed on the BoCCI. It is typically associated with wetland habitats, such as flooded grasslands, lakes, and river margins. The species is also a SCI for the River Little Brosna Callows SPA.

Teal was irregularly recorded, with a total of 26 observations involving 2368 individuals, all during the winter season. Within the proposed project site, Birds were typically seen foraging on flooded fields or commuting along the Little Brosna River, particularly to the northeast of the



site. Flocks generally ranged from 4 to 50 individuals, though a notable peak of 300 birds was recorded foraging in December 2023. Additionally, Teal was recorded outside of the proposed project site within the 10 km buffer, including groups of up to 752 individuals at the River Little Brosna Callows SPA and up to 202 at the Dovegrove Callows SPA during Wetland Bird Surveys (I-WeBS).

The site is considered to provide suitable foraging habitat for Teal Based on the frequency of observations and recorded activity levels, the local population using the site is assessed to be of **local importance (higher value)**.

#### 7.4.2.1.33 Tufted Duck

Tufted Duck (*Aythya fuligula*) is a resident and wintering visitor to Ireland and is Amber-listed on the BoCCI. The species prefers large open lakes in lowland areas, but it can also be seen on smaller water bodies such as large ponds, canals and slow-moving rivers. It feeds predominantly on mussels. The species is also a SCI for the Lough Derg (Shannon) SPA.

Tufted Duck was recorded one occasion with 15 individuals sighted, during the study period in November 2025 at Little Brosna Callows SPA during Wetland Bird Surveys (I-WeBS). There were no records of the species within the proposed project site, and on this basis, the local population is assessed to be of **local importance (higher value)**.

#### 7.4.2.1.34 Whooper Swan

Whooper Swan (*Cygnus cygnus*) is a wintering migrant to Ireland and is amber listed on the BoCCI. Ireland supports internationally important numbers of wintering Whooper Swan, with the species favouring low-lying wetlands, flooded fields, lakes, and river systems for foraging and roosting. The species is protected under Annex I of the EU Birds Directive and is designated as and SCI of the River Little Brosna Callows SPA, located approximately 10 km downstream of the proposed project.

During baseline surveys, the species was occasionally recorded, with a total of 85 observations involving 744 individuals. Flocks ranged in size from 2 to 11 birds, but up to 55 were recorded. Records were almost entirely confined to the Little Brosna River and adjacent flooded agricultural fields to the northeast of the site. Observations typically involved commuting or foraging birds, often feeding in shallow flooded fields during the winter months. Additionally, Whooper Swan was recorded outside of the proposed project site within the 10 km buffer, including groups of up to 19 individuals at the Dovegrove Callows SPA during Wetland Bird Surveys (I-WeBS).

The site provides suitable wintering habitat for this species, particularly in areas of temporary flooding along the river corridor. Based on the number of birds recorded and the foraging activity observed, the site is considered to be of **local importance (higher value)** for Whooper Swan.

#### 7.4.2.1.35 White-tailed Eagle

White-tailed Eagle (*Haliaeetus albicilla*) is a resident species in Ireland following its reintroduction. A small breeding population is now established in multiple counties mostly in the western parts of the country, within wetlands and coastal areas. The species is listed on Annex I of the EU Birds Directive and Red-listed on BoCCI. It feeds on fish, waterbirds and carrion.



Current estimates approximate the White-tailed Eagle population in Ireland to be around 150 individuals in the wild (NPWS, 2025).

During surveys, White-tailed Eagle was recorded twice during the 2025/2026 wintering season. A single bird was recorded in flight in the southern section of the proposed project site in December 2025. Additionally, two White-tailed Eagles were observed within the 10 km buffer, at The River Little Brosna Callows SPA during Wetland Bird Surveys (I-WeBS) in November 2025.

The site may provide suitable foraging habitat for the White-tailed Eagle, especially during the winter months when temporary flooding events occur, causing a subsequent increased availability of the potential prey (waterbirds). Based on the number of records, the absence of suitable nesting habitat, and the seasonal availability of foraging opportunities, the site is considered to be of **county importance (higher value)**.

#### 7.4.2.1.36 Wigeon

Wigeon (*Mareca penelope*) is a wintering migrant species in Ireland and is Amber-listed on the BoCCI. The estimated wintering population in the Republic of Ireland is approximately 50,452 individuals. Numbers typically build from early autumn and peak in January. Wigeon are widespread across a variety of coastal and inland wetland complexes but have experienced a long-term population decline since 1994 (Burke et al., 2025).

Wigeon were observed within the study area and recorded only in the winter season. A total of 36 observations were made over the survey period, with a combined total of 7,419 individuals, with majority of large flocks of up to 1232 individuals recorded within during the 10 km buffer Wetland Bird Surveys (I-WeBS) at River Little Brosna Callows SPA and Dovegrove Callows SPA. Within the proposed project site, the sightings were primarily concentrated in the eastern section of the site along the Little Brosna River, particularly in wetlands and flooded fields adjacent to the river, and flocks ranging between 4 and 444 individuals.

Wigeon were mainly observed foraging or undertaking short commuting flights along the river corridor. The species was not recorded during the breeding season.

The site is considered to provide suitable foraging habitat for Wigeon. Based on the frequency of observations and recorded activity levels, the local population using the site is assessed to be of **local importance (higher value)**.

#### 7.4.2.1.37 Woodcock

Woodcock (*Scolopax rusticola*) is resident species, and winter visitor to Ireland, and is Red-listed on BoCCI. The breeding population, once widespread, is now somewhat concentrated, mainly in eastern and midland regions, where the species nests on the ground in forests and woodlands. The wintering population is supported by migrants and is less concentrated. The species feeds predominantly on earthworms.

Woodcock was recorded on three occasions, with a total of seven individuals, in March 2026 at the proposed project site during dusk surveys. These observations were made within the areas of cutover bog and dense heather, adjacent to woodland habitats, with some records comprising of roding males. Considering the number and timing of these records, and the availability of



suitable breeding habitat for the species, the local population using the site is assessed to be of **local importance (higher value)**.

#### 7.4.2.1.38 All other species of lower conservation concern

Other species of lower conservation significance are non-target species which are determined to be less at risk from potential impacts associated with the proposed project, as they have a more favourable conservation status, were rarely recorded during surveys, and/or are not thought to be dependent on the area for breeding or feeding.

While some of these species are likely breeding and/or wintering within or near the proposed project, they were not recorded in the same detail as they do not meet the key target species criteria outlined in this assessment. However, as all wild birds, their nests and important habitats are protected under the EU Birds Directive (Directive 2009/147/EC) and Wildlife Acts, these species are considered to be of **local importance (higher value)**.

A full list of other species of low conservation significance recorded during breeding and wintering bird surveys for the proposed project are summarised in Table 7-13.

#### 7.4.2.1.39 Unknown Gull Species

During the baseline ornithological surveys, a small number of gull-type species could not be confidently identified to species level. Limitations such as distance, flight height, lighting conditions, or brief observation windows affected species-level identification. These individuals were therefore recorded as 'unknown gull species'.

A total of five unidentified gull records were noted over the survey period, details of which can be found in Appendix 7-1. These observations occurred at various times across the breeding and non-breeding seasons, with records distributed between October 2020 and July 2024. All of these instances were recorded during vantage point surveys.

These records have been considered in the collision risk assessment and overall species assemblage analysis. However, they are unlikely to significantly influence the ecological value assigned to the site.

#### 7.4.2.1.40 Unknown Goose Species

During the baseline ornithological surveys, a small number of goose-type species could not be confidently identified to species level. Factors such as limited visibility, distance, and fleeting observations contributed to the uncertainty of species identification. These individuals were therefore recorded as 'unknown goose species'.

A total of three unidentified goose records were noted over the survey period, all occurring during the wintering season, details of which can be found in Appendix 7-1.

These records have been considered in the collision risk assessment and overall species assemblage analysis. However, due to their low frequency and limited numbers, they are unlikely to significantly influence the ecological value attributed to the site.

#### 7.4.2.1.41 Unknown Swan Species

During the baseline ornithological surveys, several swan-type species could not be confidently identified to species level due to factors such as distance, brief observation periods, or limited visibility. These individuals were therefore recorded as 'unknown swan species'.



A total of four unidentified swan records were noted over the survey period, between October 2020 and December 2023, details of which can be found in Appendix 7-1.

These records have been considered in the collision risk assessment and species assemblage analysis but are not considered to significantly influence the ecological value assigned to the site.

#### 7.4.2.1.42 Unknown Wader Species

During the baseline ornithological surveys, a small number of wader-type species could not be confidently identified to species level due to factors such as distance, lighting conditions, or the brevity of the sighting. These individuals were therefore recorded as 'unknown wader species'.

A total of two unidentified wader records were noted over the survey period. Both observations occurred during the wintering seasons: one in November 2022 and the other in December 2023, details of which can be found in Appendix 7-1. These records were made during vantage point surveys and involved birds observed on the ground at a distance, which limited accurate species identification.

These records are unlikely to significantly alter the ecological value assessment but have been considered when cumulative numbers and potential collision risk were assessed.

## 7.5 SUMMARY OF ECOLOGICAL EVALUATION

The following table (Table 7-14) presents a summary of the ecological evaluation of key bird species recorded within the study area during the baseline surveys. The summary of baseline data provides a concise overview of species presence, frequency of records, and seasonal distribution.

As all wild birds, their nests and important habitats are protected under the EU Birds Directive (Directive 2009/147/EC) and Wildlife Acts, all recorded species over the survey period have been considered, in line with ecological impact assessment best practice.

Target species recorded in very low numbers, or not observed interacting with the site, have been grouped under the category "rarely recorded target species". This group includes Common Gull, Coot, Curlew, Greater Black-backed Gull, Green Sandpiper, Greenland White-fronted Goose, Tufted Duck, Herring Gull, Jack Snipe, Kingfisher, Little Grebe, Redshank, Shoveler, Tufted Duck White-tailed Eagle, and Woodcock. These species will be evaluated collectively. Non-target species recorded onsite (see Table 7-13) have been grouped under "all other species of lower conservation concern" and will also be evaluated collectively.

Remaining target species will be evaluated individually for their sensitivity to potential impacts, using the framework developed by Percival (2003) (see section 7.3.3). For each species, a rationale will be provided based on site-specific observations, ecological requirements, and conservation status (see Table 7-6). This structured approach ensures that receptors of ecological significance are identified and appropriately considered in the impact assessment.



Table 7-14: Evaluation of Key Ornithological Receptors

Species	Designation	NRA Evaluation (Table 7-4)	Summary of Baseline data	Sensitivity (Percival, 2003; EPA 2022)	Rationale (Table 7-6)
Barn Owl	BoCCI Red List - -	County importance	Barn Owls were not observed within the proposed project site during targeted surveys. However, evidence indicating that Barn Owl may be breeding in close proximity to the proposed project site was recorded in March 2026. Additionally, incidental records from the wider area suggest that Barn Owls are present in the broader landscape, likely using surrounding habitats such as rough grassland, hedgerows, and field margins for foraging, breeding, and possibly roosting.	Medium	Species listed in the Red List of Birds of Conservation Concern
Black-headed Gull	BoCCI Amber List River Little Brosna Callows SPA -	Local importance (higher value).	Black-headed Gull was regularly recorded throughout the study period, with majority of sightings occurring in winter. While often sighted during the breeding season, there were no confirmed breeding records of the species within the site or surrounding areas.  The species was observed mainly in flight, both individually and in large flocks up to 250 birds. These records were concentrated in the northern sections of the site and along the Little Brosna River. Additionally, Black-headed Gull was observed foraging within the site and surrounding areas.	Very High	SCI for nearby SPA; Species listed in the Amber List of Birds of Conservation Concern



Species	Designation	NRA Evaluation (Table 7-4)	Summary of Baseline data	Sensitivity (Percival, 2003; EPA 2022)	Rationale (Table 7-6)
Black-Tailed Godwit	BoCCI Red List River Little Brosna Callows SPA -	Local importance (higher value)	Black-tailed Godwit is a rare wintering visitor, with no breeding records onsite and nearby during the breeding season.  The species was observed on six occasions, particularly within wetlands and flooded areas adjacent to the Little Brosna River, where birds were primarily observed foraging. In February 2026, a flock of 1750 individuals was recorded flying over the flooded area of the River Little Brosna and within the proposed project site.	Very High	SCI for nearby SPA; Species listed in the Red List of Birds of Conservation Concern
Buzzard	BoCCI Green List - -	Local importance (higher value).	Buzzard was recorded regularly during the 2020-2026 breeding and wintering seasons. While there were nests located within the proposed site, evidence such as courtship displays and calls, and prey carrying suggest Buzzard breeding within the wider area around the proposed project site.  Flight activity was widespread across the site and the surrounding areas. Buzzard was observed hunting, soaring, as well as perched and foraging on the ground.	Low	Species listed in the Green List of Birds of Conservation Concern
Cormorant	BoCCI Amber List Lough Derg (Shannon) SPA -	Local importance (higher value)	Cormorants were recorded regularly during the 2021-2026 breeding and wintering seasons. There was no evidence of the species breeding within the study area.  The species flight activity was often observed, commuting along the Little Brosna River, and it was frequently seen	Very High	SCI for nearby SPA; Species listed in the Amber List of Birds of Conservation Concern



Species	Designation	NRA Evaluation (Table 7-4)	Summary of Baseline data	Sensitivity (Percival, 2003; EPA 2022)	Rationale (Table 7-6)
			foraging and roosting along the river and surrounding habitat.		
Golden Plover	<p>BoCCI Red List</p> <p>Annex I</p> <p>River Little Brosna Callows SPA</p>	Local importance (higher value)	<p>Golden Plover was recorded regularly during the in each of winter seasons throughout the study period 2020-2026. The species was not recorded onsite during the summer seasons, apart from a small number of records in September. There was no breeding activity recorded over the survey period.</p> <p>Species was often seen in flight within the site and the surrounding areas, often in large flocks up to 700 individuals. Golden Plover was also seen foraging and resting at the proposed project site or surrounding areas.</p> <p>Flock sizes did not exceed above the national importance thresholds.</p>	Very High	SCI for nearby SPA; Species listed in the Red List of Birds of Conservation Concern
Grey Heron	<p>BoCCI Green List</p> <p>-</p> <p>-</p>	Local importance (higher value).	<p>Grey Heron is a common visitor to the site, and it was recorded throughout the study period, both during the wintering and breeding season. There were no confirmed breeding records of the species at the site.</p> <p>Grey Heron was observed in flight over the site and the surrounding areas, often commuting along the Little Brosna River. Additionally, the species was observed foraging withing the site within field drains and wetlands.</p>	Low	Species listed in the Green List of Birds of Conservation Concern



Species	Designation	NRA Evaluation (Table 7-4)	Summary of Baseline data	Sensitivity (Percival, 2003; EPA 2022)	Rationale (Table 7-6)
Hen Harrier	BoCCI Amber List Annex I Slieve Blooms Mountains SPA	Local importance (higher value)	<p>Hen Harrier was recorded at the site mainly in winter season. However, the species was recorded a number of times during the breeding season one day in July 2023, likely the same ringtail hunting and commuting. There were no confirmed breeding records on the species at the site.</p> <p>Both male and ringtail were seen in flight, mainly in the southern parts of the site. No roost sites were identified within the study area.</p>	Very High	SCI for nearby SPA; Species listed in the Amber List of Birds of Conservation Concern
Kestrel	BoCCI Red List - -	County importance	<p>Kestrel was recorded regularly during the study period, both in the wintering and breeding seasons. A confirmed breeding record was observed, with a nest located 1.5 km from the proposed project site.</p> <p>Kestrel was widely recorded across all areas within the site and regularly in the surrounding areas. The species was often seen hunting as well as commuting over the proposed project area.</p>	Medium	Species listed in the Red List of Birds of Conservation Concern
Lapwing	BoCCI Red List River Little Brosna Callows SPA -	Local importance (higher value)	<p>Lapwing is a common visitor to the site during the winter season and scarce during the breeding season. The only summer record of Lapwing was in 2023, when four birds were seen feeding on an agricultural field. No breeding activity was recorded at the site.</p> <p>Lapwing was regularly recorded in flight over the site and surrounding areas, often seen commuting over wetlands, grasslands, bogs, and along the Little Brosna River. Lapwings were also seen on the ground in flooded areas and fields.</p>	Very High	SCI for nearby SPA; Species listed in the Red List of Birds of Conservation Concern



Species	Designation	NRA Evaluation (Table 7-4)	Summary of Baseline data	Sensitivity (Percival, 2003; EPA 2022)	Rationale (Table 7-6)
Lesser Black-backed Gull	BoCCI Amber List - -	Local importance (higher value).	<p>Lesser Black-backed Gull is a common visitor to the site and was recorded regularly during the winter and breeding seasons throughout the study period (2020-2026). There was no evidence of breeding within the site or the surrounding areas.</p> <p>The species was often recorded in flight, with the number of birds sighted ranging from single individuals to flocks of up to 200. Flight records were highly concentrated in the northern parts of the site.</p>	Low	Species listed in the Amber List of Birds of Conservation Concern
Little Egret	BoCCI Green List Annex I -	County importance	<p>Little Egret is a regular winter visitor to the site and was occasionally recorded during the summer seasons of 2023 and 2024. No evidence of breeding activity was observed within the site or the wider study area.</p> <p>The species was frequently seen in flight and foraging on wetlands along the Little Brosna River. Most records involved one or two individuals; however, on occasion, flocks of up to 40 birds were observed.</p>	Medium	(>1%) regional (county) population; Annex I species,
Little Grebe	BoCCI Amber List - -	Local importance (lower value)	<p>Little Grebe was rarely recorded at the site, with only two observations: the first in November 2022 and the second in September 2023. There was no evidence of breeding within the site or the surrounding areas.</p> <p>Both records involved birds observed feeding. These observations confined to flooded sections of the Little Brosna River located to the northeast of the site.</p>	Low	Species listed in the Amber List of Birds of Conservation Concern



Species	Designation	NRA Evaluation (Table 7-4)	Summary of Baseline data	Sensitivity (Percival, 2003; EPA 2022)	Rationale (Table 7-6)
Mallard	BoCCI Amber List - -	Local importance (higher value).	<p>Mallard is a common visitor to the site, and it was recorded throughout the study period, both during the wintering and breeding season. There were no confirmed breeding records of the species at the site or the wider study area.</p> <p>The species was recorded both commuting over the site and foraging along the Little Brosna River and in adjacent flooded agricultural fields.</p>	Low	Species listed in the Amber List of Birds of Conservation Concern
Merlin	BoCCI Amber List Annex I -	Local importance (higher value).	<p>Merlin is an occasional visitor to the site, with most records occurring in the winter season and rare observations during the breeding seasons. During March 2026 surveys, a pair of Merlin (male and female) was observed within the southern section of the proposed project site engaging in courtship and mating behaviour.</p> <p>Most records involved a single individual observed hunting over the proposed project site and the wider study area, often over bog habitats.</p>	Medium	Annex I Species; Species listed in the Amber List of Birds of Conservation Concern
Mute Swan	BoCCI Amber List - -	Local importance (higher value)	<p>Mute Swan is an occasional visitor to the site, and it was recorded throughout the study period, both during the wintering and breeding season. There were no confirmed breeding records of the species at the site or the wider study area.</p> <p>The observations were primarily concentrated along the Little Brosna River and surrounding flooded areas. Mute Swan was seen commuting over the site,</p>	Low	Species listed in the Amber List of Birds of Conservation Concern



Species	Designation	NRA Evaluation (Table 7-4)	Summary of Baseline data	Sensitivity (Percival, 2003; EPA 2022)	Rationale (Table 7-6)
			as well as swimming and feeding, often in small groups not exceeding seven birds.		
Peregrine Falcon	BoCCI Green List Annex I -	Local importance (higher value).	<p>Peregrine Falcon is an occasional visitor to the site, with most records during winter season and the late breeding season (August-September). There was no evidence of breeding within the site or its surrounding areas.</p> <p>The species was seen in flight in across most areas of the proposed site with somewhat of a concentration of records along the Little Brosna River, and bog habitats. On occasion Peregrine was seen perched on trees or posts.</p>	Medium	Annex I species; Species listed in the Green List of Birds of Conservation Concern
Pintail	BoCCI Amber List River Little Brosna Callows SPA -	County importance	<p>Pintail is a rare visitor to the site, with 16 records during the 2023/2024 and 2025/2026 winter seasons.</p> <p>All observations of the species at the site were of foraging birds on the flooded agricultural lands in the northeast of the site or birds found in the nearby River Little Brosna Callows SPA. Notably, one record in March 2024 involved a group of 200 birds.</p>	Very High	SCI for nearby SPA; Species listed in the Amber List of Birds of Conservation Concern



Species	Designation	NRA Evaluation (Table 7-4)	Summary of Baseline data	Sensitivity (Percival, 2003; EPA 2022)	Rationale (Table 7-6)
Snipe	BoCCI Red List - -	Local importance (higher value)	<p>Snipe was recorded occasionally throughout the study period, primarily during the winter season. The species was observed infrequently during the breeding season.</p> <p>Some evidence of probable breeding was observed, including records of drumming males over suitable nesting habitats within the site and the wider study area, suggesting possible or courtship behaviour.</p>	Medium	Species listed in the Red List of Birds of Conservation Concern
Sparrowhawk	BoCCI Green List - -	Local importance (higher value)	<p>Sparrowhawk is a regular visitor to the site throughout the survey period 2020-24, with records in all seasons. Some evidence of the species breeding within the site was observed, such as courtship displays in 2021, and 2022, and a juvenile food begging in 2023.</p> <p>Sparrowhawk was recorded in flight commuting and hunting. The records occurred throughout the site, often along or near the hedgerows, woodlands, or marginal areas.</p>	Low	Species listed in the Green List of Birds of Conservation Concern
Teal	BoCCI Amber List River Little Brosna Callows SPA -	Local importance (higher value)	<p>Teal is a rare visitor to the site during winter seasons. There were no records of the species during the breeding season.</p> <p>The species was recorded either commuting along the Little Brosna River or foraging in the adjacent flooded fields. The largest flock was observed in December 2023, comprising approximately 300 individuals.</p>	Very High	SCI for nearby SPA; Species listed in the Amber List of Birds of Conservation Concern



Species	Designation	NRA Evaluation (Table 7-4)	Summary of Baseline data	Sensitivity (Percival, 2003; EPA 2022)	Rationale (Table 7-6)
Whooper Swan	BoCCI Amber List - -	Local importance (higher value)	Whooper Swan is an occasional visitor to the site during the winter season.  The species was primarily observed commuting along the Little Brosna River and foraging on flooded agricultural fields adjacent to the river. Whooper Swans were often seen in small flocks, although larger groups were also recorded, with a maximum count of 55 individuals.	Very High	SCI for nearby SPA; Species listed in the Amber List of Birds of Conservation Concern
Wigeon	BoCCI Amber List River Little Brosna Callows SPA -	Local importance (higher value).	Wigeon is an infrequent visitor to the site during the winter season.  The species was primarily observed in the northeastern part of the site, along the Little Brosna River, foraging on flooded agricultural fields adjacent to the river.	Very High	SCI for nearby SPA; Species listed in the Amber List of Birds of Conservation Concern
Rarely recorded target species. <ul style="list-style-type: none"> <li>• Common Gull,</li> <li>• Coot</li> <li>• Curlew,</li> <li>• Great Black-backed Gull,</li> <li>• Green Sandpiper</li> <li>• Greenland White-fronted Goose,</li> <li>• Herring Gull,</li> <li>• Jack Snipe,</li> </ul>	BoCCI Red, Amber and Green List - River Little Brosna Callows SPA ( <i>Shoveler, Greenland white-fronted Goose</i> ) - Dovegrove Callows SPA ( <i>Greenland White-fronted Goose</i> ) - All Saints Bog SPA ( <i>Greenland White-fronted Goose</i> ) Annex I ( <i>Greenland White-fronted Goose, Kingfisher</i> )	Local importance (higher value).	Majority of these target species were rarely recorded at the site, with only one or two observations over the entire survey period, either along the peripheries of the proposed project or flights over the survey area without interacting with the site. These species were: Common Gull, Curlew, Great Black-backed Gull, Greenland White-fronted Goose, Herring Gull, Jack Snipe, Kingfisher, Little Grebe, Shoveler, White-tailed Eagle, and Woodcock.  Additionally, records of some of these species were collected during the Wetland Bird Surveys (I-WeBS), and within 10 km buffer. These species were: Coot, Green Sandpiper, Redshank, and Tufted Duck.	Very High to Low	A range has been provided as some species have been designated as SCI for nearby SPAs and/or are species listed in the Red, Amber or Green List of Birds of Conservation Concern



Species	Designation	NRA Evaluation (Table 7-4)	Summary of Baseline data	Sensitivity (Percival, 2003; EPA 2022)	Rationale (Table 7-6)
<ul style="list-style-type: none"> <li>• Kingfisher,</li> <li>• Little Grebe,</li> <li>• Redshank</li> <li>• Shoveler, and</li> <li>• Tufted Duck,</li> <li>• White-tailed Eagle, and</li> <li>• Woodcock</li> </ul>					
All other species of lower conservation concern	BoCCI Red, Amber and Green List	Local importance (higher value).	Other species of lower conservation concern are non-target species which are determined to be less at risk from potential impacts associated with the Proposed Project, as they have a more favourable conservation status, were rarely recorded during surveys, or are not thought to be dependent on the area for breeding or feeding.	Medium to Very Low	A range has been provided as some species are species listed in the Red, Amber or Green List of Birds of Conservation Concern



## 7.6 IMPACT ASSESSMENT

The identification and description of effects presented below takes account of the characteristics of the receiving environment, as described throughout Section 7.4 with particular reference to the KORs identified in Section 7.5. Effects are presented in relation to each phase of the project (i.e. construction, operation and decommissioning).

The effects described in this section are those ornithological impacts predicted due to the proposed project in the absence of any mitigation measures. If an effect has been determined as likely and significant, mitigation measures will be implemented (refer to Section 7.6.5 for further details on mitigation measures). Residual effects describe the likely effects that remain after the application of mitigation measures and are discussed in Section 7.10.

The following sections assess the potential for likely significant effects on birds during the following phases of the proposed project:

- Construction Phase (Section 7.6.3): Evaluation of the likely significant effects on birds during the construction of the wind farm.
- Operation Phase (Section 7.6.4): Assessment of the likely significant effects on birds during the operational phase of the wind farm.
- Decommissioning Phase (Section 7.6.5): Consideration of the likely significant effects associated with the decommissioning of the wind farm at the end of its operational life

As summarised in Section 7.1.3, the range of potential sources associated with the proposed project that may affect bird species and their habitats include:

- Construction Phase
  - Habitat Loss due to turbine and infrastructure installation.
  - Habitat degradation due to surface water runoff, dust impacts and the spread of invasive non-native species.
  - Disturbance and Displacement caused by noise, machinery, and human activity.
- Operational Phase
  - Disturbance and Displacement resulting from turbine presence and visual movement.
  - Collision Risk for birds flying at rotor height or along migratory pathways.
- Decommissioning Phase
  - Temporary Habitat Disturbance associated with turbine removal and site reinstatement.
  - Short-Term Disturbance and Displacement due to machinery use and human activity during decommissioning works.

### 7.6.1 Do Nothing/Future Baseline Effects

If the proposed project were not to proceed, then the existing environment of cutover bog, raised bog, scrub, and improved agricultural grassland, currently utilised for livestock grazing



and some commercial forestry plantations, would continue to be managed as it is nowadays with some slight increase in forestry and areas in agricultural production (i.e less scrub). KORs would likely remain as described in the sections above or reflect existing regional, national or global trends.

## 7.6.2 Assessment of Impacts on Designated Sites

### 7.6.2.1 European Sites

A Screening for Appropriate Assessment (AA) and Nature Impact Statement (NIS) were prepared as part of the planning application. The Screening for AA Report investigated the potential for the proposed project to have significant effects on European Site(s), either alone or in-combination, with other plans or projects. For the purpose of this ornithology chapter only SPAs will be discussed below. More details on SACs within the Zol can be seen in the AA screening and NIS for this proposed project and within Chapter 6 (Biodiversity) of this EIAR.

Six SPAs were identified within the Zol as part of the Screening for AA as having potential for being impacted by the proposed project. From this six and in the absence of mitigation, four were identified to be at potential risk from the potential degradation of habitat quality from the release of suspended solids and/or pollutants; the disturbance to Annex I species of the EU Birds Directive as a result of construction, operational and decommissioning works and activities; and/or the potential mortality for Annex I species of the EU Birds Directive as results of collision with operational turbines. The AA Screening Report conclusion (submitted with this application) is:

*“Following an examination, analysis and evaluation of the relevant information including, the nature of the proposed project and its potential connectivity with European sites, the conservation objectives, as well as applying the precautionary principle, it is the professional opinion of the authors of this report that that the proposed works, alone or in-combination with other plans or projects and in the absence of mitigation measure could have likely significant effects on the on the following European sites:*

- *Dovegrove Callows SPA*
- *River Little Brosna Callows SPA*
- *Lough Derg (Shannon) SPA*
- *Middle Shannon Callows SPA*

*This conclusion is based off the identified pathways between the proposed project and these European sites and likely significant effects on European Sites, their conservation objectives, and QIs/SCIs. Accordingly, in line with Article 6(3) of the Habitats Directive, a Stage 2 Appropriate Assessment (AA) is required for the proposed project to assess whether the proposed project would adversely affect the integrity of these European sites.*

An NIS was prepared as part of this application and it concluded that,

notwithstanding the identification of likely significant effects at screening stage, and having regard to the conservation objectives of the relevant European sites, the proposed project, alone or in combination with other plans or projects, will not adversely affect the integrity of any



European site, beyond reasonable scientific doubt, following the implementation of the mitigation measures described in the NIS.

### *7.6.2.2 National Sites*

A total of seven NHAs and 19 pNHAs, considered to be important for avian species, occur within proximity to the proposed project site (See Table 7-10 and Figure 7-4). The only sites with a source pathway receptor link, were those which coincide with European site boundaries. Therefore, any such effects that may occur, have been assessed in the AA Screening and NIS reports accompanying the planning application for the proposed project. With the implementation of mitigation measures outlined in the NIS, no impacts to the above-mentioned sites are anticipated.

## **7.6.3 Construction Phase Impacts**

### *7.6.3.1 Direct Habitat Loss*

The construction of turbine bases, access tracks, substation, grid connection, met mast and all other associated construction will result in a land take which will, consequently, reduce the availability of local habitat for birds. Assessing the effect of this habitat loss has been achieved by quantifying the area of each habitat which will be lost. This has been calculated at approximately 28.38 ha of habitat area and 2.3 km of habitat length (e.g. Hedgerows, drainage ditches etc.). The magnitude of this impact can be determined relative to the proportion of habitat that will be lost relative to the availability of these habitats both onsite and within the wider surroundings, which are utilised by key target species. The habitat loss to hard infrastructure was calculated using habitat loss mapping and data from the Biodiversity Chapter (Chapter 6). Habitat loss can also arise from disturbance effects, which is discussed in more detail in section 7.6.3.3. The habitat lost to the proposed infrastructure is considered to last for the lifetime of the wind farm (30 years) and will likely remain in situ following wind turbine dismantling during the Decommissioning Phase. This effect is therefore considered **Long Term**.

Table 7-15 below assesses the potential effects of habitat loss on the KORs within the proposed project. The methodology of the assessment of the effects of habitat loss follows Percival (2003) and EPA (2022) (refer to section 7.3).

Table 7-15: Assessing the Potential Effects of Habitat Loss During the Construction Phase on Key Ornithological Receptors as a Result of the Proposed project

KOR (Sensitivity see Table 7-14)	Habitat Loss (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
Barn Owl	<p>Evidence of Barn Owl potentially breeding in the close proximity to the proposed project site was recorded in March 2026, with two potential breeding locations identified, and while no direct sighting of barn owl took place during the ornithological surveys, the evidence including calls, feathers, pellets, sightings of used barn owl boxes, and anecdotal landowner observations were collected.</p> <p>Furthermore, Barn Owl presence within the study area was confirmed through incidental observations recorded during other ecological surveys at proposed project site, notably multi-disciplinary and habitat surveys.</p> <p>The proposed internal infrastructure will result in the loss of a relatively small proportion of habitat (c. 28.83 ha), equating to approximately 6% of the total proposed project site area. Of this, only a proportion comprises suitable open agricultural habitat that may be used for foraging (equating to approximately 4% of the total site area). Additionally, there will be no loss of known or suitable breeding habitat for this species, and there is a high availability of comparable suitable open agricultural habitat suitable for foraging within the wider surrounding area. Therefore, the magnitude of impact is assessed to be <b>low</b>.</p>	<p>Sensitivity: Medium                      Magnitude: Low                      Significance: Slight  <b>Long Term, Slight negative effects</b></p>	No
Black-headed Gull	<p>Black-headed Gull was regularly recorded throughout the study period, with majority of sightings occurring in winter. The species was observed feeding on site in the flooded fields adjacent to Little Brosna River, while there were no records indicating the species using the site for roosting or breeding. The observations suggest that Black-headed Gull use the site for commuting and foraging. The proposed internal infrastructure will result in the loss of a relatively small proportion of habitat (c. 28.83 ha), equating to approximately 6% of the total proposed project site area. Of this, the majority of records for the species did not relate to areas proposed to be lost, with most observations involving birds flying over the site rather than actively using these habitats. Additionally, the wider surrounding area provides extensive suitable habitat for foraging and roosting preferred by the species. Therefore, the magnitude of impact is assessed to be <b>negligible</b>.</p>	<p>Sensitivity: Very High                      Magnitude: Negligible                      Significance: Slight  <b>Long Term, Slight negative effects</b></p>	No
Black-tailed Godwit	<p>The species was observed on six occasions, particularly within wetlands and flooded areas adjacent to the Little Brosna River, where birds were primarily observed foraging. In February</p>	<p>Sensitivity: Very High                      Magnitude: Negligible                      Significance: Slight</p>	No



KOR (Sensitivity see Table 7-14)	Habitat Loss (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
	<p>2026, a flock of 1750 individuals was recorded flying over the flooded area of the River Little Brosna and within the proposed project site.</p> <p>Considering the low frequency of records, that the species was not recorded utilising any land where proposed infrastructure will be located, and the moderate availability of the foraging habitat preferred by the species in the wider area, the magnitude of impact is assessed to be <b>negligible</b>.</p>	<p><b>Long Term, Slight negative effects</b></p>	
<p>Buzzard</p>	<p>Buzzard was regularly recorded hunting, circling, and commuting over the site, but the species was often seen perched on trees and fence posts within the wider study area. There were no confirmed records of breeding at the site and within the immediate surroundings, but occasional records of behaviour indicating courtship may suggest potential of the species breeding locally. Despite the frequency of records and the potential for local breeding, the proposed internal infrastructure will result in the loss of a relatively small proportion of habitat (c. 28.83 ha), equating to approximately 6% of the total proposed project site area. Of this, the majority of records for the species did not relate to areas proposed to be lost, with most observations involving birds flying over the site rather than actively utilising these habitats. Additionally, the wider surrounding area provides extensive suitable habitat for foraging, breeding and roosting preferred by the species. Therefore, the magnitude of impact is assessed to be <b>low</b>.</p>	<p>Sensitivity: Low            Magnitude: Low            Significance: Not Significant  <b>Long Term, Not Significant negative effects</b></p>	<p>No</p>
<p>Cormorant</p>	<p>Cormorant was frequently recorded commuting over the site, with occasional observations of small groups roosting along the riverbanks of the Little Brosna River or perched in nearby trees. There were no records of the species breeding or actively foraging within the site. The proposed internal infrastructure will result in the loss of a relatively small proportion of habitat (c. 28.83 ha), equating to approximately 6% of the total proposed project site area and given the species limited interaction with the proposed project site, that the species was not recorded utilising any land where proposed infrastructure will be located, that there will be no loss of known or suitable foraging or roosting habitat for this species, and availability of similar suitable habitat in the wider surroundings, the magnitude of effect is assessed to be <b>negligible</b>.</p>	<p>Sensitivity: Very High            Magnitude: Negligible            Significance: Slight  <b>Long Term, Slight negative effects</b></p>	<p>No</p>



KOR (Sensitivity see Table 7-14)	Habitat Loss (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
Golden Plover	Flocks ranging from one individual to 700 Golden Plover were most commonly observed in flight over the site, but on occasion were also observed landing on site to forage. There were no records of the breeding behaviour on site, and all records came from winter and late summer season (September). Considering the frequency of records, that the species was not recorded utilising any land in the vicinity of where proposed infrastructure will be located, and the moderate availability of the foraging habitat preferred by the species in the wider area, the magnitude of effect is assessed to be <b>negligible</b> .	Sensitivity: Very High Magnitude: Negligible Significance: Slight <b>Long Term, Slight negative effects</b>	No
Grey Heron	Grey Heron was frequently observed commuting along the Little Brosna River, central and southern sections of the site. The species was occasionally observed foraging on site, along the field drains and wetlands. There were no records of Grey Heron breeding within the site and the surrounding areas. Considering the recorded frequency of the species occurrence, that the species was not recorded utilising any land where proposed infrastructure will be located, and the availability of similar suitable foraging habitat in the surrounding area, the magnitude of effect is assessed to be <b>negligible</b> .	Sensitivity: Low Magnitude: Negligible Significance: Imperceptible <b>Long Term, Imperceptible negative effects</b>	No
Hen Harrier	Hen Harrier was irregularly recorded over the survey period, predominantly during the winter season. There was no evidence of breeding activity or winter roosts within the site or the wider study area. The site does, however, provide some suitable hunting habitat, and the species was occasionally observed foraging over bog habitats and rough grasslands. The proposed internal infrastructure will result in the loss of a relatively small proportion of habitat (c. 28.83 ha), equating to approximately 6% of the total proposed project site area. Of this, the majority of records for the species did not relate to areas proposed to be lost, with most observations involving birds flying over the site rather than actively utilising these habitats. Additionally, the wider surrounding area provides extensive suitable habitat for foraging. Therefore, the magnitude of impact is assessed to be <b>negligible</b> .	Sensitivity: Very High Magnitude: Negligible Significance: Slight <b>Long Term, Slight negative effect</b>	No
Kestrel	Kestrel was commonly recorded throughout the study period while hunting at the site and in the wider study area. Additionally, observations of Kestrel perched on trees and electricity poles were frequent. Moreover, there were records of breeding behaviour, such as courtship, prey carrying, and a potential nest, however, the majority of this breeding activity was not recorded onsite or within the areas subject to the proposed habitat loss. Given that there will be no loss of known or suitable breeding habitat for this species, the minimal loss of suitable	Sensitivity: Medium Magnitude: Low Significance: Slight <b>Long Term, Slight negative effect</b>	No



KOR (Sensitivity see Table 7-14)	Habitat Loss (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
	foraging habitat as a result of the proposed project, and availability of similar suitable habitat in the wider surroundings, the magnitude of impact is assessed to be <b>low</b> .		
Lapwing	Lapwing was a common winter visitor to the site, with flocks ranging from one individual to 200 birds, seen mostly in flight, but also recorded on the ground in the flooded areas adjacent to the Little Brosna River, where birds were seen resting and foraging. There were no records of the species breeding at the site. Considering the frequency of records, that the species was not recorded utilising any land where proposed infrastructure will be located and the moderate availability of the foraging habitat preferred by the species in the wider area, the magnitude of impact is assessed to be <b>negligible</b> .	Sensitivity: Very High Magnitude: Negligible Significance: Slight <b>Long Term, Slight negative effect</b>	No
Lesser Black-backed Gull	Lesser Black-backed Gull was recorded throughout the survey period in flight, commuting over the site, and was occasionally observed foraging on agricultural lands within the site and the wider study area, often following recent farming activities such as slurry spreading. There were no records of the species breeding at the site. Considering the recorded frequency of species occurrence onsite, that the species was not recorded utilising any land where infrastructure is proposed to be located, and the availability of similar suitable foraging habitat in the surrounding area, the magnitude of impact is assessed to be <b>negligible</b> .	Sensitivity: Low Magnitude: Negligible Significance: Imperceptible <b>Long Term, Imperceptible negative effects</b>	No
Little Egret	Little Egret was frequently recorded foraging within the site and the wider study area. These records were comprised of foraging groups ranging from one individual to 40 birds, mostly in winter on the flooded areas along the Little Brosna River and on agricultural lands. Considering the recorded frequency of the species occurrence onsite, that the species was not recorded utilising any land where proposed infrastructure will be located, and the availability of similar suitable foraging habitat in the surrounding area, the magnitude of impact is assessed to be <b>negligible</b> .	Sensitivity: Medium Magnitude: Negligible Significance: Imperceptible <b>Long Term, Imperceptible negative effects</b>	No



KOR (Sensitivity see Table 7-14)	Habitat Loss (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
Mallard	Mallard was recorded throughout the survey period, mainly in flight, but several records indicated the use of the site for landing and foraging, primarily on the bog habitats and flooded areas along the Little Brosna. There were no records of breeding Mallard on the site and in the wider study area. Considering the recorded frequency of species occurrence onsite, that the species was not recorded utilising any land where proposed infrastructure will be located, and the availability of similar suitable foraging habitat in the surrounding area, the magnitude of impact is assessed to be <b>negligible</b> .	Sensitivity: Low Magnitude: Negligible Significance: Imperceptible <b>Long Term, Imperceptible negative effects</b>	No
Merlin	Merlin was recorded occasionally using the site for hunting and resting, perching on tree tops. During February 2026 surveys, a pair of Merlin (male and female) was observed within the southern section of the proposed project site engaging in courtship and mating behaviour. The site does contain areas suitable for Merlin to nest, such as dense heather, often in proximity to forest edges or young conifer plantations. However, the proposed internal infrastructure will result in the loss of a relatively small proportion of habitat (c. 28.83 ha), equating to approximately 6% of the total proposed project site area. Of this, the majority of records for the species did not relate to areas proposed to be lost, with most observations involving birds flying over the site rather than actively utilising these habitats. Additionally, the wider surrounding area provides extensive suitable habitat for foraging. Considering the low frequency of Merlin records, the use of the site by the species for hunting, and the availability of similar suitable hunting and roosting habitat within the wider area, the magnitude of impact is assessed to be <b>negligible</b> .	Sensitivity: Medium Magnitude: Negligible Significance: Imperceptible <b>Long Term, Imperceptible, negative effect</b>	No
Mute Swan	Mute Swan records concentrated almost entirely along the Little Brosna River, where birds were often observed on ground and on water, feeding and resting in all seasons. There was no evidence of breeding within the site. Given the number of records, the behaviour observed, that the species was not recorded utilising any land where proposed infrastructure will be located, and the availability of similar foraging and resting habitat preferred by the species in the wider area, the magnitude of impact is assessed to be <b>negligible</b> .	Sensitivity: Low Magnitude: Negligible Significance: Imperceptible <b>Long Term, Imperceptible negative effects</b>	No



KOR (Sensitivity see Table 7-14)	Habitat Loss (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
Peregrine Falcon	Peregrine was recorded at the site and in the wider study throughout the survey period in all seasons, with multiple observations of hunting over the flooded areas, bog habitats, and the agricultural fields within the site and the wider study area. There were no confirmed records of breeding at the site, although pairs and juveniles were observed. Given that there will be no loss of known or favoured breeding habitat for this species, the minimal loss of suitable foraging habitat as a result of the proposed project, and availability of similar suitable habitat in the wider surroundings, the magnitude of impact is assessed to be <b>negligible</b> .	Sensitivity: Medium Magnitude: Negligible Significance: Imperceptible <b>Long Term, Imperceptible negative effect</b>	No
Pintail	Pintail was rarely recorded at the site, and all records were of foraging birds on a flooded agricultural area adjacent to the Litte Brosna River. Notably, one record of a flock of 200 birds recorded in March 2024 requires highlighting, as it exceeds the national importance threshold of 20 individuals. Considering the low frequency of records, that the species was not recorded utilising any land where proposed infrastructure will be located, and the moderate availability of favoured foraging habitat for this species in the wider area, the magnitude of impact is assessed to be <b>negligible</b> .	Sensitivity: Very High Magnitude: Negligible Significance: Slight <b>Long Term, Slight negative effect</b>	No
Snipe	Snipe was recorded on site and within the wider study area, mainly during the winter season, but was seen and heard displaying breeding behaviour, such as territorial and courtship calls. Snipe was also seen foraging on bog and along the Little Brosna River in flocks reaching 40 individuals. Considering the use of the site by Snipe to forage and potentially breed, that the species was recorded in limited numbers utilising any land where proposed infrastructure will be located, and the availability of the similar foraging and breeding habitat preferred by the species in the area, the magnitude of impact is assessed to be <b>low</b> .	Sensitivity: Medium Magnitude: Low Significance: Slight <b>Long Term, Slight negative effect</b>	No
Sparrowhawk	Sparrowhawk was recorded in all seasons during the study period, using the site and the wider area for hunting. Additionally, the species has a probable breeding status, as evidence was observed in 2021, 2022, and 2023. These records included displaying pairs, and juveniles heard food begging. The proposed internal infrastructure will result in the loss of a relatively small proportion of habitat (c. 28.83 ha), equating to approximately 6% of the total proposed project site area. Of this, the majority of records for the species did not relate to areas proposed to be lost, with most observations involving birds flying over the site rather than actively utilising these habitats. Additionally, the wider surrounding area provides extensive suitable habitat for foraging and breeding. Given the frequency of observations, the probable breeding status, and	Sensitivity: Low Magnitude: Low Significance: Not Significant <b>Long Term, Not Significant negative effect</b>	No



KOR (Sensitivity see Table 7-14)	Habitat Loss (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
	the availability of suitable hunting and breeding habitat within the wider area, the magnitude of impact is assessed to be <b>low</b> .		
Teal	Teal was recorded on site in winter seasons, foraging in flocks ranging from 20 to 300 individuals. These records were concentrated in flooded areas adjacent to Little Brosna River. Considering the frequency of records, that the species was not recorded utilising any land where proposed infrastructure will be located and the moderate availability of the foraging habitat preferred by the species in the wider area, the magnitude of impact is assessed to be <b>negligible</b> .	Sensitivity: Very High Magnitude: Negligible Significance: Slight <b>Long Term, Slight negative effect</b>	No
Whooper Swan	Whooper Swan records were almost entirely confined to the Little Brosna River and adjacent flooded agricultural fields, where species was regularly recorded foraging and resting in flocks reaching 55 individuals. Considering the frequency of records, that the species was not recorded utilising any land where proposed infrastructure will be located and the moderate availability of the foraging habitat preferred by the species in the wider area, the magnitude of impact is assessed to be <b>negligible</b> .	Sensitivity: Very High Magnitude: Negligible Significance: Slight <b>Long Term, Slight negative effect</b>	No
Wigeon	Wigeon was observed on site in winter seasons feeding on the flooded lands adjacent to the Little Brosna River in flocks ranging from four to 125 birds. Considering the frequency of records, that the species was not recorded utilising any land where proposed infrastructure will be located and the moderate availability of the foraging habitat preferred by the species in the wider area, the magnitude of impact is assessed to be <b>negligible</b> .	Sensitivity: Very High Magnitude: Negligible Significance: Slight <b>Long Term, Slight negative effect</b>	No



KOR (Sensitivity see Table 7-14)	Habitat Loss (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
Rarely recorded target species.	<p>All these target species were rarely recorded at the site, with only one or two observations over the entire survey period, either along the peripheries of the proposed project or flights over the survey area without interacting with the site.</p> <p>Given the proposed internal infrastructure will result in the loss of a relatively small proportion of habitat (c. 28.83 ha), equating to approximately 6% of the total proposed project site area, the low numbers of records and the availability of the similar foraging and resting habitat preferred by the species in the area, the magnitude of impact is assessed to be <b>negligible</b></p>	<p>Sensitivity: Very High to Low            Magnitude: Negligible            Significance: Slight to imperceptible  <b>Long Term, Slight to imperceptible negative effect</b></p>	No
All other species of lower conservation concern	<p>The construction of the Proposed Project will result in the temporary and permanent local loss of breeding and wintering habitat for several species. The proposed internal infrastructure will result in the loss of a relatively small proportion of habitat (c. 28.83 ha), equating to approximately 6% of the total proposed project site area.</p> <p>Some of these non-target species (such as passerines) rely on hedgerows, scrub, and agricultural fields within and around the Proposed Project for breeding, foraging or resting. The removal of these features during construction would reduce the availability of suitable habitat for these species.</p> <p>Species such as house martin, house sparrow, starling, swift, and swallow are unlikely to be significantly affected, as their nesting ecology primarily involves buildings or other man-made structures, no suitable examples of which would be removed during construction.</p> <p>Given that the Construction Phase would be short-term, that existing suitable habitat outside the Proposed Project area would remain undisturbed and that some species would not experience habitat loss, the magnitude of the impact on these other species of lower conservation concern is assessed to be <b>low</b>.</p>	<p>Sensitivity: Medium to Very Low            Magnitude: Low            Significance: Slight to imperceptible  <b>Long Term, Slight to imperceptible negative effect</b></p>	No



### *7.6.3.2 Habitat Degradation Due to Surface Water Quality Effects, Air Quality Effects the Spread or Introduction of Invasive Non-Native Species*

The construction phase could potentially have a negative effect on water quality in the absence of control measures or mitigation. A wide range of environmental factors are required to support waterbird species, including good water quality, good supply of food resources, and suitable breeding sites. Thus, negative effects to water quality during the Construction Phase could result in a reduction in the availability of suitable habitat or foraging potential for waterbird species. The significance of these effects would vary among species, habitat choice, life-cycle, breeding status, range, and with the duration of construction activities.

Potential effects on water quality as a result of the construction phase of the Proposed Project include:

- Increased sediment load
- Hydrocarbon spillage on bankside habitat, amenity and surface features followed by pollution of the water column
- Pollution of the water column from chemical discharge.

These impacts may occur as results of:

- Damming and working in watercourses
- Silt-laden runoff from construction works
- Accidental spillage of oil and/or chemicals

As is described in Chapter 2 (Description of Proposed Project), there are two approaches to watercourse crossings: trenchless or open-cut. Potential effects are associated with both techniques.

Spillages, into either the dammed or dry riverbed areas, of miscible (capable of being mixed in water in this case) substances (e.g. pesticides), immiscible substances (e.g. oil), and concrete and other cements, in the absence of mitigation, have the potential to impact water quality even in small quantities. Further details on the potential impacts on surface water quality are addressed in Chapter 6 (Biodiversity) and Chapter 9 (Water).

- Excavation activities may generate dust, potentially depositing on vegetation and inhibiting plant growth.
- Dust emission risk classes follow IAQM guidelines (Guidance on the Assessment of Dust from Demolition and Construction, Holman et al., 2014).
  - Project earthworks are classified as Large (>10,000 m<sup>2</sup>).
  - Receptor sensitivity is High up to 20 m from the source, reducing to Medium at 50 m.
- Dust may also arise from track-out due to Heavy Duty Vehicle (HDV) movements at the site entrance.
  - Anticipated HDV movements: 10–50 per day → Medium track-out, affecting receptors 50–100 m from the site.



- Spread of the invasive species Parrot's-feather (*Myriophyllum aquaticum*) and Himalayan balsam (*Impatiens glandulifera*), which were identified within the Proposed Project site (see Chapter 6 – Biodiversity) may:
  - Outcompete other flora, reducing diversity.
  - Alter habitat conditions or structure (e.g., soil chemistry, water flow).
  - Be facilitated by material transport, ground disturbance, or movement of machinery/personnel.

It is acknowledged that some of the potential impacts described above may only give rise to short-term or temporary effects during construction. However, the assessment has considered the potential duration of effects in the absence of mitigation or in the event that unanticipated pathways arise. In particular, deterioration in surface water quality could, without appropriate controls, affect downstream habitats for a period extending beyond the construction phase. Similarly, the introduction or spread of invasive non-native plant species during construction activities, if not effectively managed, could result in longer-term habitat degradation.

On this basis, a precautionary approach has been adopted by considering the potential persistence of such effects as **long-term**, rather than assuming that all construction-related impacts would necessarily be short-term and reversible.

Table 7-16 assesses the potential effect of a reduction in water quality on KORs observed within the Proposed Project. The methodology of the assessment of the impact of a reduction in water quality follows Percival (2003) and EPA (2022), as discussed in Section 7.3.



**Table 7-16: Assessing the Potential Effects of Habitat Degradation, due to surface water quality, air quality and the spread or introduction of invasive alien species during the Construction Phase on Key Ornithological Receptors as a Result of the Proposed project.**

KOR (Sensitivity see Table 7-14)	Habitat Degradation (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
Barn Owl	<p>Evidence of Barn Owl potentially breeding in the close proximity to the proposed project site was recorded in March 2026, with two potential breeding locations identified, and while no direct sighting of barn owl took place during the ornithological surveys, the evidence including calls, feathers, pellets, sightings of used barn owl boxes, and anecdotal landowner observations were collected.</p> <p>Furthermore, Barn Owl presence within the study area was confirmed through incidental observations recorded during other ecological surveys at proposed project site, notably multi-disciplinary and habitat surveys. The potential construction phase impacts identified in this assessment relate to habitat degradation arising from changes in surface water quality, localised air quality effects (e.g. dust deposition), and the potential spread or introduction of invasive alien species. Barn Owl does not rely directly on aquatic habitats or watercourses for foraging or roosting, and suitable foraging habitat is widely available in the surrounding landscape. While some effects could persist beyond construction, they would be spatially limited and would not materially affect Barn Owl habitat, the magnitude of impact on Barn Owl is assessed to be of <b>negligible concern</b>.</p>	<p>Sensitivity: Medium                      Magnitude: Negligible                      Significance: Imperceptible  <b>Long-term, Imperceptible negative effects</b></p>	No
Black-headed Gull	<p>Black-headed Gull was recorded during all survey seasons, primarily observed in flight, with occasional instances of feeding on flooded fields adjacent to the Little Brosna River. The species was not recorded interacting with the majority of the site, was largely observed in flight, and typically favours watercourses or wetlands for foraging and resting.</p> <p>The potential construction-phase impacts identified (i.e. localised habitat degradation arising from surface water quality changes, dust deposition, or the spread of invasive alien species) could persist beyond construction but would be spatially limited. Given the species' limited use of the site, its mobility, and the availability of alternative wetland and agricultural foraging habitats in the wider area, the magnitude of impact is assessed to be of <b>negligible concern</b>.</p>	<p>Sensitivity: Very High                      Magnitude: Negligible                      Significance: Slight  <b>Long-term, Slight negative effects</b></p>	No



KOR (Sensitivity see Table 7-14)	Habitat Degradation (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
Black-tailed Godwit	<p>The species was observed on six occasions, particularly within wetlands and flooded areas adjacent to the Little Brosna River, where birds were primarily observed foraging. In February 2026, a flock of 1750 individuals was recorded flying over the flooded area of the River Little Brosna and within the proposed project site. Considering the species' preference for watercourses and wetlands for foraging and resting, and the location of this observation in proximity to the Little Brosna River, some sensitivity to aquatic habitat degradation is recognised. However, records were limited in frequency and spatially confined to areas adjacent to the Little Brosna River, with no evidence of regular or sustained use of the wider development footprint. The potential construction phase impacts identified (i.e. localised and temporary habitat degradation arising from surface water quality changes, dust deposition, or the spread of invasive alien species) could persist beyond the construction phase but would be spatially limited. Given the species' mobility and the availability of similar habitats in the wider area, the magnitude of potential impact is assessed to be of <b>low concern</b>.</p>	<p>Sensitivity: Very High            Magnitude: Low            Significance: Moderate  <b>Long-term, Moderate negative effects</b></p>	<p><b>Yes</b> - This moderate determination has been considered as significant in EIA terms, given the extent and likelihood of this impact occurring. The project is likely to have a significant impact on Black-tailed Godwit that occur in the area.</p>
Buzzard	<p>Buzzard was frequently recorded hunting, circling, and commuting over the site, and was often observed perched on trees and fence posts within the wider study area. While there were no confirmed records of breeding within the site or its immediate surroundings, occasional observations of courtship behaviour suggest potential for local breeding activity. The potential construction-phase impacts identified relate to localised habitat degradation arising from surface water quality changes, dust deposition, or the spread of invasive alien species. Buzzard typically forages over agricultural land and rough grassland and does not rely directly on aquatic habitats or watercourses for hunting or breeding. Given the species' wide foraging range, behavioural adaptability, and the availability of extensive alternative habitat in the surrounding landscape, the magnitude of impact is assessed to be of <b>negligible concern</b>.</p>	<p>Sensitivity: Low            Magnitude: Low            Significance: Not Significant  <b>Long-term, Not Significant negative effect</b></p>	<p>No</p>



KOR (Sensitivity see Table 7-14)	Habitat Degradation (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
Cormorant	<p>This species is associated with aquatic habitats and is therefore often reliant on watercourses and wetlands, similar to those present on site. Cormorant was often recorded commuting along the Little Brosna River and was also observed foraging and resting along the river, in trees, and on flooded areas adjacent to the river.</p> <p>The potential construction phase impacts identified (i.e. localised and temporary habitat degradation arising from surface water quality changes, dust deposition, or the spread of invasive alien species) could persist beyond the construction phase but would be spatially limited. Given the species’ mobility and the availability of similar habitats in the wider area, the magnitude of potential impact is assessed to be of <b>low concern</b>.</p>	<p>Sensitivity: Very High            Magnitude: Low            Significance: Moderate  <b>Long-term, Moderate negative effects</b></p>	<p><b>Yes</b> - This moderate determination has been considered as significant in EIA terms, given the extent and likelihood of this impact occurring. The project is likely to have a significant impact on Cormorant that occur in the area.</p>
Golden Plover	<p>Golden Plover was observed mostly in flight, often in flocks. However, the species was also observed on the ground. The species is associated with wetlands and similar habitats, and suitable foraging habitat is widely available in the local area. Construction-phase impacts (e.g., habitat degradation from surface water changes, dust deposition, or invasive species) could persist beyond the construction phase but would be spatially limited. Given the species’ mobility and habitat availability, the magnitude of impact is assessed to be of <b>low concern</b>.</p>	<p>Sensitivity: Very High            Magnitude: Low            Significance: Moderate  <b>Long-term, Moderate negative effect</b></p>	<p><b>Yes</b> - This moderate determination has been considered as significant in EIA terms, given the extent and likelihood of this impact occurring. The project is likely to have a significant impact on Golden Plover that occur in the area.</p>
Grey Heron	<p>Grey Heron is associated with watercourses, and wetlands, relying on the aquatic habitats to hunt. The species was often seen commuting over the site, but was also seen foraging, mainly in the areas adjacent to the Litte Brosna River and on field drains. Construction-phase impacts (e.g., habitat degradation from surface water changes, dust deposition, or invasive species) could persist beyond the construction phase but would be spatially limited. Given the availability of comparable foraging habitat in the surrounding area, the magnitude of impact is assessed to be of <b>low concern</b>.</p>	<p>Sensitivity: Low            Magnitude: Low            Significance: Not Significant  <b>Long-term, Not Significant negative effect</b></p>	<p>No</p>



KOR (Sensitivity see Table 7-14)	Habitat Degradation (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
Hen Harrier	<p>Hen Harrier was recorded hunting on site, mainly over the bog habitats. Construction-phase impacts (e.g., habitat degradation from surface water changes, dust deposition, or invasive species) could persist beyond the construction phase but would be spatially limited. Given the availability of similar preferred habitats in the surrounding landscape, the magnitude of impact is assessed to be of <b>negligible concern</b>.</p>	<p>Sensitivity: Very High            Magnitude: Negligible            Significance: Slight  <b>Long-term, Slight negative effect</b></p>	No
Kestrel	<p>Kestrel was regularly recorded hunting or resting across all areas of the site. Additionally, the species was observed breeding at a location outside of the proposed project boundary.</p> <p>The potential construction-phase impacts identified relate to localised habitat degradation arising from surface water quality changes, dust deposition, or the spread of invasive alien species. Buzzard typically forages over agricultural land and rough grassland and does not rely directly on aquatic habitats or watercourses for hunting or breeding. Given the species' wide foraging range, behavioural adaptability, and the availability of extensive alternative habitat in the surrounding landscape, the magnitude of impact is assessed to be of <b>negligible concern</b>.</p>	<p>Sensitivity: Medium            Magnitude: Negligible            Significance: Imperceptible  <b>Long-term, Imperceptible negative effect</b></p>	No
Lapwing	<p>Lapwing was observed occasionally foraging and resting, mainly in the flooded areas adjacent to the Little Brosna River. The species is associated with wetlands and similar habitats, and suitable foraging habitat is widely available in the local area. Construction-phase impacts (e.g., habitat degradation from surface water changes, dust deposition, or invasive species) could persist beyond the construction phase but would be spatially limited. Given the species' mobility and habitat availability, the magnitude of habitat degradation on the species is assessed to be of <b>negligible concern</b>.</p>	<p>Sensitivity: Very High            Magnitude: Negligible            Significance: Slight  <b>Long-term, Slight negative effect</b></p>	No
Lesser Black-backed Gull	<p>Lesser Black-backed Gull was recorded throughout the survey period in flight, commuting over the site, and was occasionally observed foraging on agricultural lands within the site and the wider study area, often following recent farming activities such as slurry spreading. Construction-phase impacts (e.g., habitat degradation from surface water changes, dust deposition, or invasive species) could persist beyond the construction phase but would be spatially limited. Given the short-term duration of the construction phase, and the availability of</p>	<p>Sensitivity: Low            Magnitude: Negligible            Significance: Imperceptible  <b>Long-term, Imperceptible negative effect</b></p>	No



KOR (Sensitivity see Table 7-14)	Habitat Degradation (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
	similar habitats preferred by the species to forage and roost in the surrounding areas, the magnitude of impact is assessed to be of <b>negligible concern</b> .		
Little Egret	Little Egret was frequently recorded foraging within the site and the wider study area. These records were comprised of foraging groups ranging from one individual to 40 birds, mostly in winter on the flooded areas along the Little Brosna River and on agricultural lands. Construction-phase impacts (e.g., habitat degradation from surface water changes, dust deposition, or invasive species) could persist beyond the construction phase but would be spatially limited. Considering the species' reliance on wetlands to forage and rest, the large foraging groups, the short-term duration of the construction phase, the availability of the habitats preferred by the species in the surrounding areas, and the frequency of records, the magnitude of impact is assessed to be of <b>low concern</b> .	Sensitivity: Medium Magnitude: Low Significance: Slight <b>Long-term, Slight negative effect</b>	No
Mallard	Mallard was recorded throughout the survey period, mainly in flight, but several records indicated the use of the site for resting and foraging, primarily on the flooded areas along the Little Brosna River during the winter periods. Construction-phase impacts (e.g., habitat degradation from surface water changes, dust deposition, or invasive species) could persist beyond the construction phase but would be spatially limited. Considering the species reliance on watercourses and wetlands to forage and rest, the short-term duration of the construction phase, the availability of the habitats preferred by the species in the surrounding areas, and the frequency of records, the magnitude of impact is assessed to be of <b>low concern</b> .	Sensitivity: Low Magnitude: Low Significance: Not Significant <b>Long-term, Not Significant negative effect</b>	No
Merlin	Merlin was recorded occasionally using the site for hunting and resting. Additionally, one record from February 2026 of a pair engaging in courtship behaviour may indicate that breeding occurs within, or in close proximity to the site. While potential habitat degradation (e.g., habitat degradation from surface water changes, dust deposition, or invasive species) during construction may indirectly affect the species by limiting prey availability, it is not typically reliant on watercourses or wetlands for foraging or resting. Given the short-term duration of the construction phase, the number of observations of this species	Sensitivity: Medium Magnitude: Negligible Significance: Imperceptible <b>Long-term, Imperceptible negative effect</b>	No



KOR (Sensitivity see Table 7-14)	Habitat Degradation (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
	and the availability of similar foraging and resting habitat in the wider landscape, the magnitude of impact on this species is assessed to be of <b>negligible concern</b> .		
Mute Swan	Mute Swan was recorded occasionally over the survey period, mainly in flight, but several records indicated the use of the site for resting and foraging, primarily on the flooded areas along the Little Brosna River during the winter periods. Construction-phase impacts (e.g., habitat degradation from surface water changes, dust deposition, or invasive species) could persist beyond the construction phase but would be spatially limited. Considering the species reliance on watercourses and wetlands to forage and rest, the short-term duration of the construction phase, the availability of the habitats preferred by the species in the surrounding areas, and the frequency of records, the magnitude of impact is assessed to be of <b>low concern</b> .	Sensitivity: Low Magnitude: Low Significance: Not Significant <b>Long-term, Not Significant negative effect</b>	No
Peregrine Falcon	The species was recorded occasionally hunting prey species over flooded fields along the Little Brosna River and was occasionally observed on the ground. While potential habitat degradation impacts (e.g., habitat degradation from surface water changes, dust deposition, or invasive species) during construction may indirectly affect the species by limiting prey availability, it is not typically reliant on watercourses or wetlands for foraging or resting. Given the short-term duration of the construction phase and the availability of similar foraging and resting habitat in the wider landscape, the magnitude of impact on this species is assessed to be of <b>low concern</b> .	Sensitivity: Medium Magnitude: Low Significance: Slight <b>Long-term, Slight negative effect</b>	No
Pintail	Pintail was recorded on three occasions during the survey period from 2020 to 2024, including a large flock observed feeding for several hours on flooded fields adjacent to the Little Brosna River in March 2024. Construction-phase impacts (e.g., habitat degradation from surface water changes, dust deposition, or invasive species) could persist beyond the construction phase but would be spatially limited. Considering the species' preference for watercourses and wetlands for foraging and resting, and the location of this observation in	Sensitivity: Very High Magnitude: Low Significance: Moderate <b>Long-term, Moderate negative effects</b>	<b>Yes</b> - This moderate determination has been considered as significant in EIA terms, given the extent and likelihood of this impact



KOR (Sensitivity see Table 7-14)	Habitat Degradation (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
	<p>proximity to the Little Brosna River, some sensitivity to aquatic habitat degradation is recognised. However, given the infrequent nature of its occurrence at the site, its limited interaction with the main development footprint, and the short-term duration of the construction phase, the effects of potential habitat degradation on the species are assessed to be of <b>low concern</b>.</p>		<p>occurring. The project is likely to have a significant impact on Pintail that occur in the area.</p>
<p>Snipe</p>	<p>Snipe was observed occasionally foraging and resting, mainly in the flooded areas adjacent to the Little Brosna River, there was also evidence of breeding within the proposed project site boundary that was confined largely to the bog habitats. Construction-phase impacts (e.g., habitat degradation from surface water changes, dust deposition, or invasive species) could persist beyond the construction phase but would be spatially limited. Considering the species' preference for wetlands, the presence of large numbers of individuals within the study area, and the availability of similar habitat preferred by the species in the local area, the magnitude of habitat degradation on the species is assessed to be of <b>low concern</b>.</p>	<p>Sensitivity: Medium            Magnitude: Low            Significance: Slight  <b>Long-term, Slight negative effects</b></p>	<p>No</p>
<p>Sparrowhawk</p>	<p>The species was recorded hunting over the site in variety of habitats. Additionally, observations of courtship flights, and juvenile food begging indicates breeding within, or near the site. . While potential habitat degradation (e.g. from surface water changes, dust deposition, or invasive species) during construction may indirectly affect the species by limiting prey availability, it is not typically reliant on habitats that might be impacted by habitat degradation for foraging or resting. Given the short-term duration of the construction phase and the availability of similar foraging and resting habitat in the wider landscape, the magnitude of impact on this species is assessed to be of <b>negligible concern</b>.</p>	<p>Sensitivity: Low            Magnitude: Negligible            Significance: Imperceptible  <b>Long-term, Imperceptible negative effect</b></p>	<p>No</p>
<p>Teal</p>	<p>Teal was irregularly recorded during the survey period from 2020 to 2026, but large flocks were sometimes observed feeding for several hours on flooded fields adjacent to the Little Brosna River. While potential habitat degradation (e.g., from surface water changes, dust deposition, or invasive species) during the Construction Phase may indirectly affect the species by reducing foraging availability, considering the infrequent occurrence of the species at the site, its limited interaction with the main development footprint, and the short-term</p>	<p>Sensitivity: Very High            Magnitude: Low            Significance: Moderate  <b>Long-term, Moderate negative effects</b></p>	<p><b>Yes</b> - This moderate determination has been considered as significant in EIA terms, given the extent and likelihood of this impact</p>



KOR (Sensitivity see Table 7-14)	Habitat Degradation (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
	duration of the Construction Phase, the effects of potential habitat degradation on the species are assessed to be of <b>low concern</b> .		occurring. The project is likely to have a significant impact on Teal that occur in the area.
Whooper Swan	Whooper Swan was recorded occasionally over the survey period, mainly in flight, but several records indicated the use of the site for resting and foraging, primarily on the flooded areas along the Little Brosna River during the winter periods. While potential habitat degradation (e.g., from surface water changes, dust deposition, or invasive species) during the Construction Phase may indirectly affect the species by reducing foraging availability, considering the infrequent occurrence of the species at the site, its limited interaction with the main development footprint, and the short-term duration of the Construction Phase, the magnitude of impact is assessed to be of <b>low concern</b> .	Sensitivity: Very High Magnitude: Low Significance: Moderate <b>Long-term, Moderate negative effects</b>	<b>Yes</b> - This moderate determination has been considered as significant in EIA terms, given the extent and likelihood of this impact occurring. The project is likely to have a significant impact on Whooper Swan that occur in the area.
Wigeon	Wigeon was irregularly recorded during the survey period from 2020 to 2026, but large flocks were sometimes observed feeding for several hours on flooded fields adjacent to the Little Brosna River. While potential habitat degradation (e.g., from surface water changes, dust deposition, or invasive species) during the Construction Phase may indirectly affect the species by reducing foraging availability, however, given the infrequent nature of its occurrence at the site, its limited interaction with the main development footprint, and the short-term duration of the construction phase, the effects of potential habitat degradation on the species are assessed to be of <b>low concern</b> .	Sensitivity: Very High Magnitude: Low Significance: Moderate <b>Long-term, Moderate negative effects</b>	<b>Yes</b> - This moderate determination has been considered as significant in EIA terms, given the extent and likelihood of this impact occurring. The project is likely to have a significant impact on Wigeon that occur in the area.



KOR (Sensitivity see Table 7-14)	Habitat Degradation (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
Rarely recorded target species.	<p>All these target species were rarely recorded at the site, with only one or two observations over the entire survey period, either along the peripheries of the proposed project or flights over the survey area without interacting with the site. Given the low numbers of records, that some did not occur/are not dependent on potentially impacted habitats and the availability of the similar foraging and resting habitat preferred by these species in the area, the magnitude of impact is assessed to be <b>negligible</b></p>	<p>Sensitivity: Very High to Low            Magnitude: Negligible            Significance: Slight to imperceptible  <b>Long-term, Slight to imperceptible negative effect</b></p>	No
All other species of lower conservation concern	<p>These non-target species are determined to be less at risk from potential impacts associated with the proposed project, as they have a more favourable conservation status, were rarely recorded during surveys, and/or are not thought to be dependent on the area for breeding, resting or feeding. However, a few of these species are considered dependent on habitat which may potentially be impacted by habitat degradation (e.g. from surface water changes, dust deposition, or invasive species), namely, dipper, grey wagtail and moorhen. The remaining species were not typically found near watercourses or wetlands and are unlikely to rely on potentially impacted habitats. Given that the Construction Phase would be short-term, that the majority of these species are not dependent on potentially impacts habitats and that the availability of the habitats preferred by potentially impacted species occurs in the surrounding areas, the magnitude of the impact on these other species of lower conservation concern is assessed to be <b>low</b>.</p>	<p>Sensitivity: Medium to Very Low            Magnitude: Low            Significance: Slight to <b>Long-term, Slight to imperceptible negative effect</b></p>	No



### *7.6.3.3 Disturbance/Displacement*

Birds often respond to human presence or related activities, such as noise, vibration, or movement, by moving away, a behaviour known as disturbance or displacement. This can have negative effects on individuals or populations of bird species, including reduction in body condition due to lack of available feeding areas, increased energy expenditure by fleeing birds, or the reduction, or promotion of predation, of nests (Price 2008). Studies have investigated this disturbance and displacement impact and observed the magnitude of the effect has been found to vary with species, breeding status, and with the availability of alternative habitat nearby (Ruddock and Whitfield 2007, Goodship and Furness 2022). These studies have been conducted within various habitat types including upland, coastal and offshore wind farm sites. Although the results of such studies have been shown to vary, it remains clear that under particular circumstances some displacement can occur. Without appropriate mitigation measures in place, construction activities have the potential to result in likely significant negative effects.

Within the Proposed project, potential disturbance/displacement effects may occur during the Construction Phase. These effects would vary with species, habitat choice, breeding status, range and with the duration of the construction works. Potential disturbance/displacement effects would be felt for the duration of construction works only, i.e. within 18-24 months; therefore, potential disturbance/displacement effects are expected to be **short-term** in duration.

Table 7-17 assesses the potential effects of disturbance/displacement on the KOR species as a result of the Construction Phase of the Proposed project. The methodology of the assessment of the ornithological disturbance/displacement effects follows (Percival 2003) and (EPA 2022), as discussed in Section 7.3.



Table 7-17: Assessing the Potential Effects of Disturbance/Displacement During the Construction Phase on Key Ornithological Receptors as a Result of the Proposed project.

KOR (Sensitivity see Table 7-14)	Disturbance/Displacement (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
Barn Owl	<p>Barn Owls were not observed within the proposed project site during targeted surveys. However, evidence indicating that Barn Owl may be breeding in close proximity to the proposed project site was recorded in March 2026. Additionally, incidental records from the wider area suggest that Barn Owls are present in the broader landscape, likely using surrounding habitats such as rough grassland, hedgerows, and field margins for foraging, breeding, and possibly roosting.</p> <p>Disturbance/displacement associated with construction activities is not expected to result in likely significant effects for this species in the short-term, at any geographic scale. Based on the ecology of this species, which is primarily nocturnal and that low numbers of this species are within habitats surrounding the Proposed project and given the short-term duration of the construction works, and the availability of similar suitable habitats in the wider surroundings, the magnitude of the impact is assessed to be <b>low</b>.</p>	<p>Sensitivity: Medium                      Magnitude: Low                      Significance: Slight  <b>Short-term, Slight negative effects</b></p>	No
Black-headed Gull	<p>Black-headed Gull was recorded during all survey seasons, primarily observed in flight, with occasional instances of feeding on flooded fields adjacent to the Little Brosna River. The species was not recorded interacting with the majority of the site and typically favoured watercourses or wetlands for foraging and resting. During the construction phase, disturbance from noise, increased machinery traffic, and human activity may cause temporary displacement or reduced use of the immediate site by the species. However, considering the species' flight behaviour, habitat preferences, and the short-term duration of the construction phase, along with the availability of suitable alternative habitats nearby, the magnitude of potential disturbance and displacement impact is assessed to be <b>low</b>.</p>	<p>Sensitivity: Very High                      Magnitude: Low                      Significance: Moderate  <b>Short-term, Moderate negative effects</b></p>	<p>No – This moderate effect has been assessed as not significant in EIA terms, as the extent and likelihood of the impact occurring would not give rise to a potentially significant effect on Black-headed Gull in the area. Although the species was regularly observed, there was limited interactions with proposed project infrastructure, and any potential disturbance would be restricted to the short duration of construction works. On this basis, significant effects are not anticipated.</p>



KOR (Sensitivity see Table 7-14)	Disturbance/Displacement (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
Black-Tailed Godwit	<p>The species was observed on six occasions, particularly within wetlands and flooded areas adjacent to the Little Brosna River, where birds were primarily observed foraging. In February 2026, a flock of 1750 individuals were recorded flying over the flooded area of the River Little Brosna and within the proposed project site. During the construction phase, disturbance from noise, increased machinery traffic, and human activity may result in temporary displacement or reduced use of the immediate area by the species. According to Goodship and Furness (2022), Black-tailed Godwit is considered to have a medium sensitivity to disturbance and has shown responses to human activity at distances of up to 100–200 metres. However, given the infrequent nature of its occurrence, limited interaction with the main development footprint, and the short-term duration of the construction phase, the potential effects of potential disturbance and displacement on the species are assessed to be <b>low</b>.</p>	<p>Sensitivity: Very High            Magnitude: Low            Significance: Moderate  <b>Short-term, Moderate negative effects</b></p>	<p>No – This moderate effect has been assessed as not significant in EIA terms, as the extent and likelihood of the impact occurring would not give rise to a potentially significant effect on Black-tailed Godwit in the area. Although the species is noted to have medium sensitivity to disturbance, only a limited number of observations were made across eight survey seasons and none of these observations occurred near proposed infrastructure areas (the nearest record being over 500m from T4). Additionally, any potential disturbance would be restricted to the short duration of construction works. On this basis, significant effects are not anticipated.</p>
Buzzard	<p>Buzzard was frequently recorded hunting, circling, and commuting over the site, and was often observed perched on trees and fence posts within the wider study area. While there were no confirmed records of breeding within the site or its immediate surroundings, occasional observations of courtship behaviour suggest potential for local breeding activity. The species’ use of the site appears primarily linked to foraging and commuting, with surrounding habitats offering suitable alternative opportunities. Given its relatively common and widespread status, adaptability to disturbed habitats, and the availability of similar habitat in the wider area, the magnitude of impact from habitat degradation during the short-term construction phase is assessed to be of <b>low concern</b>.</p>	<p>Sensitivity: Low            Magnitude: Low            Significance: Not Significant  <b>Short-term, Not Significant negative effect</b></p>	<p>No</p>



KOR (Sensitivity see Table 7-14)	Disturbance/Displacement (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
Cormorant	<p>Cormorant was frequently recorded commuting over the site, with occasional observations of small groups roosting along the riverbanks of the Little Brosna River or perched in nearby trees. There were no records of the species breeding or actively foraging within the site. Given the species' limited interaction with the site, its general tolerance of human activity, and the short-term nature of construction works, the magnitude of potential habitat degradation is assessed to be of <b>low concern</b>.</p>	<p>Sensitivity: Very High            Magnitude: Low            Significance: Moderate  <b>Short-term, Moderate negative effects</b></p>	<p>No – This moderate effect has been assessed as not significant in EIA terms, as the extent and likelihood of the impact occurring would not give rise to a potentially significant effect on Cormorant in the area. Based on the limited interactions with proposed project infrastructure and that any potential disturbance would be restricted to the short duration of construction works. On this basis, significant effects are not anticipated.</p>
Golden Plover	<p>Golden Plover was regularly recorded within the study area, with flock sizes ranging from single individuals to up to 700 birds. The species was most frequently observed in flight over the site, though it was also occasionally recorded foraging on the ground. All records were from the winter and late summer (September) periods, with no evidence of breeding behaviour within the site.</p> <p>Golden Plover is known to be sensitive to disturbance, particularly during the winter months when large flocks may be displaced by human activity, noise, or increased vehicular presence. According to Goodship and Furness (2022), the species demonstrates high levels of responsiveness to disturbance, with flight initiation distances ranging between 200–500 m.</p> <p>Given the frequent use of the site by foraging and commuting flocks, the potential for temporary displacement during construction is considered notable. However, the availability of similar habitats in the wider landscape, and the short-term duration of the construction phase, means that the magnitude of disturbance and displacement impacts is assessed to be of <b>medium concern</b>.</p>	<p>Sensitivity: Very High            Magnitude: Medium            Significance: <b>Short-term, Significant negative effect</b></p>	<p><b>Yes</b></p>



KOR (Sensitivity see Table 7-14)	Disturbance/Displacement (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
Grey Heron	<p>Grey Heron was regularly recorded within the study area, typically observed commuting along the Little Brosna River and through the central and southern sections of the site. Occasional foraging activity was noted on-site, particularly along field drains and wetlands. There were no records of Grey Heron breeding within the site or surrounding areas. As a species associated with watercourses and wetlands, Grey Heron relies on undisturbed aquatic habitats for effective foraging. While it can exhibit some tolerance to human activity, it may be sensitive to direct disturbance or habitat degradation, particularly where construction activities affect wetland or riparian features. Given the short-term duration of the construction phase, the infrequent on-site foraging records, and the availability of similar habitat in the wider area, the magnitude of potential disturbance and displacement impacts is assessed to be of <b>low concern</b>.</p>	<p>Sensitivity: Low            Magnitude: Low            Significance: Not Significant  <b>Short-term, Not Significant negative effect</b></p>	No
Hen Harrier	<p>Hen Harrier was irregularly recorded over the survey period, predominantly during the winter season. There was no evidence of breeding activity or winter roosts within the site or the wider study area. The site does, however, provide some suitable hunting habitat, and the species was occasionally observed foraging over bog habitats and rough grasslands. Given the species' sensitivity to disturbance and its reliance on open habitats for foraging, there is some potential for displacement during the construction phase, particularly if works are close to suitable hunting grounds. However, due to the low frequency of observations, absence of breeding or roosting activity,</p>	<p>Sensitivity: Very High            Magnitude: Low            Significance: Moderate  <b>Short-term, Moderate negative effects</b></p>	<p>No – This moderate effect has been assessed as not significant in EIA terms, as the extent and likelihood of the impact occurring would not give rise to a potentially significant effect on Hen Harrier in the area. Although the species is sensitive to disturbance, only a small number of observations were made across eight survey seasons, interactions with</p>



KOR (Sensitivity see Table 7-14)	Disturbance/Displacement (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
	and the availability of similar habitat in the wider landscape, the magnitude of potential disturbance and habitat degradation impacts is assessed to be of <b>low concern</b> .		proposed project infrastructure were limited, and any potential disturbance would be confined to the short construction phase. On this basis, significant effects are not anticipated.
Kestrel	Kestrel was regularly recorded throughout the study area across all seasons. Observations typically involved single individuals, although pairs and family groups were occasionally noted, particularly during the breeding season. A confirmed breeding site was recorded approximately 1.5 km outside of the proposed project boundary, and the species was frequently seen foraging across a range of habitats, particularly along field edges and marginal areas. While Kestrels are known to be relatively tolerant of low-level human activity (Goodship and Furness, 2022), repeated disturbance during the construction phase, particularly from machinery, could result in temporary displacement from favoured foraging areas. However, given the species' widespread distribution, adaptability to disturbed environments, and the availability of similar habitat in the surrounding landscape, the magnitude of potential disturbance impacts is assessed as <b>low concern</b> .	Sensitivity: Medium Magnitude: Low Significance: Slight <b>Short-term, Slight negative effects</b>	No
Lapwing	Lapwing was occasionally recorded within the study area, with the majority of observations occurring during the winter season. Flocks ranged from one individual to 200 birds, seen mostly in flight but also recorded on the ground in the flooded areas adjacent to the Little Brosna River, where birds were seen resting and foraging. There were no records of the species breeding at the site. Given the species' preference for wet, open habitats and its tendency to form large winter flocks, temporary disturbance during construction could result in localised displacement from favoured areas. However, due to the availability of suitable alternative habitat in the wider area and the	Sensitivity: Very High Magnitude: Low Significance: Moderate <b>Short-term, Moderate negative effects</b>	<b>Yes</b> - This moderate determination has been considered as significant in EIA terms, given the extent and likelihood of this impact occurring. The project is likely to have a significant impact on Lapwing that occur in the area.



KOR (Sensitivity see Table 7-14)	Disturbance/Displacement (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
	species' transient use of the site, the magnitude of potential disturbance impacts is assessed as <b>low concern</b> .		
Lesser Black-backed Gull	Lesser Black-backed Gull was recorded throughout the survey period in flight, commuting over the site, and was occasionally observed foraging on agricultural lands along the peripherals of the proposed project site and the wider study area, often following recent farming activities such as slurry spreading. There were no records of the species breeding at the site. Given the species' mobility, generalist foraging behaviour, and widespread availability of comparable habitat in the local area, the magnitude of potential disturbance impacts is assessed to be of <b>low concern</b> .	Sensitivity: Low Magnitude: Low Significance: Not Significant <b>Short-term, Not Significant negative effect</b>	No
Little Egret	Little Egret was regularly recorded foraging and resting along the peripherals of the proposed project site and the wider study area. These records were comprised of foraging groups ranging from one individual to 40 birds, mostly in winter on the flooded areas along the Little Brosna River and on agricultural lands to the north-eastern edge of the proposed project site. Given the moderate presence of a similar suitable habitat preferred by the species in the surrounding areas, and number of records observed, largely comprising of low numbers of birds (although a flock of national importance was observed in March 2024, and in March 2026), the magnitude of impact is assessed to be <b>low concern</b> .	Sensitivity: Medium Magnitude: Low Significance: Slight <b>Short-term, Slight negative effects</b>	No



KOR (Sensitivity see Table 7-14)	Disturbance/Displacement (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
Mallard	Mallard was recorded throughout the survey period, predominantly during the winter season. While many observations involved birds in flight, several records indicated the use of flooded areas along the Little Brosna River for resting and foraging. There were no records of breeding within the site or wider study area. Given the species' regular use of wetland areas, but limited interaction with the main development footprint and the availability of similar habitat in the local area, potential disturbance and displacement effects during the construction phase are assessed to be of <b>low concern</b> .	Sensitivity: Low Magnitude: Low Significance: Not Significant <b>Short-term, Not Significant negative effect</b>	No
Merlin	Merlin was recorded occasionally using the site for hunting and resting, primarily during the winter season. A single record of a pair engaging in courtship behaviour indicates that breeding may be taking place within the site or the surrounding areas. Considering that the site may provide suitable hunting habitat, particularly in open bog and grassland areas, the species' use of the site appears to be limited and sporadic. Given the lack of confirmed breeding activity, the availability of similar hunting habitat in the wider area, and the transient nature of its use of the site, potential disturbance and displacement effects during the construction phase are assessed to be of <b>low concern</b> .	Sensitivity: Medium Magnitude: Low Significance: Slight <b>Short-term, Slight negative effects</b>	No
Mute Swan	Mute Swan was occasionally observed over the survey period, with records concentrated almost entirely along the Little Brosna River, where birds were frequently seen on the ground and on water, feeding and resting across all seasons. There was no evidence of breeding within the site or the surrounding area. Given the number of records, the behaviour observed, and the species' association with aquatic habitats, some sensitivity to disturbance is expected. However, considering the limited spatial overlap with the main development footprint and the availability of similar suitable habitat in the surrounding landscape, potential disturbance and displacement impacts during construction are assessed to be of <b>low concern</b> .	Sensitivity: Low Magnitude: Low Significance: Not Significant <b>Short-term, Not Significant negative effect</b>	No



KOR (Sensitivity see Table 7-14)	Disturbance/Displacement (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
Peregrine Falcon	Peregrine was occasionally observed within the site and wider study area across all seasons during the survey period. Observations included individuals hunting over flooded areas, bog habitats, and agricultural fields. While there were no confirmed records of breeding within the site or surrounding area, the occasional presence of pairs and juveniles suggests possible breeding activity nearby. Given the species' wide-ranging hunting behaviour, low dependence on specific habitat features within the site, and the availability of similar foraging habitats in the wider area, potential disturbance and displacement impacts are assessed to be of <b>low concern</b> .	Sensitivity: Medium Magnitude: Low Significance: Slight <b>Short-term, Slight negative effects</b>	No
Pintail	Pintail was rarely recorded during the survey period, with only three observations made across all seasons. All records were confined to the flooded agricultural fields adjacent to the Little Brosna River, with one notable sighting in March 2024 involving a flock of approximately 200 individuals, exceeding the threshold for national importance (20 individuals). However, this large flock was only observed on a single occasion, with no subsequent records at similar scale. Given the very limited number of records, the restricted use of habitat outside the main development footprint, and the short-term nature of construction activity, potential disturbance and displacement impacts on this species are assessed to be of <b>low concern</b> .	Sensitivity: Very High Magnitude: Low Significance: Moderate <b>Short-term, Moderate negative effects</b>	<b>Yes</b> - This moderate determination has been considered as significant in EIA terms, given the extent and likelihood of this impact occurring. The project is likely to have a significant impact on Pintail that occur in the area.
Snipe	Snipe was occasionally recorded within the site and the wider study area, with the majority of records occurring during the winter season. However, breeding behaviour, including territorial display and courtship (drumming), was also observed during the breeding season, suggesting possible breeding activity. The species was frequently seen foraging along the Little Brosna River and within bog habitats, sometimes in flocks of up to 40 individuals. Given the species' potential local breeding activity and its regular use of the site for foraging, potential disturbance and displacement impacts are assessed to be of <b>medium concern</b> .	Sensitivity: Medium Magnitude: Medium Significance: Moderate <b>Short-term, Moderate negative effects</b>	<b>Yes</b> - This moderate determination has been considered as significant in EIA terms, given the extent and likelihood of this impact occurring. The project is likely to have a significant impact on Snipe that occur in the area.



KOR (Sensitivity see Table 7-14)	Disturbance/Displacement (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
Sparrowhawk	<p>Sparrowhawk was regularly recorded across all seasons during the study period, using the site and wider area for hunting. The species is considered to have a probable breeding status within the study area, with evidence of breeding observed in 2021, 2022, 2023, and 2025. These records included displaying pairs early in the breeding season and juveniles heard food-begging later in the season. Given its regular presence and likely breeding within the study area, the potential for disturbance and displacement impacts is assessed to be of <b>medium concern</b>.</p>	<p>Sensitivity: Low Magnitude: Medium Significance: Slight <b>Short-term, Slight negative effects</b></p>	<p>No</p>
Teal	<p>Teal was irregularly recorded within the study area, with the majority of observations occurring during the winter season. Flocks ranging from 20 to 300 individuals, were recorded in the flooded areas adjacent to the Little Brosna River, where birds were seen resting and foraging. There were no records of the species breeding at the site. Given the species' preference for wet, open habitats and its tendency to form large winter flocks, temporary disturbance during construction could result in localised displacement from favoured areas. However, due to the limited number of records, the restricted use of habitat outside the main development footprint, and the short-term nature of construction activity, potential disturbance and displacement impacts on this species are assessed to be of <b>low concern</b>.</p>	<p>Sensitivity: Very High Magnitude: Low Significance: Moderate <b>Short-term, Moderate negative effects</b></p>	<p><b>Yes</b> - This moderate determination has been considered as significant in EIA terms, given the extent and likelihood of this impact occurring. The project is likely to have a significant impact on Teal that occur in the area.</p>
Whooper Swan	<p>Whooper Swan was occasionally recorded within the study area and was entirely confined to the Little Brosna River and adjacent flooded agricultural fields, where species were regularly recorded foraging and resting in flocks reaching up to 55 individuals. Given the restricted use of habitat outside the main development footprint, the availability of the similar foraging and resting habitat preferred by the species in the surrounding area and the short-term nature of construction activity, potential disturbance and displacement impacts on this species are assessed to be of <b>low concern</b>.</p>	<p>Sensitivity: Very High Magnitude: Low Significance: Moderate <b>Short-term, Moderate negative effects</b></p>	<p><b>Yes</b> - This moderate determination has been considered as significant in EIA terms, given the extent and likelihood of this impact occurring. The project is likely to have a significant impact on Whooper Swan that occur in the area.</p>



KOR (Sensitivity see Table 7-14)	Disturbance/Displacement (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
Wigeon	<p>Wigeon irregularly recorded within the study area, with the majority of observations occurring during the winter season. Flocks ranging from four to 125 birds were recorded along the Little Brosna River and adjacent flooded agricultural fields in the flooded areas, where birds were seen resting and foraging. There were no records of the species breeding at the site.</p> <p>Given the species' preference for wet, open habitats and its tendency to form large winter flocks, temporary disturbance during construction could result in localised displacement from favoured areas. However, due to the limited number of records, the restricted use of habitat outside the main development footprint, and the short-term nature of construction activity, potential disturbance and displacement impacts on this species are assessed to be of <b>low concern</b>.</p>	<p>Sensitivity: Very High            Magnitude: Low            Significance: Moderate  <b>Short-term, Moderate negative effects</b></p>	<p><b>Yes</b> - This moderate determination has been considered as significant in EIA terms, given the extent and likelihood of this impact occurring. The project is likely to have a significant impact on Wigeon that occur in the area.</p>
Rarely recorded target species.	<p>All these target species were rarely recorded at the site, with only one or two observations over the entire survey period, either along the peripheries of the proposed project or flights over the survey area without interacting with the site.</p> <p>Given the low numbers of records, that some did not occur/are not dependent on potentially impacted habitats and the availability of the similar foraging and resting habitat preferred by these species in the area, the magnitude of impact is assessed to be <b>negligible</b></p>	<p>Sensitivity: Very High to Low            Magnitude: Negligible            Significance: Slight to imperceptible  <b>Short Term, Slight to imperceptible negative effect</b></p>	<p>No</p>
All other species of lower conservation concern	<p>These non-target species are determined to be less at risk from potential impacts associated with the proposed project, as they have a more favourable conservation status, were rarely recorded during surveys, and/or are not thought to be dependent on the area for breeding, resting or feeding.</p> <p>Some of these non-target species (such as passerines) rely on hedgerows, scrub, and agricultural fields within and around the proposed project for breeding, foraging or resting. Construction</p>	<p>Sensitivity: Medium to Very Low            Magnitude: Low            Significance: Slight to imperceptible  <b>Short Term, Slight to imperceptible negative effect</b></p>	<p>No</p>



KOR (Sensitivity see Table 7-14)	Disturbance/Displacement (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
	<p>related disturbance would reduce the availability of suitable habitat for these species. However, Hötker <i>et al.</i> (2006) found that disturbance and displacement effects depend on the availability of similar suitable habitats in the surrounding landscape. Since the majority of the habitat affected by the proposed project is also present in the wider area, significant effects on these species are unlikely.</p> <p>Species such as house martin, house sparrow, starling, swift, and swallow are also unlikely to be significantly affected, as their nesting ecology primarily involves buildings or other man-made structures, none of which will be removed or disturbed during construction or within the immediate vicinity of the works.</p> <p>Given that the construction phase would be short-term, that suitable habitat outside the proposed project area would remain undisturbed and that some species were not recorded interacting with the site, the overall magnitude of impact on these species of low conservation significance is assessed to be <b>low</b>.</p>		



## 7.6.4 Operational Phase Impacts

### 7.6.4.1 Disturbance/Displacement and Barrier Effect

The presence of turbines in the landscape could potentially deter birds from using the area and its surroundings, resulting in a disturbance displacement effect. Disturbance can result in a significant impact if it reduces the availability of resources for KOR.

The availability of alternative feeding habitat influences the sensitivity of birds to disturbance. When resources are limited, birds are generally more vulnerable to disturbance impacts (Percival, 2005; Powlesland, 2009). If disturbance displacement is impacting an avian receptor, then the significance of the impact is a product of the scale of the deterrence, as opposed to the ability of the wider surroundings to support displaced individuals (Langston & Pullan, 2003).

An additional possible disturbance effect is the disruption to flight lines, which may result in a wind farm acting as a partial barrier to bird movements. Such a disturbance effect could be felt as, either a barrier to a migration route, or between a roost and feeding site. The ecological impact could prove significant if the increased energy expenditure involved in avoiding the barrier depleted the body fat reserves of an already stressed population. Following the completion of construction of the proposed infrastructure is considered to last the lifetime of the wind farm (30 years). This impact is therefore considered **Long Term**.

It should be noted that the effect of disturbance/displacement is expected to decrease over time, as the local avian communities will adjust to the presence of turbines and habituation occurs to the disturbance. In addition, Percival (2001) recommends locating turbines at a minimum of 200m apart to facilitate the free movement of birds and thereby avoid a barrier effect. In the case of the proposed project, all turbines are proposed to be located at distances greater than 450m from their nearest neighbour. Table 7-18 below assesses the potential impact of disturbance displacement on avian communities during the operational phase of the development. The methodology of the assessment of operational disturbance/displacement and barrier effects follows Percival (2003) and EPA (2022) (refer to section 7.3).



Table 7-18: Assessing the Potential Effects of Disturbance/Displacement and Barrier Effects During the Operational Phase on Key Ornithological Receptors as a Result of the Proposed project.

KOR (Sensitivity see Table 7-14)	Disturbance/Displacement and Barrier Effect (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
<p>Barn Owl</p>	<p>Although no Barn Owls were recorded during the survey period, and no breeding sites were observed within the boundary of the proposed project, consultation and incidental data confirm the presence of breeding Barn Owls in the surrounding area. A confirmed nest site is located approximately 600 m from the nearest proposed turbine, and a potential nest site lies within 160 m of another turbine.</p> <p>Barn Owls are considered moderately sensitive to wind energy developments, however long-term monitoring in the UK reports successful breeding within proximity to turbines and minimal recorded mortality (Barn Owl Trust, 2015). The species may be susceptible to disturbance during operation phases, especially in areas of high breeding density, as is the case locally. While Barn Owls can adapt to human activity to some extent, their reliance on open foraging habitat and consistent nesting sites makes them vulnerable to changes in land use or disturbance (McGuinness <i>et al.</i>, 2015).</p> <p>Given the presence of confirmed and potential nest sites within proximity to proposed turbines, the locally high density of the species, and their ecological sensitivity, the potential for disturbance displacement effects and indirect barrier impacts is assessed as being <b>medium</b>.</p>	<p>Sensitivity: Medium            Magnitude: Medium            Significance: Moderate  <b>Long-term, Moderate negative effects</b></p>	<p>No – This moderate effect has been assessed as not significant in EIA terms. Although Barn Owl is sensitive to landscape change, no individuals or breeding activity were recorded within the site, although confirmed activity was recorded in the wider area of proposed project site. Evidence from UK monitoring (Barn Owl Trust, 2015) shows the species can breed successfully near turbines with minimal mortality, and it demonstrates some adaptability to human activity. On this basis, significant effects are not anticipated.</p>
<p>Black-headed Gull</p>	<p>Black-headed Gulls were recorded during all survey seasons, primarily in flight over or adjacent to the Little Brosna River, with occasional foraging observed on seasonally flooded fields. The species was not recorded engaging with the majority of the development site and showed a clear preference for watercourses and wetland habitats for foraging and loafing. No breeding activity was recorded within the site or its immediate surroundings.</p>	<p>Sensitivity: Very High            Magnitude: Low            Significance: Moderate  <b>Long-term, Moderate negative effects</b></p>	<p>No – This moderate effect has been assessed as not significant in EIA terms, as the extent and likelihood of the impact occurring would not give rise to a potentially significant effect on Black-headed Gull in the area.</p>



KOR (Sensitivity see Table 7-14)	Disturbance/Displacement and Barrier Effect (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
	<p>While Black-headed Gull is relatively common and widespread, the species is considered to have a moderate sensitivity to wind energy developments, primarily due to collision risk associated with commuting and foraging flights (McGuinness et al., 2015). However, in this case, the limited overlap between typical flight paths and the proposed turbine locations reduce the likelihood of interaction. Additionally, extensive suitable foraging habitat remains available outside the footprint of the development.</p> <p>Given the absence of breeding activity, the limited recorded use of the site outside of peripheral wetland areas, and the species' behavioural flexibility, the magnitude of potential displacement or barrier effects is considered <b>low</b>.</p>		<p>Although the species was regularly observed, interactions with the proposed development site were limited, occurring largely in peripheral wetland areas, and based on the species behavioural flexibility, significant effects are not anticipated.</p>
<p>Black-Tailed Godwit</p>	<p>Black-tailed Godwits were recorded on six occasions over the survey period, including a flock of 1750 individuals was recorded flying over the flooded area of the River Little Brosna. . No breeding activity was recorded, and birds were not observed interacting with the core area of the proposed project site. Their use of the site was limited to peripheral wetland habitats associated with the Little Brosna River corridor.</p> <p>Given the species' limited use of the site, the absence of breeding activity, and the peripheral nature of foraging records, but recognising their sensitivity to disturbance and the proximity of high-value feeding areas, the magnitude associated with displacement or barrier impacts is classified as <b>low</b>.</p>	<p>Sensitivity: Very High            Magnitude: Low            Significance: Moderate  <b>Long-term, Moderate effects</b></p>	<p>No – This moderate effect has been assessed as not significant in EIA terms, as the extent and likelihood of the impact occurring would not give rise to a potentially significant effect on Black-tailed Godwit in the area. Although the species was recorded on two occasions, including a flock foraging on flooded fields along the Little Brosna River, no breeding activity was observed and interactions with the proposed development site were limited to peripheral wetland habitats. While the species is sensitive to disturbance, the absence of activity within the site footprint and the peripheral nature of records mean</p>



KOR (Sensitivity see Table 7-14)	Disturbance/Displacement and Barrier Effect (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
			significant effects are not anticipated.
Buzzard	<p>Buzzard was regularly and widely recorded within the study area throughout the baseline surveys, with observations made in all seasons, indicating year-round use of the site. A total of 938 observations were made, involving 1,150 individual birds. The majority of sightings involved single birds, although groups of up to four individuals were occasionally observed. Their use of the site included commuting, hunting, and on occasion foraging and resting. There were no breeding records within the site, but the species is likely to be breeding in the wider area.</p> <p>Buzzard is reported to reduce flight activity in close proximity to wind farms (Pearce-Higgins et al, 2009). The high frequency of records during the study period, mainly for the purpose of hunting and foraging, points to relative importance of the site for the species. However, recognising the extensive availability of the habitat preferred by the species, and the widespread distribution of Buzzard in the county and Ireland, and the absence of breeding records, the magnitude for displacement, or barrier effect is considered <b>medium</b>.</p>	<p>Sensitivity: Low            Magnitude: Medium            Significance: Slight  <b>Long-term, Slight negative effects</b></p>	No
Cormorant	<p>Cormorant was regularly recorded within the study area throughout the survey period. Sightings were distributed across all seasons. The species was typically recorded in low number or single records. However, the largest count consisted of 40 individuals observed at a communal roost site within the study area. There was no evidence of cormorant breeding within the study area. The species was typically recorded in flight, foraging in the Little Brosna</p>	<p>Sensitivity: Very High            Magnitude: Low            Significance: Moderate  <b>Long-term, Moderate negative effects</b></p>	No – This moderate effect has been assessed as not significant in EIA terms, as the extent and likelihood of the impact occurring would not give rise to a potentially significant effect on



KOR (Sensitivity see Table 7-14)	Disturbance/Displacement and Barrier Effect (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
	<p>River, commuting over watercourses, or roosting in groups along the river and surrounding habitats.</p> <p>Cormorant is known to have moderate sensitivity to wind farm developments, primarily due to commuting and foraging flights (Langton, 2010; Humphreys et al, 2015). However, the study of the flightlines recorded during the survey period point to a pattern of commuting flights along the Little Brosna River, which rarely overlap with the areas of the proposed turbines. Given the high frequency of records, but relative low interaction with the proposed wind farm site, and the availability of suitable habitats preferred by the species in the wider area, the potential for significant displacement or barrier effects is considered low. The overall magnitude of effect is therefore assessed as <b>low</b>.</p>		<p>Cormorant in the area. Although the species was regularly recorded, including large flocks roosting along the Little Brosna River, no breeding activity was observed, and use of the core development footprint was limited. While Cormorant are considered sensitive to wind farm developments, most observations were confined to peripheral habitats, and no regular flight paths through the site were identified. On this basis, significant effects are not anticipated.</p>
Golden Plover	<p>Golden Plover was regularly recorded within the study area during the baseline surveys. Flock sizes ranged from four to 700 individuals, with the largest counts occurring in flooded fields to the north of the site near the Little Brosna River. The species was also recorded in other wetland habitats throughout the wider study area. The majority of records occurred during the winter season or in the late breeding season (September), which is consistent with the species' known wintering and migratory behaviour in Ireland. There was no breeding activity recorded over the survey period. Golden Plover was primarily observed foraging, resting, or flying between feeding areas within and around the site.</p> <p>Golden Plover are believed to be sensitive to wind farm developments, with some studies suggesting high avoidance of wind turbines (Pearce-Higgins et al., 2009). However, a review of more recent literature indicates that the operational disturbance and</p>	<p>Sensitivity: Very High            Magnitude: Low            Significance: Moderate  <b>Long-term, Moderate negative effects</b></p>	<p>No – This moderate effect has been assessed as not significant in EIA terms, as the extent and likelihood of the impact occurring would not give rise to a potentially significant effect on Golden Plover in the area. Although the species was regularly recorded, including large flocks foraging and roosting in flooded fields near the Little Brosna River, no breeding activity was observed and use of the core development footprint was limited. While Golden Plover are considered</p>



KOR (Sensitivity see Table 7-14)	Disturbance/Displacement and Barrier Effect (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
	<p>displacement effects from wind turbines on this species may be less significant than previously thought (Fielding et al., 2015). Another study by Hötker <i>et al.</i>, (2006) observed Golden Plover to approach within 175m of operating turbines during the non-breeding season. Given the varying numbers of this species recorded onsite, that the majority of observations being of flocks foraging/roosting on flooded agricultural fields to the northeast of the site, along the Little Brosna River, and away from the main infrastructure of the proposed project site, and that no regular flight paths have emerged from survey work, the magnitude of the disturbance displacement and barrier effect are judged to be <b>low</b>.</p>		<p>sensitive to wind farm developments, most observations were confined to peripheral habitats, and no regular flight paths through the site were identified. On this basis, significant effects are not anticipated.</p>
<p>Grey Heron</p>	<p>Grey Heron was regularly recorded within the study area throughout both the breeding and winter seasons. The majority of records involved single birds, although groups of up to five individuals were recorded on occasion. The species was frequently observed commuting along the Little Brosna River and flying over the southern and central sections of the site. Grey Heron was also occasionally recorded foraging within field drains and wetland areas within the site. There were no records of breeding Grey Heron at the site and wider study area.</p> <p>According to Hötker <i>et al.</i>(2006) the birds of the open habitats such as Grey Heron would typically avoid wind farm developments. However, Grey Heron appeared to be an exception, and the species often appears in close proximity to wind turbines. Considering that most of the records during the study period were concentrated along the Little Brosna River and the adjacent wetlands, with minimal overlap with the proposed wind turbine locations, the magnitude of displacement, or barrier effect is considered to be <b>low</b>.</p>	<p>Sensitivity: Low            Magnitude: Low            Significance: Not significant  <b>Long-term, Not significant negative effects</b></p>	<p>No</p>



KOR (Sensitivity see Table 7-14)	Disturbance/Displacement and Barrier Effect (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
Hen Harrier	<p>Hen Harrier was irregularly recorded over the survey period, predominantly in the winter season, with the exception of a small number of records in July 2023. A total of 18 observations were made over the survey period, each involving a single bird, typically a female or a ringtail (juvenile), but males were also observed. Observations were typically of birds hunting or commuting over bog habitat and rough grassland within the study area. No evidence of breeding or winter roost sites were identified within the site or wider study area.</p> <p>Hen Harrier is reported to reduce flight activity in close proximity to wind farms (Pearce-Higgins et al, 2009). However, given the low number of records during the study period, mainly hunting individuals, with no identified roost locations, and the availability of similar habitats preferred by the species in the wider area, it is unlikely that Hen Harrier is highly dependent on the site. Therefore, the magnitude of displacement, or barrier effect is considered <b>Low</b></p>	<p>Sensitivity: Very High            Magnitude: Low            Significance: Moderate  <b>Long-term, Moderate negative effects</b></p>	<p>No – This moderate effect has been assessed as not significant in EIA terms, as the extent and likelihood of the impact occurring would not give rise to a potentially significant effect on Hen Harrier in the area. The species was irregularly recorded, with only 15 observations across the full survey period, mostly of single hunting individuals, and no evidence of breeding or roost sites was found. Although Hen Harrier is considered sensitive to wind farms, similar suitable habitats are widely available in the surrounding landscape and the species is not reliant on the development site. On this basis, significant effects are not anticipated.</p>
Kestrel	<p>Kestrel was regularly recorded throughout the study area across all seasons. Observations typically involved single individuals, although pairs and family groups were occasionally noted, particularly during the breeding season. A confirmed breeding site was recorded approximately 1.5 km outside of the proposed project site, and the species was frequently seen foraging across a range of habitats, particularly along field edges and marginal areas.</p> <p>There is limited potential for disturbance displacement effects associated with avoidance of operating turbines at the proposed project site. Kestrels demonstrate low displacement associated with</p>	<p>Sensitivity: Medium            Magnitude: Low            Significance: Slight  <b>Long-term , Slight negative effects</b></p>	<p>No</p>



KOR (Sensitivity see Table 7-14)	Disturbance/Displacement and Barrier Effect (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
	<p>operating wind farms (Madders <i>et al</i>, 2006). No nest sites were confirmed onsite or within a 500m radius of the proposed project boundary and the widespread distribution of this species limits the potential for ecologically significant effects, the nearest nest being 1.5 km from the nearest proposed turbine. Given the low numbers recorded per observation (1 to 2 individuals), the availability of alternative habitat nearby and the absence of regular flight paths across the site, the magnitude of effects associated with disturbance/displacement and barrier effect is judged as <b>low</b>.</p>		
Lapwing	<p>Lapwing was occasionally recorded within the study area, with the majority of observations occurring during the winter season. A total of 104 observations were made, involving 8,6812 individual birds, including the observations made within 10 km buffer. Records typically involved small flocks of around 10 to 60 individuals, although larger groups of up to 200 birds were recorded at the proposed project site. The species was primarily concentrated in the northern and southern parts of the site, particularly in areas of flooded fields and bog, as well as commuting along the Little Brosna River to the east.</p> <p>Only a single observation was made during the breeding season (July 2023), which likely related to failed or non-breeding birds from elsewhere, as no breeding activity was recorded at the site prior to, or after this sighting.</p> <p>According to Hötker et al (2006) wind farms may have a significant negative disturbance/displacement effect on Lapwing behaviour, notably during the winter season, and no evidence of “habituation” after a few years of operation was seen. However, considering the species utilises the proposed project area in varying numbers, with the majority of the records favouring habitats located offsite, that no regular flight paths were observed over the survey period, and the availability of similar habitat preferred by the species in the</p>	<p>Sensitivity: Very High            Magnitude: Low            Significance: Moderate  <b>Long-term , Moderate negative effects</b></p>	<p>No – This moderate effect has been assessed as not significant in EIA terms, as the extent and likelihood of the impact occurring would not give rise to a potentially significant effect on Lapwing in the area. Although Lapwing was regularly recorded during the winter period, with flocks of up to 200 birds, the majority of records were associated with peripheral flooded fields and bog habitats, and no breeding activity was confirmed within the site. While Lapwing can be sensitive to disturbance from wind farms (Hötker et al., 2006), their use of the site was variable, no regular flight paths were observed, and extensive suitable habitats are available in the wider</p>



KOR (Sensitivity see Table 7-14)	Disturbance/Displacement and Barrier Effect (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
	wider area, the magnitude of disturbance/displacement and barrier effect is judged to be <b>low</b> .		landscape. On this basis, significant effects are not anticipated.
Lesser Black-backed Gull	<p>Lesser Black-backed Gull was regularly recorded within the study area across all survey seasons. Sightings were largely concentrated in the northern part of the site, particularly over agricultural grasslands and along the Little Brosna River. There was no evidence of breeding within the site or the wider study area.</p> <p>There is potential for disturbance/displacement or barrier effects on Lesser Black-backed Gull in relation to operational wind energy infrastructure. Studies show Gulls to exhibit some degree of disturbance effects at distances of 500m (Percival, 2003), while other studies based around offshore wind energy projects demonstrate that the species can have a variable tolerance of turbines, with some individuals avoiding areas containing turbines and others attracted to them (Vanermen <i>et al.</i>, 2022).</p> <p>Considering the differing opinions with information relating to this species, its regular use of wetland areas, but limited interaction with the main development footprint and the availability of similar habitat in the local area, the magnitude of potential displacement or barrier effects is considered <b>medium</b>.</p>	<p>Sensitivity: Low            Magnitude: Medium            Significance: Slight  <b>Long-term , Slight negative effects</b></p>	No
Little Egret	<p>Little Egret was regularly recorded foraging and resting along the peripherals of the proposed project site and the wider study area. These records were comprised of foraging groups ranging from one individual to 40 birds, mostly in winter on the flooded areas along the Little Brosna River and on agricultural lands to the north-eastern edge of the proposed project site.</p> <p>There is limited published research on disturbance/displacement or barrier effects on little egret in relation to operational wind energy infrastructure. However, a study by Xu <i>et al.</i> (2021) reported that proximity to an onshore wind farm had limited influence on the</p>	<p>Sensitivity: Medium            Magnitude: Low            Significance: Slight  <b>Long-term, Slight negative effects</b></p>	No



KOR (Sensitivity see Table 7-14)	Disturbance/Displacement and Barrier Effect (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
	<p>abundance and behaviour of the species. When considered alongside the availability of suitable alternative foraging and resting habitat in the surrounding area, the absence of regular flight paths across the site and the typically low numbers observed, the magnitude of potential displacement or barrier effects is considered <b>low</b>. The occurrence of a nationally important flock is noted, but as a one-off event, it does not alter the overall assessment of likely operational impacts.</p>		
Mallard	<p>Mallard was recorded regularly throughout the survey period, predominantly during the winter season. While many observations involved birds in flight, several records indicated the use of flooded areas along the Little Brosna River for resting and foraging. There were no records of breeding within the site or wider study area.</p> <p>There is limited published research on disturbance/displacement or barrier effects on mallard in relation to operational wind energy infrastructure. Studies such as Langston and Pullan (2003) suggest that this species can experience disturbance from operational turbines by as much as 300m, while Hötter et al (2006) suggests the species may become habituated.</p> <p>Given the limited information relating to this species, its regular use of wetland areas, but limited interaction with the main development footprint and the availability of similar habitat in the local area, potential disturbance and displacement effects during the operational phase are assessed to be <b>medium</b>.</p>	<p>Sensitivity: Low            Magnitude: Medium            Significance: Slight  <b>Long-term , Slight negative effects</b></p>	No
Merlin	<p>Merlin was recorded occasionally using the site for hunting and resting, primarily during the winter season. A single record of a pair engaging in courtship behaviour indicates that breeding may be taking place within the site or the surrounding areas. Considering that the site may provide suitable hunting habitat, particularly in open bog and grassland areas, the species' use of the site appears to be limited and sporadic.</p> <p>There is limited published research on disturbance/displacement or barrier effects on merlin in relation to operational wind energy</p>	<p>Sensitivity: Medium            Magnitude: Low            Significance: Slight  <b>Long-term , Slight negative effects</b></p>	No



KOR (Sensitivity see Table 7-14)	Disturbance/Displacement and Barrier Effect (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
	<p>infrastructure. However, studies such as Goodship and Furness (2022) suggest that this species can experience disturbance from anthropogenic activities by as much as 500m during the breeding season and up to 200m in the non-breeding season.</p> <p>But given the low numbers recorded per observation (predominantly one individual), the availability of alternative habitat nearby and the absence of regular flight paths across the site, the magnitude of potential displacement or barrier effects is considered <b>low</b>.</p>		
Mute Swan	<p>Mute Swan was occasionally observed over the survey period, with records concentrated almost entirely along the Little Brosna River, where birds were frequently seen on the ground and on water, feeding and resting across all seasons. There was no evidence of breeding within the site or the surrounding area.</p> <p>Research suggests that Mute Swans may be displaced at distances of 100–600 m from turbines (Rees, 2012). However, evidence from studies on other swan and goose species indicates in cases some habituation can occur and swan or goose species can occur as close as 40–100 m to operational turbines (Madsen &amp; Boertmann, 2008). This suggests that mute swans may exhibit similar behavioural tolerance under comparable conditions.</p> <p>Considering the species utilise the proposed project area in varying numbers, with the majority of the records favouring habitats located offsite, that no regular flight paths were observed over the survey period and the availability of similar habitat preferred by the species in the wider area, the magnitude of potential displacement or barrier effects is considered <b>low</b>.</p>	<p>Sensitivity: Low            Magnitude: Low            Significance: Not significant  <b>Long-term , Not significant negative effects</b></p>	No



KOR (Sensitivity see Table 7-14)	Disturbance/Displacement and Barrier Effect (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
Peregrine Falcon	<p>Peregrine was occasionally observed within the site and wider study area across all seasons during the survey period. Observations included individuals hunting over flooded areas, bog habitats, and agricultural fields. While there were no confirmed records of breeding within the site or surrounding area, the occasional presence of pairs and juveniles suggests possible breeding activity nearby.</p> <p>Several studies have suggested that Peregrine are likely to habituate to the presence of anthropogenic activities in a landscape (Goodship and Furness, 2022) and unlikely to be affected by displacement due to operating turbines (Madders and Whitfield, 2006).</p> <p>Considering the species utilises the proposed project area in varying numbers, with no confirmed breeding activity noted within or around the area, that no regular flight paths were observed over the survey period and the availability of similar habitat preferred by the species in the wider area, the magnitude of potential displacement or barrier effects is considered <b>low</b>.</p>	<p>Sensitivity: Medium            Magnitude: Low            Significance: Slight  <b>Long-term, Slight negative effects</b></p>	No
Pintail	<p>Pintail was rarely recorded during the survey period, with only six observations made across all seasons within the proposed project site. These records were confined to the flooded agricultural fields adjacent to the Little Brosna River, with two notable sightings, one in March 2024 involving a flock of approximately 200 individuals, and a second in March 2026 involving 34 individuals. Both records exceeded the threshold for national importance (20 individuals).</p> <p>There is limited published research on disturbance/displacement or barrier effects on pintail in relation to operational wind energy infrastructure. However, studies such as Goodship and Furness (2022) suggest that this species can experience disturbance from anthropogenic activities and be impacted at least 100m to 200m from the disturbance event. When considered alongside the availability of suitable alternative foraging and resting habitat in the surrounding area, the absence of regular flight paths across the site</p>	<p>Sensitivity: Very High            Magnitude: Low            Significance: Moderate  <b>Long Term, Moderate negative effects</b></p>	No – This moderate effect has been assessed as not significant in EIA terms, as the extent and likelihood of the impact occurring would not give rise to a potentially significant effect on Pintail in the area. The species was rarely recorded during surveys, with only three observations made, and although a nationally important flock of c.200 individuals was noted, this was a single event with no



KOR (Sensitivity see Table 7-14)	Disturbance/Displacement and Barrier Effect (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
	<p>and the typically low numbers observed, the magnitude of potential displacement or barrier effects is considered <b>low</b>. The occurrence of a nationally important flock is noted, but as a one-off event, it does not alter the overall assessment of likely operational impacts.</p>		<p>comparable records subsequently. All observations were confined to peripheral flooded fields adjacent to the Little Brosna River, away from core project infrastructure. While studies indicate that Pintail may be sensitive to disturbance at distances, the absence of regular use of the site, the lack of identified flight paths, and the availability of extensive suitable alternative habitats in the wider area reduce the likelihood of significant effects. On this basis, significant impacts on Pintail are not anticipated.</p>
<p>Snipe</p>	<p>Snipe was occasionally recorded within the site and the wider study area, with the majority of records occurring during the winter season. However, breeding behaviour, including territorial display and courtship (drumming), was also observed during the breeding season, suggesting possible breeding activity. The species was frequently seen foraging along the Little Brosna River and within bog habitats, sometimes in flocks of up to 40 individuals.</p> <p>There is limited published research on disturbance/displacement or barrier effects on Snipe in relation to operational wind energy infrastructure. However, the Pearce-Higgins <i>et al.</i> (2009) study found significant displacement impacts with a predicted reduction in breeding density within 500 m of turbines. A further study by Pearce-Higgins <i>et al.</i> (2012), which monitored bird usage of wind farms and control sites before, during and after construction, found</p>	<p>Sensitivity: Medium            Magnitude: Low            Significance: Slight  <b>Long-term, Slight negative effects</b></p>	<p>No</p>



KOR (Sensitivity see Table 7-14)	Disturbance/Displacement and Barrier Effect (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
	<p>a 53% reduction in Snipe densities during construction, which persisted into the post-construction period.</p> <p>No nest sites were confirmed onsite, however at least one territory was recorded within 500m of the site. The widespread distribution of this species limits the potential for ecologically significant effects. Given the low numbers recorded per observation (typically 1 - 5 individuals, but up to 40 have been recorded in the winter), the availability of alternative habitat nearby and the absence of regular flight paths across the site, the magnitude of potential displacement or barrier effects is considered <b>low</b>.</p>		
Sparrowhawk	<p>Sparrowhawk was regularly recorded across all seasons during the study period, using the site and wider area for hunting. The species is considered to have a probable breeding status within the study area, with evidence of breeding observed in 2021, 2022, and 2023. These records included displaying pairs early in the breeding season and juveniles heard food-begging later in the season.</p> <p>Displacement of raptor species is known to occur at operation wind farms, with various degrees of effects, however some limited studies suggest that Sparrowhawk may be a species to show a tolerance to the presence of operation turbine (Campedelli <i>et al.</i>, 2013).</p> <p>When considered alongside the availability of suitable alternative foraging and resting habitat in the surrounding area, the absence of regular flight paths across the site and the typically low numbers observed, the magnitude of potential displacement or barrier effects is considered <b>low</b>.</p>	<p>Sensitivity: Low            Magnitude: Low            Significance: Not significant  <b>Long-term, Not significant negative effects</b></p>	No
Teal	<p>Teal was irregularly recorded within the study area, with the majority of observations occurring during the winter season. Flocks ranging from 20 to 300 individuals, were recorded in the flooded areas adjacent to the Little Brosna River, where birds were seen resting and foraging. There were no records of the species breeding at the site.</p> <p>There is limited published research on disturbance/displacement or barrier effects on Teal in relation to operational wind energy</p>	<p>Sensitivity: Very High            Magnitude: Low            Significance: Moderate  <b>Long Term, Moderate negative effects</b></p>	No – This moderate effect has been assessed as not significant in EIA terms, as the extent and likelihood of the impact occurring would not give rise to a potentially significant effect on Teal in the area. The species was



KOR (Sensitivity see Table 7-14)	Disturbance/Displacement and Barrier Effect (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
	<p>infrastructure. Research by Hötker et al (2006) suggests there is limited effects.</p> <p>Given the low frequency of occurrence and low numbers per observation and the absence of a regular flight path across the site, effects associated with disturbance displacement and barrier effect are judged of <b>Low</b></p>		<p>irregularly recorded, mainly in winter, with flocks of 20–300 individuals confined to flooded fields adjacent to the Little Brosna River. No breeding activity was recorded, and there was no evidence of regular flight paths across the site. Published research indicates only limited disturbance effects for this species in relation to wind energy developments. On this basis, the potential for significant disturbance, displacement or barrier impacts is considered low, and significant effects are not anticipated.</p>
Whooper Swan	<p>Whooper Swan was occasionally recorded within the study area and was entirely confined to the River Little Brosna and adjacent flooded agricultural fields, where species was regularly recorded foraging and resting in flocks reaching up to 55 individuals.</p> <p>Literature suggests disturbance distances for swans of up to 200-560m (Rees, 2012) or up to 600m (McGuinness <i>et al.</i> 2015). However, as a result of habituation, swans species have been found to feed closer to turbines, especially later in the winter as food resources deplete (Fijn <i>et al.</i>, 2012).</p> <p>Given the varying numbers of this species recorded onsite, that the majority of observations of this species have been of flocks foraging/roosting on flooded agricultural fields along the Little Brosna River, to the northeast and away from the main infrastructure of the proposed project site and that no regular flight paths have emerged</p>	<p>Sensitivity: Very High            Magnitude: Low            Significance: Moderate  <b>Long-term, Moderate negative effects</b></p>	<p>No – This moderate effect has been assessed as not significant in EIA terms, as the extent and likelihood of the impact would not give rise to a potentially significant effect on Whooper Swan in the area. The species was occasionally recorded, mainly along the River Little Brosna and adjacent flooded fields, with flocks of up to 55 individuals. While disturbance distances of up to 600 m have been reported swans are known to</p>



KOR (Sensitivity see Table 7-14)	Disturbance/Displacement and Barrier Effect (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
	<p>from survey work, the magnitude of potential displacement or barrier effects is considered <b>low</b>.</p>		<p>habituate and feed closer to turbines, particularly in leaner months of winter. As most observations were confined to peripheral habitats away from project infrastructure and no regular flight paths were identified, disturbance, displacement and barrier effects are considered low, and significant effects are not anticipated.</p>
<p>Wigeon</p>	<p>Wigeon irregularly recorded within the proposed project site, with the majority of observations occurring during the winter season. Flocks ranging from four to 217 birds were recorded along the Little Brosna River and adjacent flooded agricultural fields in the flooded areas, where birds were seen resting and foraging. There were no records of the species breeding at the site.</p> <p>There is limited published research on disturbance/displacement or barrier effects on Wigeon in relation to operational wind energy infrastructure. However, studies such as Goodship and Furness (2022) suggest that this species can experience disturbance from anthropogenic activities by as much as 500m during the non-breeding season.</p> <p>But given the low frequency of occurrence and low numbers per observation and the absence of a regular flight path across the site, the magnitude of potential displacement or barrier effects is considered <b>low</b>.</p>	<p>Sensitivity: Very High            Magnitude: Low            Significance: Moderate  <b>Long-term, Moderate negative effects</b></p>	<p>No – This moderate effect has been assessed as not significant in EIA terms, as the extent and likelihood of the impact would not give rise to a potentially significant effect on Wigeon in the area. The species was irregularly recorded, mainly in winter, with flocks of four to 125 birds foraging and resting along the Little Brosna River and adjacent flooded fields. Although disturbance distances of up to 500 m have been reported during the non-breeding season, records at the site were infrequent, numbers were generally low, and no regular flight paths were observed. On this basis, disturbance, displacement and</p>



KOR (Sensitivity see Table 7-14)	Disturbance/Displacement and Barrier Effect (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
			barrier effects are judged to be of low concern, and significant effects are not anticipated.
Rarely recorded target species.	<p>All these target species were rarely recorded at the site, with only one or two observations over the entire survey period, either along the peripheries of the proposed project or flights over the survey area without interacting with the site.</p> <p>Given the low numbers of records, that some did not occur/are not dependent on potentially impacted habitats and the availability of the similar foraging and resting habitat preferred by these species in the area, the magnitude of impact is assessed to be <b>negligible</b></p>	<p>Sensitivity: Very High to Low            Magnitude: Negligible            Significance: Slight to imperceptible  <b>Long Term, Slight to imperceptible negative effect</b></p>	No
All other species of lower conservation concern	<p>These non-target species are determined to be less at risk from potential impacts associated with the proposed project, as they have a more favourable conservation status, were rarely recorded during surveys, and/or are not thought to be dependent on the area for breeding, resting or feeding.</p> <p>Hötker <i>et al.</i> (2006) found that disturbance and displacement effects depend on the availability of similar suitable habitats in the surrounding landscape. Since the majority of the habitat affected by the proposed project is also present in the wider area, significant effects on these species are unlikely.</p> <p>Given that suitable habitat outside the proposed project area would remain undisturbed and that some species were not recorded interacting with the site, the overall magnitude of impact on these species of low conservation significance is assessed to be <b>low</b>.</p>	<p>Sensitivity: Medium to Very Low            Magnitude: Low            Significance: Slight to <b>Long Term, Slight to imperceptible negative effect</b></p>	No



### 7.6.4.2 Collision Risk

The potential for birds to collide with turbines is one of the main effects to consider in the assessment of possible impacts of an operating wind farm. Bird collision is dependent on a number of factors, such as species of bird involved, the number of flights and individuals per flight, turbine height and blade length, weather (i.e. fog), topography, geography, etc. As the collision risk is only associated with operating wind farms and considering the 30-year life span of this wind farm, impacts are considered to be **Long Term**.

As discussed in section 7.6.4.1, birds may initially be disturbed or avoid areas with active turbines (i.e. displaced), but over time, they can become habituated to the disturbance. As they begin to return to these previously abandoned areas, their risk of collision with turbine blades increases (Band et al., 2007).

Bird collisions with turbines may represent a detrimental effect to the respective populations. Markedly, the effects of collisions involving low density bird species (e.g. birds of prey), and species with low reproductive rates, will be of higher significance to their respective populations than those involving higher and more frequent broods (e.g. passerine species). Also, beyond the local topography, and the physical characteristics of the obstacle (e.g. turbine height, number of turbines), collision risk also differs significantly amongst species, depending on their morphology, foraging and flight behaviours (Linder et al., 2022). For example, the visual field for some species can be quite restrictive and, while flying and foraging (i.e. head pitched forward, to maximise binocular vision of the ground) these birds can be blind in the direction of travel, becoming highly vulnerable to collisions with tall structures in their path (Martin et al., 2012). Also, birds' 'wing loading', i.e. the ration between body weight and wing area, is associated with low manoeuvrability and high occurrence of collisions (Janss, 2000). Nevertheless, the collision risk is proportional to the abundance of birds in the wind farm area, i.e. greater if a wind farm is located at (or near) feeding/roosting locations, or on migratory flyways or local flight paths (Drewitt and Langston, 2006).

#### 7.6.4.2.1 Collision Risk Model

A collision risk model (CRM) was carried out to estimate the potential number of bird collisions with turbines at the proposed wind farm (Appendix 7-2). The proposed project will comprise 11 turbines, with three potential turbine models under consideration. Each of these has been assessed within the CRM. The turbine models have hub heights ranging from 98.5 to 105 metres and rotor diameters between 149.1m and 163m, resulting in potential collision risk airspaces of 17–180m for the Nordex N163, 30–180m for the Vestas V150, and 30.15–179.2m for the Nordex N149.

The model included data from the VP surveys over eight seasons (i.e. Breeding Season 2020 to Breeding Season 2024, with the exception of Breeding season 2022 – Appendix 7-1). The target species groups assessed were raptors and waterbirds (except Snipe, as vantage point surveys are not an effective method for sampling their flight activity, see Appendix 7-2 for more details). Non-target species such as passerines, as well as target species that were rarely recorded, were not assessed in the CRM. This was due to several factors: these species are considered less at risk from potential turbine impacts, they hold a more favourable conservation status, they were infrequently recorded during surveys (suggesting limited reliance on the area for breeding or feeding), or their flight activity was so low that the CRM would have produced negligible results.



In summary, the CRM is based on NatureScot (2024) guidance, taking into account:

- The number of birds flying through, or around the site, their flight height, and flight duration (derived from the VP surveys during the Field Study);
- Predicted changes of behaviour of birds (e.g. avoidance);
- The number, size (mentioned above) and rotation speed of turbine blades;
- Physical details on bird size and flight speed.

The CRM produces results in the form of estimated number of bird collisions per year, along with the general assumptions and uncertainty associated with model estimates (Band, 2024).

The CRM in Appendix 7-2, further assesses the uncertainty associated with the modelling process, following NatureScot (2024). It assessed the role of several uncertainty factors, such as:

- Sampling effects –when the results from the VP survey show higher or lower levels of flight activity relative to the overall distribution of flight activity in the respective season;
- Height distribution – accounts for misestimation of flight heights during the VP survey;
- Nocturnal flight activity – derived from the correction factor applied to account for nocturnal activity (not recorded during VP surveys);
- Single transit risk – relates to Band (2024) addressing the simplifications included in the model for Stage C could represent a collision probability within around  $\pm 20\%$ ; and
- Other factors – other sources of uncertainty that cannot be quantified.

The CRM estimates the predicted number of collisions per year for target species observed flying within potential collision height, within the risk area of the wind farm. Its results are contained within Table 7-19.

**Table 7-19: Predicted collision risk results for KORs (Appendix 7-2)**

Species	Season	Avoidance rate	Collisions / year		
			N149	N163	V150
Black-headed Gull	non-breeding	0.992	0.31	0.43	0.32
Black-tailed Godwit	all year	0.98	3.3	4.7	3.4
Buzzard	all year	0.98	1.4	1.7	1.4
Cormorant	breeding	0.98	0.10	0.12	0.11
	non-breeding	0.98	0.32	0.44	0.33
Common Gull	all year	0.992	0.00	0.01	0.00
Curlew	all year	0.98	0.02	0.02	0.02
Golden Plover	winter	0.996	7.9	9.4	8.1
Greenland White-fronted Goose	all year	0.998	0.00	0.01	0.00



Species	Season	Avoidance rate	Collisions / year		
			N149	N163	V150
Grey Heron	all year	0.98	0.10	0.17	0.11
Hen Harrier	all year	0.99	0.01	0.02	0.01
Kestrel	all year	0.95	1.4	2.9	1.5
Lapwing	winter	0.98	1.4	1.6	1.4
Lesser Black-backed Gull	autumn	0.995	0.02	0.05	0.02
	spring	0.995	0.01	0.13	0.01
	winter	0.995	0.05	0.04	0.05
Little Egret	breeding	0.98	0.01	0.00	0.01
	non-breeding	0.98	0.01	0.05	0.01
Mallard	all year	0.98	0.56	0.68	0.58
Merlin	all year	0.98	0	0.01	0
Mute Swan	non-breeding	0.995	0.01	0.02	0.01
Peregrine	all year	0.98	0.02	0.03	0.02
Pintail	all year	0.980	0.01	0.01	0.01
Sparrowhawk	all year	0.98	0.11	0.17	0.11
Teal	winter	0.98	0.00	0.01	0.00
Whooper Swan	winter	0.995	0.02	0.05	0.02
White-tailed Eagle	all year	0.950	0.02	0.04	0.02
Wigeon	winter	0.98	1.4	2.4	1.4

Collision risks are shown rounded to two significant figures, or to two decimal places if < 0.1. Other species/seasons with collision risk < 0.005 collisions/year: Shoveler, Lapwing (summer), Lesser Black-backed Gull (breeding) and Herring Gull.

### 7.6.4.2.2 Collision Risk Assessment

For the purposes of the analysis, all collisions are considered fatal, either directly or indirectly through injury. Full details of the collision risk analysis, including target species selection criteria, is presented in the CRM report in Appendix 7-2.

The CRM also appraises the significance of the increase in annual mortality generated by the predicted collision risk with turbines on each species (Collision Risk Assessment). When this increase in absolute mortality is higher than 1% of a species baseline annual mortality, the effect is considered significant to that species population (Percival, 2003). Depending on the availability of populations sizes, the scale of significance is determined at national, regional and/or local level.



KORs identified as being at risk of collision with turbines were brought forward for detailed analysis under the collision risk assessment. Black-headed Gull, Buzzard, Common Gull, Curlew, Greenland White-fronted Goose, Hen Harrier, Lesser Black-backed Gull, Merlin, Mute Swan, Peregrine Falcon, Pintail, Teal and White-tailed Eagle were not carried forward, as the predicted number of collisions was too low to warrant further assessment, or their populations are considered stable or increasing (see Appendix 7-2 for more details). The results of collision risk assessment can be found in Table 7-20, including the predicted annual mortality rates based on the three proposed turbine models and the range of uncertainty due to the factors described in more detail in Appendix 7-2.

**Table 7-20: Potential increase in annual mortality rates of KORs due to the predicted collision risk from the Ballincor Wind Farm. The uncertainty factors indicate the degree by which the predicted collision risk should be increased or decreased to indicate the range of uncertainty around the estimate.**

KOR Species	Population	Scale	Turbine		
			N149	N163	V150
Black-tailed Godwit	non-breeding	national	0.2% (0.1% - 0.9%)	0.3% (0.1% - 1.3%)	0.2% (0.1% - 1.0%)
		local	<b>1.6% (0.7% - 6.5%)</b>	<b>2.2% (0.9% - 9.2%)</b>	<b>1.6% (0.7% - 6.7%)</b>
Cormorant	breeding	national	0.0% (0.0% - 0.0%)	0.0% (0.0% - 0.0%)	0.0% (0.0% - 0.0%)
		local	0.2% (0.1% - 0.4%)	0.2% (0.1% - 0.5%)	0.2% (0.1% - 0.4%)
	non-breeding	national	0.0% (0.0% - 0.0%)	0.0% (0.0% - 0.1%)	0.0% (0.0% - 0.0%)
Golden Plover (99.6%)	winter	national	0.0% (0.0% - 0.1%)	0.0% (0.0% - 0.1%)	0.0% (0.0% - 0.1%)
		local	0.3% (0.1% - 1.0%)	0.4% (0.2% - 1.3%)	0.3% (0.1% - 1.1%)
Golden Plover (99.8%)	winter	national	0.0% (0.0% - 0.1%)	0.0% (0.0% - 0.1%)	0.0% (0.0% - 0.1%)
		local	0.2% (0.1% - 0.5%)	0.2% (0.1% - 0.6%)	0.2% (0.1% - 0.5%)
Grey Heron	breeding	national	0.0% (0.0% - 0.0%)	0.0% (0.0% - 0.0%)	0.0% (0.0% - 0.0%)
		county	0.4% (0.2% - 1.1%)	0.6% (0.3% - 1.8%)	0.4% (0.2% - 1.1%)
Kestrel	breeding	national	0.0% (0.0% - 0.1%)	0.1% (0.0% - 0.2%)	0.0% (0.0% - 0.1%)
		county	<b>1.5% (0.9% - 3.3%)</b>	<b>3.0% (1.9% - 6.7%)</b>	<b>1.5% (1.0% - 3.4%)</b>
Lapwing	winter	national	0.0% (0.0% - 0.0%)	0.0% (0.0% - 0.1%)	0.0% (0.0% - 0.0%)
		local	0.1% (0.0% - 0.3%)	0.1% (0.0% - 0.3%)	0.1% (0.0% - 0.3%)
Little Egret	non-breeding	national	0.0% (0.0% - 0.0%)	0.0% (0.0% - 0.0%)	0.0% (0.0% - 0.0%)
Mallard	winter	national	0.0% (0.0% - 0.0%)	0.0% (0.0% - 0.0%)	0.0% (0.0% - 0.0%)
		local	<b>1.6% (0.8% - 5.7%)</b>	<b>1.9% (0.9% - 6.9%)</b>	<b>1.6% (0.8% - 5.8%)</b>



KOR Species	Population	Scale	Turbine		
			N149	N163	V150
Sparrowhawk	breeding	national	0.0% (0.0% - 0.0%)	0.0% (0.0% - 0.0%)	0.0% (0.0% - 0.0%)
		county	0.1% (0.1% - 0.4%)	0.2% (0.1% - 0.7%)	0.1% (0.1% - 0.5%)
Whooper Swan	winter	national	0.0% (0.0% - 0.0%)	0.0% (0.0% - 0.0%)	0.0% (0.0% - 0.0%)
		county	0.0% (0.0% - 0.0%)	0.0% (0.0% - 0.0%)	0.0% (0.0% - 0.0%)
		local	0.0% (0.0% - 0.1%)	0.1% (0.0% - 0.2%)	0.0% (0.0% - 0.1%)
Wigeon	winter	national	0.00%	0.00%	0.00%
		local	0.0% (0.0% - 0.2%)	0.1% (0.0% - 0.3%)	0.0% (0.0% - 0.2%)

Separate estimates of mortality increases are included for Golden Plover using avoidance rates of 99.6% and 99.8% as discussed in Appendix 7-2. The values in parentheses indicate the range of uncertainty around the mortality increases due to uncertainty in the predicted collision risk.

The central estimates of the potential increase in annual mortality due to the predicted collision risk exceeded the 1% threshold for the local Mallard wintering population, the local Black-tailed Godwit wintering population and the county Kestrel population. The upper limit of the uncertainty range exceeded the thresholds by small amounts for the Grey Heron county population, the national Black-tailed Godwit wintering population (N163 and V150 turbines), and the local Golden Plover wintering population (99.6% avoidance rate).

### 7.6.4.2.3 Assessment of Significant Effects from Collision Risk

Table 7-21 includes the description of the collision risk effects on the relevant KORs, as well as the description of the factors contributing for the effect classification, derived from the Collision Risk Assessment in section 7.6.4.2.2 and Appendix 7-2. It concludes that the predicted collision risk is unlikely to give rise to significant effects on any of these populations of the KORs. The methodology of the assessment on the impact of operational collision risk follows Percival (2003) and EPA (2022) (refer to section 7.3).



Table 7-21: Assessing the Potential Effects of Collision Risk Effects During the Operational Phase on Key Ornithological Receptors as a Result of the Proposed project.

KOR (Sensitivity see Table 7-14)	Collision Risk (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
Barn Owl	No Barn Owl flight activity was recorded over the survey period and therefore no collision risk was identified. It is acknowledged that this species is largely nocturnal and therefore standard VP surveys are likely to have missed this species, which are typically conducted during daylight hours. However, given the hunting strategy of this species which predominantly takes place within 3-4m off the ground (Barn Owl Trust, 2015) and the fact that the lowest turbine blade sweep in the proposed project is 17m above the ground, the likelihood of collision is considered low. Consequently, the magnitude of potential collision risk effects is assessed as being <b>negligible</b> .	Sensitivity: Medium Magnitude: Negligible Significance: Imperceptible <b>Long-term, Imperceptible negative effects</b>	No
Black-headed Gull	A limited number of collisions was predicted for Black-headed Gull by the CRM for any of the potential turbine options (see Table 7-19). Based on this limited number of collisions per year and the absence of reliable population data for the species winter population, the species was not carried forward into the detailed collision risk assessment. While Black-headed Gull is included in the Irish Wetland Bird Survey data (IWeBS), it is largely underrepresented by this methodology, meaning the actual population is likely significantly higher than reported. As such, the predicted collisions are not expected to have any measurable impact on the species annual mortality rate. Therefore, the magnitude of potential collision risk effects is assessed as being <b>negligible</b> .	Sensitivity: Very High Magnitude: Negligible Significance: Slight <b>Long-term, Slight negative effects</b>	No
Black-Tailed Godwit	A number of collisions was predicted for Black-tailed Godwit by the CRM for all of the potential turbine options (see Table 7-19). However as discussed in greater detail in Appendix 7-2, this predicted impact was largely generated by a single flock of 1,750 birds, which accounted for 95% of the flight activity with all other records involving much smaller flocks (<100 birds). The available data does not provide a clear indication of how frequently such large flocks occur, and there are relatively few records to describe variation in flock size and activity. As such, it is not possible to determine whether the recorded flock represents a more regular event or a pattern of site use that is	Sensitivity: Very High Magnitude: Negligible Significance: Slight <b>Long-term, Slight negative effects</b>	No



KOR (Sensitivity see Table 7-14)	Collision Risk (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
	<p>only occasionally recorded. However, the inclusion of this record within the CRM ensures that the assessment captures a pre-cautionary upper range of potential collision risk.</p> <p>This pre-cautionary approach which has predicted a 1.6 to 2.2% increase of annual mortality at a local level depending on the turbine mode (see Table 7-20), only slightly exceeds the applied 1% threshold. As discussed in appendix 7-2 (section 2.7), the 1% threshold is considered highly precautionary. The calculations of increased annual mortality also applied conservative assumptions, namely that all collision fatalities were adult birds and that collision mortality was entirely additive rather than compensatory. As such, substantial increases in annual mortality, well above the 1% threshold, would likely be required to cause significant population-level impacts. Consequently, the CRM output reflects a conservative assessment, being strongly influenced by a single large flock event and incorporating precautionary assumptions within the modelling approach.</p> <p>Therefore, based on this the magnitude of potential collision risk effects is assessed as being <b>negligible</b>.</p>		
Buzzard	<p>A low number of collisions was predicted for Buzzard by the CRM for all the potential turbine options (see Table 7-19). Given this low number of estimated collisions per year and the absence of reliable population data for the species, due to its rapid expansion in Ireland (Coughlan et al., 2024), Buzzard was not carried forward into the detailed collision risk assessment. Although a population estimate is available, it is largely outdated, being based on data published in 2013, and the actual population is likely to be significantly higher than reported. Consequently, the predicted collisions are not expected to have any measurable impact on the species annual mortality rate, and the magnitude of potential collision risk effects is assessed as being <b>negligible</b>.</p>	<p>Sensitivity: Low            Magnitude: Negligible            Significance: Imperceptible  <b>Long-term, Imperceptible negative effects</b></p>	No



KOR (Sensitivity see Table 7-14)	Collision Risk (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
Cormorant	<p>A low number of collisions was predicted for Cormorant by the CRM (see Table 7-19). Based on this limited number of collisions per year and the results of the collision risk assessment, the predicted collisions are not expected to have any measurable impact on the species annual mortality rate. Therefore, the magnitude of potential collision risk effects is assessed as being <b>negligible</b>.</p>	<p>Sensitivity: Very High            Magnitude: Negligible            Significance: Slight  <b>Long-term, Slight negative effects</b></p>	No
Golden Plover	<p>A number of collisions was predicted for Golden Plover by the CRM for all the potential turbine options (see Table 7-19).            Based on this number of predicted collisions per year, Golden Plover would not exceed the 1% mortality threshold when the calculated uncertainty factor is not applied; however, the upper limit of the uncertainty range does exceed the 1% threshold for the local wintering population.            As discussed in Appendix 7-2 (Section 2.7), the 1% threshold is considered highly precautionary. The calculations of increased annual mortality also applied conservative assumptions, namely that all collision fatalities were adult birds and that collision mortality was entirely additive rather than compensatory. As such, substantial increases in annual mortality, well above the 1% threshold, would likely be required to cause significant population-level impacts. Therefore, as the calculated collision risks (without the uncertainty factor applied) does not exceed the 1% threshold, and the upper limit of the uncertainty range is not significantly higher than 1%, the magnitude of potential collision risk effects is assessed as being <b>negligible</b>.</p>	<p>Sensitivity: Very High            Magnitude: Negligible            Significance: Slight  <b>Long-term, Slight negative effects</b></p>	No
Grey Heron	<p>A limited number of collisions was predicted for Grey Heron by the CRM for all the potential turbine options (see Table 7-19). Based on this number of predicted collisions per year, the county Grey Heron breeding population (with the N163 turbine model) may exceed the 1% mortality threshold when the calculated uncertainty factor has not been applied, suggesting a potential impact on the species annual mortality rate.            However, as discussed in Appendix 7-2 (Section 2.7), the 1% threshold is considered highly precautionary. The calculations of increased annual mortality also applied conservative assumptions, namely that all collision fatalities were adult birds and that collision mortality was entirely additive</p>	<p>Sensitivity: Low            Magnitude: Negligible            Significance: Imperceptible  <b>Long-term, Imperceptible negative effects</b></p>	No



KOR (Sensitivity see Table 7-14)	Collision Risk (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
	rather than compensatory. As such, substantial increases in annual mortality, well above the 1% threshold, would likely be required to cause significant population level impacts. Therefore, as the calculated collision risks (without the uncertainty factor applied) are not significantly higher than 1%, the magnitude of potential collision risk effects is assessed as being <b>negligible</b> .		
Hen Harrier	A low number of collisions was predicted for Hen Harrier by the CRM for all the potential turbine options (see Table 7-19). Based on this limited number of collisions per year and the results of the collision risk assessment, the predicted collisions are not expected to have any measurable impact on the species annual mortality rate. Therefore, the magnitude of potential collision risk effects is assessed as being <b>negligible</b> .	Sensitivity: Very High Magnitude: Negligible Significance: Slight <b>Long-term, Slight negative effects</b>	No
Kestrel	A number of collisions was predicted for Kestrel by the CRM for all the potential turbine options (see Table 7-19). Based on this number of predicted collisions per year, the county Kestrel breeding population may exceed the 1% mortality threshold when the calculated uncertainty factor has not been applied, suggesting a potential impact on the species annual mortality rate. However, as discussed in Appendix 7-2 (Section 2.7), the 1% threshold is considered highly precautionary. The calculations of increased annual mortality also applied conservative assumptions, namely that all collision fatalities were adult birds and that collision mortality was entirely additive rather than compensatory. As such, substantial increases in annual mortality, well above the 1% threshold, would likely be required to cause significant population level impacts. Therefore, as the calculated collision risks (without the uncertainty factor applied) are not significantly higher than 1%, the magnitude of potential collision risk effects is assessed as being <b>negligible</b> .	Sensitivity: Medium Magnitude: Negligible Significance: Imperceptible <b>Long-term, Imperceptible negative effects</b>	No



KOR (Sensitivity see Table 7-14)	Collision Risk (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
Lapwing	<p>A number of collisions was predicted for Lapwing by the CRM for all the potential turbine options (see Table 7-19).</p> <p>Based on this number of predicted collisions per year, Lapwing would not exceed the 1% mortality threshold when the calculated uncertainty factor is not applied; however, the upper limit of the uncertainty range does exceed the 1% threshold for the local wintering population.</p> <p>As discussed in Appendix 7-2 (Section 2.7), the 1% threshold is considered highly precautionary. The calculations of increased annual mortality also applied conservative assumptions, namely that all collision fatalities were adult birds and that collision mortality was entirely additive rather than compensatory. As such, substantial increases in annual mortality, well above the 1% threshold, would likely be required to cause significant population-level impacts. Therefore, as the calculated collision risks (without the uncertainty factor applied) does not exceed the 1% threshold, and the upper limit of the uncertainty range is not significantly higher than 1%, the magnitude of potential collision risk effects is assessed as being <b>negligible</b>.</p>	<p>Sensitivity: Very High            Magnitude: Negligible            Significance: Slight  <b>Long-term, Slight negative effects</b></p>	No
Lesser Black-backed Gull	<p>A limited number of collisions was predicted for Lesser Black-backed Gull by the CRM for all the potential turbine options (see Table 7-19). Based on this limited number of collisions per year and the absence of reliable population data for the population, the species was not carried forward into the detailed collision risk assessment. While Lesser Black-backed Gull is included in the Irish Wetland Bird Survey data (IWeBS), it is largely underrepresented by this methodology, meaning the actual population is likely significantly higher than reported. As such, the predicted collisions are not expected to have any measurable impact on the species annual mortality rate. Therefore, the magnitude of potential collision risk effects is assessed as being <b>negligible</b>.</p>	<p>Sensitivity: Low            Magnitude: Negligible            Significance: Imperceptible  <b>Long-term, Imperceptible negative effects</b></p>	No



KOR (Sensitivity see Table 7-14)	Collision Risk (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
Little Egret	<p>A low number of collisions was predicted for Little Egret by the CRM for all the potential turbine options (see Table 7-19). Based on this limited number of collisions per year and the results of the collision risk assessment, the predicted collisions are not expected to have any measurable impact on the species annual mortality rate. Therefore, the magnitude of potential collision risk effects is assessed as being <b>negligible</b>.</p>	<p>Sensitivity: Medium            Magnitude: Negligible            Significance: Imperceptible  <b>Long-term, Imperceptible negative effects</b></p>	No
Mallard	<p>A number of collisions was predicted for Mallard by the CRM for all the potential turbine options (see Table 7-19). Based on this number of predicted collisions per year, the local Mallard population may exceed the 1% mortality threshold for all the potential turbine types, when the calculated uncertainty factor has not been applied, suggesting a potential impact on the species annual mortality rate. This is largely down to the high numbers of Mallard recorded during the winter period.</p> <p>However, as discussed in Appendix 7-2 (Section 2.7), the 1% threshold is considered highly precautionary. The calculations of increased annual mortality also applied conservative assumptions, namely that all collision fatalities were adult birds and that collision mortality was entirely additive rather than compensatory. As such, substantial increases in annual mortality, well above the 1% threshold, would likely be required to cause significant population level impacts. With that considered, as the calculated collision risks (without the uncertainty factor applied) ranged from 3.8, 3.9 and 6.1% between all the turbine types on the local mallard population, the magnitude of potential collision risk effects is assessed as being <b>low</b>.</p>	<p>Sensitivity: Low            Magnitude: Low            Significance: Not significant  <b>Long-term, Not significant negative effects</b></p>	No
Merlin	<p>A low number of collisions was predicted for Merlin by the CRM for all the potential turbine options (see Table 7-19). Based on this limited number of collisions per year and the results of the collision risk assessment, the predicted collisions are not expected to have any measurable impact on the species annual mortality rate. Therefore, the magnitude of potential collision risk effects is assessed as being <b>negligible</b>.</p>	<p>Sensitivity: Medium            Magnitude: Negligible            Significance: Imperceptible  <b>Long-term, Imperceptible negative effects</b></p>	No



KOR (Sensitivity see Table 7-14)	Collision Risk (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
Mute Swan	A low number of collisions was predicted for Mute Swan by the CRM for all the potential turbine options (see Table 7-19). Based on this limited number of collisions per year and the results of the collision risk assessment, the predicted collisions are not expected to have any measurable impact on the species annual mortality rate. Therefore, the magnitude of potential collision risk effects is assessed as being <b>negligible</b> .	Sensitivity: Low Magnitude: Negligible Significance: Imperceptible <b>Long-term, Imperceptible negative effects</b>	No
Peregrine Falcon	A low number of collisions was predicted for Peregrine Falcon by the CRM for all the potential turbine options (see Table 7-19). Based on this limited number of collisions per year and the results of the collision risk assessment, the predicted collisions are not expected to have any measurable impact on the species annual mortality rate. Therefore, the magnitude of potential collision risk effects is assessed as being <b>negligible</b> .	Sensitivity: Medium Magnitude: Negligible Significance: Imperceptible <b>Long-term, Imperceptible negative effects</b>	No
Pintail	A low number of collisions was predicted for Pintail by the CRM for all the potential turbine options (see Table 7-19). Based on this limited number of collisions per year and the results of the collision risk assessment, the predicted collisions are not expected to have any measurable impact on the species annual mortality rate. Therefore, the magnitude of potential collision risk effects is assessed as being <b>negligible</b> .	Sensitivity: Very High Magnitude: Negligible Significance: Slight <b>Long-term, Slight negative effects</b>	No
Snipe	Snipe was not included in the collision risk modelling as vantage point surveys are not an effective method for recording their flight activity, which typically occurs at low altitudes and often outside standard survey hours. As such, any results from CRM would not be meaningful or representative of actual risk. Considering that the species predominantly flies at low heights and the lowest turbine blade sweep in the proposed project being 17 m above ground level, the magnitude of potential collision risk effects is assessed as being <b>negligible</b> .	Sensitivity: Medium Magnitude: Negligible Significance: Imperceptible <b>Long-term, Imperceptible negative effects</b>	No



KOR (Sensitivity see Table 7-14)	Collision Risk (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
Sparrowhawk	<p>A low number of collisions was predicted for Sparrowhawk by the CRM for all the potential turbine options (see Table 7-19). Based on this limited number of collisions per year and the results of the collision risk assessment, the predicted collisions are not expected to have any measurable impact on the species annual mortality rate. Therefore, the magnitude of potential collision risk effects is assessed as being <b>negligible</b>.</p>	<p>Sensitivity: Low            Magnitude: Negligible            Significance: Imperceptible  <b>Long-term, Imperceptible negative effects</b></p>	No
Teal	<p>A low number of collisions was predicted for Teal by the CRM for all the potential turbine options (see Table 7-19). Based on this limited number of collisions per year and the results of the collision risk assessment, the predicted collisions are not expected to have any measurable impact on the species annual mortality rate. Therefore, the magnitude of potential collision risk effects is assessed as being <b>negligible</b>.</p>	<p>Sensitivity: Very High            Magnitude: Negligible            Significance: Slight  <b>Long-term, Slight negative effects</b></p>	No
Whooper Swan	<p>A limited number of collisions was predicted for Whooper Swan by the CRM for all the potential turbine options (see Table 7-19).            Based on this number of predicted collisions per year, Whooper Swan will not exceed the 1% mortality threshold when the calculated uncertainty factor is not applied; however, the upper limit of the uncertainty range does exceed the 1% threshold for the local wintering population ((with the N163 turbine model).            As discussed in Appendix 7-2 (Section 2.7), the 1% threshold is considered highly precautionary. The calculations of increased annual mortality also applied conservative assumptions, namely that all collision fatalities were adult birds and that collision mortality was entirely additive rather than compensatory. As such, substantial increases in annual mortality, well above the 1% threshold, would likely be required to cause significant population-level impacts. Therefore, as the calculated collision risks (without the uncertainty factor applied) does not exceed the 1% threshold, and the upper limit of the uncertainty range is not significantly higher than 1%, the magnitude of potential collision risk effects is assessed as being <b>negligible</b>.</p>	<p>Sensitivity: Very High            Magnitude: Negligible            Significance: Slight  <b>Long-term, Slight negative effects</b></p>	No



KOR (Sensitivity see Table 7-14)	Collision Risk (Magnitude)	Significance Evaluation	Significant in EIA terms (see section 7.3.6)
Wigeon	A low number of collisions was predicted for Wigeon by the CRM for all the potential turbine options (see Table 7-19). Based on this limited number of collisions per year and the results of the collision risk assessment, the predicted collisions are not expected to have any measurable impact on the species annual mortality rate. Therefore, the magnitude of potential collision risk effects is assessed as being <b>negligible</b> .	Sensitivity: Very High Magnitude: Negligible Significance: Slight <b>Long-term, Slight negative effects</b>	No
Rarely recorded target species.	All of these target species were rarely recorded at the site, with only one or two observations made over the entire survey period. Records were generally confined to the peripheries of the proposed project area or involved flights over the survey area without interaction with the site. Given the very low numbers of records, and the fact that some species do not occur regularly or are not dependent on the proposed project site, no collision risk modelling was undertaken, as the results would be negligible. Accordingly, the magnitude of impact is assessed as <b>negligible</b> .	Sensitivity: Very High to Low Magnitude: Negligible Significance: Slight to imperceptible <b>Long Term, Slight to imperceptible negative effect</b>	No
All other species of lower conservation concern	These non-target species are considered to be at low risk from potential impacts associated with the proposed project, as they have a more favourable conservation status, were rarely recorded during surveys, and/or are not thought to be dependent on the area for breeding, resting, or feeding. As these species were not identified as target species and given that they are not expected to be significantly affected by wind farm development, no collision risk modelling was undertaken, as the results would be negligible. Accordingly, the magnitude of impact is assessed as <b>negligible</b> .	Sensitivity: Medium to Very Low Magnitude: Negligible Significance: Slight to <b>Long Term, imperceptible negative effect</b>	No



## 7.6.5 Decommissioning Phase Impacts

Decommissioning Phase of the proposed project will either encompass the replacement of the wind turbines (subject to a future planning permission), or the site may be fully decommissioned (except the electricity substation, and all associated transmission infrastructure - i.e. underground cables and OHL), by removing of above ground turbine components.

The works and activities proposed for the Decommissioning Phase of the proposed project are then likely to be of similar nature than those assessed for the Construction Phase of the proposed wind farm (i.e. habitat loss, disturbance displacement – Section 7.6.3). The extent, magnitude, duration and frequency of these effects is likely to be similar or significantly lower, which is likely to also significantly reduce the significance of the potential effects on all KORs.

Therefore, effects from the works and activities associated with the Decommissioning Phase of the proposed wind farm are not considered likely or significant.

## 7.7 MITIGATION MEASURES

### 7.7.1 Construction Phase Mitigation Measures

#### *7.7.1.1 Mitigation by Design*

The proposed project design has followed the basic principles outlined below to minimise the potential for significant effects on avian receptors:

The proposed project has been deliberately designed to avoid the most sensitive areas for birds within the study area following preliminary results from the continued survey effort from April 2020 and desktop research using available data sources, maps and reports. These sensitive areas include intact raised bog habitat, or areas where concentrations of winter birds have been recorded along the Little Brosna River to the northeast of the proposed project. The proposed project will largely be confined to already modified cutover bog habitat or agricultural lands, with limited suitability for KORs and, where appropriate, is located within the vicinity of existing roadways to minimise further habitat loss.

Hard standing areas, roads and turning bays have been designed to the minimum size necessary to accommodate the turbine dimensions and number of vehicles and machinery required.

The proposed on site substation will be connected to the national electricity grid through the existing ESB Dallow 110 kV substation, located approximately 12 km north of the proposed project site. The works associated with the grid connection route and 110kV substation will require excavation, although almost entirely being confined to existing roads and will require minimal habitat loss for KORs.

#### *7.7.1.2 General*

The proposed project has been designed to incorporate current industry best practice for the construction and operation of wind farms, which is described in detail in Chapter 2 (Description of the Proposed Project) of this EIAR.

Best practice measures incorporated into the design aim to avoid significant effects on the surrounding biodiversity. A Construction Environmental Management Plan (CEMP) has been



developed to provide a framework for how significant effects on the environment will be avoided during the construction phase and includes all mitigation measures described herein.

A suitably qualified Ecological Clerk of Works (ECoW) with extensive experience in ornithology, will be appointed by the Contractor and will be required full time on site during the construction phase. The ECoW will ensure that all mitigation measures outlined within this Chapter are implemented correctly during the construction phase.

Regular toolbox talks with construction staff on disturbance to relevant bird species during construction will be organised. These will be mandatory for staff members and will be run at the beginning of each season: in February, in preparation to the breeding season; and in August, in preparation to the non-breeding season. These toolbox talks will include the description of the main ecological features staff should note, particularly the identification of KORs and signs of proximity to sensitive locations (e.g. raising awareness to alarm calls during the breeding season; description of ground-nesting species), and the processes of reporting any findings to the ECoW. If an important ornithological area does become apparent, the works will immediately cease, and the suitably qualified ECoW will clearly mark these areas, in line with appropriate buffer distances which have been outlined in Goodship and Furness (2022). The areas will be avoided until the chicks have fledged or where nesting has failed (in the case of breeding activity) or where birds are no longer found, roosting, feeding or foraging (in the case of wintering activity).

### ***7.7.1.3 Management of Habitats Loss***

Where areas of potentially sensitive breeding bird habitat are proposed to be removed during construction, these works will be timed to avoid the breeding birds nesting season from 1 March to 31 August. This measure will avoid any potentially significant effects to breeding bird species particularly in areas where hedgerow, scrub and woodland will be removed. In the event that the bird nesting season cannot be avoided, a suitably qualified ornithologist/ecologist will undertake a pre-construction survey of the vegetation proposed to be removed to establish the presence of breeding birds and nests. This survey will be conducted up to five days ahead of the works to identify breeding behaviour and nests. Where an active nest is found, the nest will be clearly marked and avoided until the chicks have fledged or where nesting has failed.

### ***7.7.1.4 Management of Habitat Degradation Due to Surface Water Quality Impacts***

The following species were identified as being potentially significantly negatively affected by habitat degradation arising from surface water quality impacts: Black-tailed Godwit, Cormorant, Golden Plover, Pintail, Teal, Whooper Swan, and Wigeon. To mitigate this potential impact, the proposed project has been designed to avoid significant effects on watercourses. The turbines have been located an excess of 50m from all rivers, and no in-stream works are proposed as part of the proposed wind farm. The construction of internal roadways within the proposed wind farm, will involve water crossing at 15 locations with one crossing of the Holy Well Clohaskin River (EPA code: 25H28, Segment code: 25\_3276). The proposed crossing will be constructed using a clear-span bridge. The proposed clear-span bridge will comprise a reinforced concrete bridge bed placed on foundations, set 2.5m back from the bank, either side of the stream. Installation of such features will take place during dry periods to reduce the risk of sediment entering the watercourse (more details on this methodology are described in Chapter 9 - Hydrology and Hydrogeology).



The remaining 14 crossings are over minor artificial drains or peatland channels. These crossings will require installation of culverts, which will constitute limited in-stream works confined to these man-made drains. Culverting will be undertaken during dry weather where possible, and appropriate silt control measures (e.g. temporary silt fences/dams) will be used to prevent sediment movement downstream.

All mitigation measures outlined in Chapter 8 (Land, Soils and Geology), and Chapter 9 (Hydrology and Hydrogeology) of this EIAR in relation to the protection of surface and groundwater bodies will be implemented during the proposed construction phase. These mitigation measures have been collated in the CEMP, and within Chapter 20 (Schedule of Mitigation Measures).

#### 7.7.1.4.1 Pollution control measures

Pollution control measures which will be implemented during the construction phase are summarised hereunder:

- All construction works will be undertaken regarding alignment with the guidance contained within the CIRIA Document C811 'Environment Good Practice on Site' (CIRIA, 2023) and the IFI guidance 'Guidelines on the Protection Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters' (2016) to ensure the protection of watercourses located within the Proposed Development site.
- Culverting will only be used for existing forestry/field drains and will be carried out in dry weather periods.
- Fuels and chemicals will be stored within bunded areas within the construction compound to guard against potential accidental spills or leakages. The bund area will have a volume of at least 110 % of the volume of such materials stored.
- All on-site refuelling will be carried out at construction compounds by a trained competent operative.
- All vehicles and machinery operating and the proposed project site will be provided with mobile measures, such as drip trays and fuel absorbent mats, which readily available for use during all refuelling operations.
- No refuelling will take place within 50m of any watercourse;
- All equipment and machinery will have regular checking for leakages and quality of performance and will carry spill kits.
- Any servicing of vehicles will be confined to designated and suitably protected areas within the construction compounds.
- Additional drip trays and spill kits will be kept available on site, to ensure that any spills from vehicles are contained and removed off site.
- Soil/peat exposure will be minimized by controlling, in so far as is practical, where and when peat is stripped.
- Concrete is required for the construction of the turbine bases and foundations. No batching of wet-cement products will occur on site. Ready-mixed supply of small amounts of wet concrete products and emplacement of pre-cast elements will take place. Pre-cast elements for bridge, culverts and concrete works will be used.
- After concrete is poured at, the chutes of ready-mixed concrete trucks must be washed out to remove the remaining concrete before it hardens at the construction compound.



Wash out of the main concrete bottle will not be permitted on site; wash out will be restricted only to chute wash out. Wash down and wash out of the concrete transporting vehicles will take place at an appropriate facility, offsite.

- The best practice management objectives for concrete chute washout are to collect and retain all the concrete washout water and solids in leak proof containers, or impermeable lined wash out pits, so that the washed material does not reach the soil surface and then migrate to surface waters, or into the groundwater. The collected concrete washout water and solids will be emptied on a regular basis and disposed of offsite.
- During the construction phase, four temporary site compounds will be required. Temporary on-site toilet facilities will be used. These will be sealed with no discharge to the surface water or groundwater environment adjacent to the site. They will be emptied on a regular basis by a suitable contractor and disposed of offsite.

#### 7.7.1.4.2 Sediment and Erosion Control Measures

Sediment control measures which will be implemented during the construction phase are summarised hereunder:

- The stripping of soils will be kept to a minimum and confined to construction areas only.
- Silt fencing will be erected immediately downslope of construction works at watercourse crossings and along sections of the grid connection route that are adjacent to or within 50 m of a watercourse. Fencing will be positioned between the works area and the watercourse to intercept surface runoff and prevent silt entering aquatic habitats.
- Silt curtains and floating booms will be available for use were deemed to be appropriate, as per the surface water management plan (SWMP). An assessment for its use will be undertaken by the ECoW separately at each individual location.
- Excavated material will not be stockpiled or side-cast within 50m of any watercourse.
- During the side casting of peat, silt fences, straw bales and/or biodegradable geogrids will be used to retain surface water runoff from the storage areas and prevent silt-laden runoff to flow into rivers and water features.
- All surface water run-off from the development will pass through settlement ponds. It is proposed to locate settlement lagoons immediately downstream of the proposed infrastructure including each hardstand and along all site access tracks.
- Settlement ponds will be located appropriately as per the SWMP and will be installed concurrently with the formation of the access track. They will be located as close to the source of sediment as possible.
- The settlement ponds will be regularly cleaned/maintained to provide effective and successful operation throughout the works, the sediment of which will either be disposed of offsite or deposited into borrow pits. Outfalls and ditches will be cleaned, when required, starting upstream, with the outfalls blocked temporarily prior to cleaning.
- Traffic on site will be kept to a minimum. Only the proposed onsite access track will be used for project-related traffic. Where onsite access tracks pass close to watercourses, silt fencing will be used to protect the streams.



### *7.7.1.5 Management of Disturbance/Displacement*

The following measures, in relation to birds, are proposed for the construction phase:

Pre-construction surveys will be required to identify the location of any breeding birds onsite, in particular breeding Snipe, which was identified as being potentially significantly negatively affected by disturbance and displacement during the breeding period, as well as other wader and raptor species. To minimise disturbance or displacement of this breeding KOR or other breeding species which may become established surveys will only be conducted between the months of April to July. These surveys are required to inform site clearance activities given the legal protection of all breeding birds.

As noted, any removal of scrub vegetation will be undertaken outside the bird breeding season, which begins on the 1 March and ends on 31 August. Where programme or site constraints (e.g. safety concerns or adverse weather) require works to be undertaken during the breeding season, no vegetation clearance will take place unless a pre-construction nesting bird survey of the affected area has been carried out by the ECoW. This survey will be conducted up to five days ahead of the works to identify breeding behaviour and nests. In the event of any key ornithological receptor nests being found, the works will immediately cease, and the suitably qualified ECoW will clearly mark these areas in line with appropriate buffer distances which have been outlined in Goodship and Furness (2022). These areas will be avoided until the chicks have fledged or where nesting has failed.

Areas identified as supporting important wintering records of KORs, such as locations in proximity to T1, and sections of infrastructure along the Little Brosna River to the north-east of the proposed project, will be subject to seasonal restrictions on habitat removal and other potentially disturbing activities. In particular, these areas have recorded the presence of Golden Plover, Lapwing, Pintail, Teal, Wigeon, Whooper Swan, and Snipe which were identified as being potentially significantly negatively affected by disturbance and displacement during the wintering period. To minimise disturbance or displacement of these wintering birds or other winter species which may become established, works will be scheduled outside the typical wintering period (October to March inclusive). To minimise disturbance or displacement of these wintering KORs or other winter species which may have become established following the completion of surveys in 2024, such works will be scheduled outside the wintering period, typically from October to March inclusive. Should unforeseen circumstances require activity within this period, surveys will be undertaken up to five days before the works, by a suitably qualified ECoW to confirm the absence of KORs within the affected area. If wintering birds are present in large enough concentrations and assessed to be foraging, resting and/or roosting, such as those identified within the existing environment (See Section 7.4), works will be postponed or relocated to an alternative area until the birds have vacated. Physical exclusion zones and clear signage will be implemented where necessary to prevent accidental encroachment during the wintering season.

These measures are designed to avoid or minimise disturbance and displacement effects to breeding and wintering bird species, in accordance with their legal protection, and to ensure that any disturbance arising from the construction phase does not reach a level that would be considered significant at a population level. The mitigation strategy is based on a precautionary, avoidance-led approach, with works timed and controlled to prevent disturbance to breeding or wintering birds.



The effectiveness of these measures will be overseen by a suitably qualified Ecological Clerk of Works, with ongoing monitoring undertaken throughout the construction phase (see Section 7.8.1).

### 7.7.2 Operational Phase Mitigation Measures

Based on the results of extensive baseline bird surveys encompassing both breeding and wintering seasons and the specific design characteristics of the proposed project, no likely significant effects on bird populations are predicted during the operational phase. Turbine locations, access routes, and associated infrastructure have been sited to avoid habitats of high ornithological value, thereby reducing the potential for collision risk, displacement, or barrier effects to key ornithological receptors.

Furthermore, the operational footprint will predominantly be confined to areas of low ecological value, and no ongoing habitat loss or degradation is anticipated beyond that which occurs during construction. As such, no dedicated mitigation measures are considered necessary for the operational phase.

Nonetheless, a precautionary approach will be maintained. If unexpected ornithological issues arise during the operational phase, such as evidence of collision risk to sensitive species, an adaptive management strategy will be implemented. This will be monitored following a dedicated monitoring programme (see section 7.8 for more information).

### 7.7.3 Decommissioning Phase Mitigation Measures

The expected life span of the proposed wind farm is at least 30 years. The decommissioning works will comprise the removal of all above ground turbine components of the wind farm, which effects on birds are not considered to be likely nor significant. Nevertheless, to assure compliance with the Wildlife Act (as amended), as well as the Article 5 of the Birds Directive (2009/147/EC), the decommissioning works will not be carried out within the period from the 1<sup>st</sup> of March to the 31<sup>st</sup> of August or in the case of locations in proximity to T1 and sections of infrastructure along the Little Brosna River to the north-east of the proposed project, will be subject to seasonal restrictions on habitat removal and other potentially disturbing activities. To minimise disturbance or displacement of wintering KORs, such works will be scheduled outside the core wintering period, typically from October to March inclusive.

## 7.8 BIRD MONITORING PROGRAMME

A Bird Monitoring Programme will be undertaken at the proposed wind farm site pre and post construction of the proposed project. The monitoring programme is presented in full in Appendix 7-3 and described below.

The programme has been carefully developed to ensure that the proposed project can proceed while safeguarding local and migratory bird populations. It is designed to understand, mitigate, and monitor potential effects on birds and outlines a detailed plan for both the construction and operation phases of the proposed project at the wind farm site. The overarching objective of the programme is to understand bird behaviour, identify potential risks, and ensure appropriate protections are in place, with clear objectives and targeted monitoring actions tailored to each phase.



The design of the programme has been informed by the desktop studies, and the bird breeding and non-breeding season surveys used for the ornithological impact assessment in this chapter of the EIAR. As outlined above, the desk studies included a review of data from sources like NPWS, BirdWatch Ireland, and NBDC to identify protected species, and previously published ecological assessments, scientific literature, and publicly available environmental impact reports. The desk study informed the design of field surveys at the proposed wind farm site which were carried out in accordance with best-practice methodologies from recognised authorities, including NatureScot<sup>10</sup>.

The objectives of the programme are to:

- Prevent disturbance to breeding birds during the construction phase;
- Monitor how birds use the site and interact with turbines during operation;
- Detect both short- and long-term changes in bird populations, particularly among sensitive or protected species;
- Assess collision risks and document any bird fatalities;
- Report findings at key intervals to inform mitigation and adaptive management over time.

### 7.8.1 Post-Construction Monitoring: Long-Term Environmental Monitoring

Once the wind farm becomes operational, a robust, long-term monitoring regime will begin, continuing across the first 15 years of the wind farm's life (in years 1, 2, 3, 5, 10, and 15). A variety of complementary surveys will be carried out to monitor bird behaviour, assess potential turbine interactions, and evaluate any population changes or displacement effects.

#### 1. Vantage Point (Flight Activity) Surveys

These surveys are conducted monthly in designated operational years. Observers stationed at key vantage points record bird flight paths, height, and behaviour near turbines. This helps determine if birds are avoiding or flying dangerously close to turbine blades – vital for understanding collision risk.

#### 2. Breeding Bird Surveys

A suite of breeding bird surveys including raptors, woodcock, waders, and the breeding bird transect surveys will be carried out to track any shifts in nesting behaviour or territory usage caused by the wind farm and supporting infrastructure. These surveys help detect subtle displacement effects that may not be immediately obvious.

#### 3. Winter Bird Surveys

To capture seasonal variation, winter surveys will be undertaken during the same operational years. These will include winter transects, I-WeBS counts, and Hen Harrier roost monitoring. Although no Hen Harrier roosts were recorded during the field study, such surveys remain valuable, as roosts may become established following consent. Their timing also allows for recording of wildfowl, geese, and swans commuting between roosting and foraging areas.

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<sup>10</sup> Formerly known as a Scottish Natural Heritage (SNH)



Winter surveys are particularly important for species such as Whooper Swan and for wintering wader populations associated with nearby SPAs.

#### **4. Fatality Monitoring**

A detailed collision monitoring programme will also be put in place. Trained dogs will be used to search for bird carcasses around turbines, increasing the likelihood of detection. Carcass removal trials will be conducted to understand scavenger interference, and all findings will be calibrated to estimate actual fatality rates. This ensures any bird deaths linked to turbine operation are documented and used to guide mitigation if necessary.

### **7.8.2 Reporting and Adaptive Management**

At the end of each monitoring season, a comprehensive report will be submitted to the NPWS and the planning authority, no later than March 31<sup>st</sup>. These reports will include all survey data, analysis of bird-turbine interactions and flight maps created with GIS software. Where monitoring identifies effects materially exceeding those predicted in the EIAR, appropriate adaptive management measures will be implemented, which may include turbine management measures where necessary. This reporting structure allows for a mechanism to verify the assessment conclusions and to facilitate adaptive management if required.

### **7.9 ENHANCEMENT MEASURES**

A detailed Biodiversity Management Plan has been produced for the effective implementation of mitigation and enhancement measures to offset residual effects (Appendix 6-4)

### **7.10 RESIDUAL EFFECTS**

The proposed project has the potential to give rise to likely significant effects on Key Ornithological Receptors during the construction phase in the absence of mitigation, principally in relation to habitat loss, habitat degradation, and disturbance or displacement. Following the implementation of the mitigation measures set out in Section 7.7, no significant residual effects on Key Ornithological Receptors are anticipated during the construction phase.

No significant residual effects are anticipated during the operational or decommissioning phases of the proposed project.

Table 7-22 contains a summary of all potential effects associated with the proposed project, the prescribed mitigation measures, and the resulting (residual) effects' significance of all KORs.

Upon the implementation of the aforementioned mitigation measures, it is considered that any effects from habitat loss, habitat degradation and disturbance/displacement from the proposed project, alone and/or cumulatively with other projects, is either unlikely or not significant and therefore no likely significant effects are anticipated.



## 7.11 IMPACT ASSESSMENT SUMMARY

This chapter of the EIAR has assessed the potential environmental effects on ornithological receptors from the construction, operation and maintenance and decommissioning phases of the proposed project. Where significant effects have been identified, additional mitigation has been considered and incorporated into the assessment.

Table 7-22, summarises the impact assessment undertaken and confirms the significance of any residual effects, following the application of mitigation.



Table 7-22: Summary of potential impacts and residual effects

Potential Impact	Key Ornithological Receptor (KOR)	Sensitivity of KOR receptor	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
<b>Construction Phase</b>						
Direct Habitat Loss	Barn Owl	Medium	Low	Long Term, Slight negative effects	No Mitigation Required – However seasonal restrictions on site clearance works and appointment of an ECoW will further reduce the impact magnitude in relation to direct habitat loss.	Long Term, Slight negative effects
	Black-headed Gull	Very High	Negligible	Long Term, Slight negative effects		Long Term, Slight negative effects
	Black-tailed Godwit	Very High	Negligible	Long Term, Slight negative effects		Long Term, Slight negative effects
	Buzzard	Low	Low	Long Term, Not Significant negative effects		Long Term, Not Significant negative effects
	Cormorant	Low	Negligible	Long Term, Slight negative effect		Long Term, Slight negative effect
	Golden Plover	Very High	Negligible	Long Term, Slight negative effects		Long Term, Slight negative effects
	Grey Heron	Low	Negligible	Long Term, Imperceptible negative effect		Long Term, Imperceptible negative effect
	Hen Harrier	Very High	Negligible	Long Term, Slight negative effect		Long Term, Slight negative effect



Potential Impact	Key Ornithological Receptor (KOR)	Sensitivity of KOR receptor	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
	Kestrel	Medium	Low	Long Term, Slight negative effect		Long Term, Slight negative effect
	Lapwing	Very High	Negligible	Long Term, Slight negative effect		Long Term, Slight negative effect
	Lesser Black-backed Gull	Low	Negligible	Long Term, Imperceptible negative effect		Long Term, Imperceptible negative effect
	Little Egret	Medium	Negligible	Long Term, Imperceptible negative effect		Long Term, Imperceptible negative effect
	Mallard	Low	Negligible	Long Term, Imperceptible negative effect		Long Term, Imperceptible negative effect
	Merlin	Medium	Negligible	Long Term, Imperceptible negative effect		Long Term, Imperceptible negative effect
	Mute Swan	Low	Negligible	Long Term, Imperceptible negative effect		Long Term, Imperceptible negative effect
	Peregrine Falcon	Medium	Negligible	Long Term, Imperceptible negative effect		Long Term, Imperceptible negative effect



Potential Impact	Key Ornithological Receptor (KOR)	Sensitivity of KOR receptor	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
	Pintail	Very High	Negligible	Long Term, Slight negative effect		Long Term, Slight negative effect
	Snipe	Medium	Low	Long Term, Slight negative effect		Long Term, Slight negative effect
	Sparrowhawk	Low	Low	Long Term, Not Significant negative effect		Long Term, Not Significant negative effect
	Teal	Very High	Negligible	Long Term, Slight negative effect		Long Term, Slight negative effect
	Whooper Swan	Very High	Negligible	Long Term, Slight negative effect		Long Term, Slight negative effect
	Wigeon	Very High	Negligible	Long Term, Slight negative effect		Long Term, Slight negative effect
	Rarely recorded target species.	Very High to Low	Negligible	Long Term, Slight to imperceptible negative effect		Long Term, Slight to imperceptible negative effect
	All other species of lower conservation concern	Medium to Very Low	Low	Long Term, Slight to imperceptible negative effect		Long Term, Slight to imperceptible negative effect



Potential Impact	Key Ornithological Receptor (KOR)	Sensitivity of KOR receptor	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
Habitat Degradation Due to Surface Water Quality Impacts, Air Quality Impacts the Spread or Introduction of Invasive Non-Native Species	Barn Owl	Medium	Negligible	Long Term, Imperceptible negative effects	No Mitigation Required	Long Term, Imperceptible negative effects
	Black-headed Gull	Very High	Negligible	Long Term, Slight negative effects	No Mitigation Required	Long Term, Slight negative effects
	Black-tailed Godwit	Very High	Low	Long Term, Moderate negative effects	<b>Mitigation in relation to the management of water quality impacts will be implemented (see section 7.7.1.4)</b>	Long Term, Slight negative effects
	Buzzard	Low	Low	Long Term, Not Significant negative effect	No Mitigation Required	Long Term, Not Significant negative effect
	Cormorant	Very High	Low	Long Term, Moderate negative effect	<b>Mitigation in relation to the management of water quality effects will be implemented (see section 7.7.1.4)</b>	Long Term, Slight negative effect
	Golden Plover	Very High	Low	Long Term, Moderate negative effect	<b>Mitigation in relation to the management of water quality effects will be implemented (see section 7.7.1.4)</b>	Long Term, Slight negative effects



Potential Impact	Key Ornithological Receptor (KOR)	Sensitivity of KOR receptor	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
	Grey Heron	Low	Low	Long Term, Not Significant negative effect	No Mitigation Required	Long Term, Not Significant negative effect
	Hen Harrier	Very High	Negligible	Long Term, Slight negative effect	No Mitigation Required	Long Term, Slight negative effect
	Kestrel	Medium	Negligible	Long Term, Imperceptible negative effect	No Mitigation Required	Long Term, Imperceptible negative effect
	Lapwing	Very High	Negligible	Long Term, Slight negative effect	No Mitigation Required	Long Term, Slight negative effect
	Lesser Black-backed Gull	Low	Negligible	Long Term, Imperceptible negative effect	No Mitigation Required	Long Term, Imperceptible negative effect
	Little Egret	Medium	Low	Long Term, Slight negative effect	No Mitigation Required	Long Term, Slight negative effect
	Mallard	Low	Low	Long Term, Not Significant negative effect	No Mitigation Required	Long Term, Not Significant negative effect
	Merlin	Medium	Negligible	Long Term, Imperceptible negative effect	No Mitigation Required	Long Term, Imperceptible negative effect



Potential Impact	Key Ornithological Receptor (KOR)	Sensitivity of KOR receptor	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
	Mute Swan	Low	Low	Long Term, Not Significant negative effect	No Mitigation Required	Long Term, Not Significant negative effect
	Peregrine Falcon	Medium	Low	Long Term, Slight negative effect	No Mitigation Required	Long Term, Slight negative effect
	Pintail	Very High	Low	Long Term, Moderate negative effects	<b>Mitigation in relation to the management of water quality effects will be implemented (see section 7.7.1.4)</b>	Long Term, Slight negative effects
	Snipe	Medium	Low	Long Term, Slight negative effects	No Mitigation Required	Long Term, Slight negative effects
	Sparrowhawk	Low	Negligible	Long Term, Imperceptible negative effect	No Mitigation Required	Long Term, Imperceptible negative effect
	Teal	Very High	Low	Long Term, Moderate negative effects	<b>Mitigation in relation to the management of water quality effects will be implemented (see section 7.7.1.4)</b>	Long Term, Slight negative effects
	Whooper Swan	Very High	Low	Long Term, Moderate negative effects	<b>Mitigation in relation to the management of water quality effects will be implemented (see section 7.7.1.4)</b>	Long Term, Slight negative effects



Potential Impact	Key Ornithological Receptor (KOR)	Sensitivity of KOR receptor	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
	Wigeon	Very High	Low	Long Term, Moderate negative effects	<b>Mitigation in relation to the management of water quality effects will be implemented (see section 7.7.1.4)</b>	Long Term, Slight negative effects
	Rarely recorded target species.	Very High to Low	Negligible	Long Term, Slight to imperceptible negative effect	No Mitigation Required	Long Term, Slight to imperceptible negative effect
	All other species of lower conservation concern	Medium to Very Low	Low	Long Term, Slight to imperceptible negative effect	No Mitigation Required	Long Term, Slight to imperceptible negative effect
Disturbance/Displacement	Barn Owl	Medium	Low	Short-term, Slight negative effects	No Mitigation Required	Short-term, Slight negative effects
	Black-headed Gull	Very High	Low	Short-term, Moderate negative effects	No Mitigation Required	Short-term, Moderate negative effects
	Black-tailed Godwit	Very High	Low	Short-term, Moderate negative effects	<b>Mitigation in relation to the management of disturbance/displacement effects will be implemented (see section 7.7.1.5)</b>	Short-term, Slight negative effects



Potential Impact	Key Ornithological Receptor (KOR)	Sensitivity of KOR receptor	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
	Buzzard	Low	Low	Short-term, Not Significant negative effect	No Mitigation Required	Short-term, Not Significant negative effect
	Cormorant	Very High	Moderate	Short-term, Moderate negative effect	No Mitigation Required	Short-term, Moderate negative effect
	Golden Plover	Very High	Medium	Short-term, Significant negative effect	<b>Mitigation in relation to the management of disturbance/displacement effects will be implemented (see section 7.7.1.5)</b>	Short-term, Slight negative effects
	Grey Heron	Low	Low	Short-term, Not Significant negative effect	No Mitigation Required	Short-term, Not Significant negative effect
	Hen Harrier	Very High	Low	Short-term, Moderate negative effects	No Mitigation Required	Short-term, Moderate, Slight negative effects
	Kestrel	Medium	Low	Short-term, Slight negative effects	No Mitigation Required	Short-term, Slight negative effects
	Lapwing	Very High	Low	Short-term, Moderate negative effects	<b>Mitigation in relation to the management of disturbance/displacement effects will be</b>	Short-term, Slight negative effects



Potential Impact	Key Ornithological Receptor (KOR)	Sensitivity of KOR receptor	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
					<b>implemented (see section 7.7.1.5)</b>	
	Lesser Black-backed Gull	Low	Low	Short-term, Not Significant negative effect	No Mitigation Required	Short-term, Not Significant negative effect
	Little Egret	Medium	Low	Short-term, Slight negative effects	No Mitigation Required	Short-term, Slight negative effects
	Mallard	Low	Low	Short-term, Not Significant negative effect	No Mitigation Required	Short-term, Not Significant negative effect
	Merlin	Medium	Low	Short-term, Slight negative effects	No Mitigation Required	Short-term, Slight negative effects
	Mute Swan	Low	Low	Short-term, Not Significant negative effect	No Mitigation Required	Short-term, Not Significant negative effect
	Peregrine Falcon	Medium	Low	Short-term, Slight negative effects	No Mitigation Required	Short-term, Slight negative effects
	Pintail	Very High	Low	Short-term, Moderate negative effects	<b>Mitigation in relation to the management of disturbance/displacement effects will be implemented (see section 7.7.1.5)</b>	Short-term, Slight negative effects



Potential Impact	Key Ornithological Receptor (KOR)	Sensitivity of KOR receptor	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
	Snipe	Medium	Medium	Short-term, Moderate negative effects	Mitigation in relation to the management of disturbance/displacement effects will be implemented (see section 7.7.1.5)	Short-term, Slight negative effects
	Sparrowhawk	Low	Medium	Short-term, Slight negative effects	No Mitigation Required	Short-term, Slight negative effects
	Teal	Very High	Low	Short-term, Moderate negative effects	Mitigation in relation to the management of disturbance/displacement effects will be implemented (see section 7.7.1.5)	Short-term, Slight negative effects
	Whooper Swan	Very High	Low	Short-term, Moderate negative effects	Mitigation in relation to the management of disturbance/displacement effects will be implemented (see section 7.7.1.5)	Short-term, Slight negative effects
	Wigeon	Very High	Low	Short-term, Moderate negative effects	Mitigation in relation to the management of disturbance/displacement effects will be implemented (see section 7.7.1.5)	Short-term, Slight negative effects



Potential Impact	Key Ornithological Receptor (KOR)	Sensitivity of KOR receptor	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
	Rarely recorded target species.	Very High to Low	Negligible	Long Term, Slight to imperceptible negative effect	No Mitigation Required	Long Term, Slight to imperceptible negative effect
	All other species of lower conservation concern	Medium to Very Low	Low	Long Term, Slight to imperceptible negative effect	No Mitigation Required	Long Term, Slight to imperceptible negative effect
<b>Operational Phase</b>						
Disturbance/Displacement and Barrier Effect	Barn Owl	Medium	Medium	Long-term, Moderate negative effects	No Mitigation Required	Long-term, Moderate negative effects
	Black-headed Gull	Very High	Low	Long-term, Moderate negative effects		Long-term, Moderate negative effects
	Black-Tailed Godwit	Very High	Low	Long-term, Moderate negative effects		Long-term, Moderate negative effects
	Buzzard	Low	Medium	Long-term, Slight negative effects		Long-term, Slight negative effects
	Cormorant	Very High	Low	Long-term, Moderate negative effects		Long-term, Moderate negative effects
	Golden Plover	Very High	Low	Long-term, Moderate negative effects		Long-term, Moderate negative effects



Potential Impact	Key Ornithological Receptor (KOR)	Sensitivity of KOR receptor	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
	Grey Heron	Low	Low	Long-term, not significant negative effects		Long-term, not significant negative effects
	Hen Harrier	Very High	Low	Long-term, Moderate negative effects		Long-term, Moderate negative effects
	Kestrel	Medium	Low	Long-term, Slight negative effects		Long-term, Slight negative effects
	Lapwing	Very High	Low	Long Term, Moderate negative effects		Long Term, Moderate negative effects
	Lesser Black-backed Gull	Low	Medium	Long-term, Slight negative effects		Long-term, Slight negative effects
	Little Egret	Medium	Low	Long-term, Slight negative effects		Long-term, Slight negative effects
	Mallard	Low	Medium	Long-term, Slight negative effects		Long-term, Slight negative effects
	Merlin	Medium	Low	Long-term, Slight negative effects		Long-term, Slight negative effects
	Mute Swan	Low	Low	Long-term, not significant negative effects		Long-term, not significant negative effects



Potential Impact	Key Ornithological Receptor (KOR)	Sensitivity of KOR receptor	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
	Peregrine Falcon	Medium	Low	Long-term, Slight negative effects		Long-term, Slight negative effects
	Pintail	Very High	Low	Long Term, Moderate negative effects		Long Term, Moderate negative effects
	Snipe	Medium	Low	Long-term, Slight negative effects		Long-term, Slight negative effects
	Sparrowhawk	Low	Low	Long-term, not significant negative effects		Long-term, not significant negative effects
	Teal	Very High	Low	Long Term, Moderate negative effects		Long Term, Moderate negative effects
	Whooper Swan	Very High	Low	Long-term, Moderate negative effects		Long-term, Moderate negative effects
	Wigeon	Very High	Low	Long-term, Moderate negative effects		Long-term, Moderate negative effects
	Rarely recorded target species.	Very High to Low	Negligible	Long Term, Slight to imperceptible negative effect		Long Term, Slight to imperceptible negative effect
	All other species of lower	Medium to Very Low	Low	Long Term, Slight to imperceptible negative effect		Long Term, Slight to imperceptible negative effect



Potential Impact	Key Ornithological Receptor (KOR)	Sensitivity of KOR receptor	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
	conservation concern					
Collision Risk	Barn Owl	Medium	Negligible	Long-term, Imperceptible negative effects	No Mitigation Required	Long-term, Imperceptible negative effects
	Black-headed Gull	Very High	Negligible	Long-term, Slight negative effects		Long-term, Slight negative effects
	Black-Tailed Godwit	Very High	Negligible	Long-term, Slight negative effects		Long-term, Slight negative effects
	Buzzard	Low	Negligible	Long-term, Imperceptible negative effects		Long-term, Imperceptible negative effects
	Cormorant	Low	Negligible	Long-term, Imperceptible negative effects		Long-term, Imperceptible negative effects
	Golden Plover	Very High	Negligible	Long-term, Slight negative effects		Long-term, Slight negative effects
	Grey Heron	Low	Negligible	Long-term, Imperceptible negative effects		Long-term, Imperceptible negative effects
	Hen Harrier	Very High	Negligible	Long-term, Slight negative effects		Long-term, Slight negative effects



Potential Impact	Key Ornithological Receptor (KOR)	Sensitivity of KOR receptor	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
	Kestrel	Medium	Negligible	Long-term, Imperceptible negative effects		Long-term, Imperceptible negative effects
	Lapwing	Very High	Negligible	Long-term, Slight negative effects		Long-term, Slight negative effects
	Lesser Black-backed Gull	Low	Negligible	Long-term, Imperceptible negative effects		Long-term, Imperceptible negative effects
	Little Egret	Medium	Negligible	Long-term, Imperceptible negative effects		Long-term, Imperceptible negative effects
	Mallard	Low	Negligible	Long-term, Imperceptible negative effects		Long-term, Imperceptible negative effects
	Merlin	Medium	Negligible	Long-term, Imperceptible negative effects		Long-term, Imperceptible negative effects
	Mute Swan	Low	Negligible	Long-term, Imperceptible negative effects		Long-term, Imperceptible negative effects
	Peregrine Falcon	Medium	Negligible	Long-term, Imperceptible negative effects		Long-term, Imperceptible negative effects



Potential Impact	Key Ornithological Receptor (KOR)	Sensitivity of KOR receptor	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
	Pintail	Very High	Negligible	Long-term, Slight negative effects		Long-term, Slight negative effects
	Snipe	Medium	Negligible	Long-term, Imperceptible negative effects		Long-term, Imperceptible negative effects
	Sparrowhawk	Low	Negligible	Long-term, Imperceptible negative effects		Long-term, Imperceptible negative effects
	Teal	Very High	Negligible	Long-term, Slight negative effects		Long-term, Slight negative effects
	Whooper Swan	Very High	Negligible	Long-term, Slight negative effects		Long-term, Slight negative effects
	Wigeon	Very High	Negligible	Long-term, Slight negative effects		Long-term, Slight negative effects
	Rarely recorded target species.	Very High to Low	Negligible	Long-term, Slight to imperceptible negative effects		Long-term, Slight to imperceptible negative effects
	All other species of lower conservation concern	Medium to Very Low	Negligible	Long-term, Imperceptible negative effects		Long-term, Imperceptible negative effects
<b>Decommissioning phase</b>						



Potential Impact	Key Ornithological Receptor (KOR)	Sensitivity of KOR receptor	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
Direct Habitat Loss	Barn Owl	Medium	Low	Long Term, Slight negative effects	No Mitigation Required – However seasonal restrictions on site clearance works and appointment of an ECoW will further reduce the impact magnitude in relation to direct habitat loss.	Long Term, Slight negative effects
	Black-headed Gull	Very High	Negligible	Long Term, Slight negative effects		Long Term, Slight negative effects
	Black-tailed Godwit	Very High	Negligible	Long Term, Slight negative effects		Long Term, Slight negative effects
	Buzzard	Low	Low	Long Term, Not Significant negative effects		Long Term, Not Significant negative effects
	Cormorant	Low	Negligible	Long Term, Slight negative effect		Long Term, Slight negative effect
	Golden Plover	Very High	Negligible	Long Term, Slight negative effects		Long Term, Slight negative effects
	Grey Heron	Low	Negligible	Long Term, Imperceptible negative effect		Long Term, Imperceptible negative effect
	Hen Harrier	Very High	Negligible	Long Term, Slight negative effect		Long Term, Slight negative effect
	Kestrel	Medium	Low	Long Term, Slight negative effect		Long Term, Slight negative effect
	Lapwing	Very High	Negligible	Long Term, Slight negative effect		Long Term, Slight negative effect



Potential Impact	Key Ornithological Receptor (KOR)	Sensitivity of KOR receptor	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
	Lesser Black-backed Gull	Low	Negligible	Long Term, Imperceptible negative effect		Long Term, Imperceptible negative effect
	Little Egret	Medium	Negligible	Long Term, Slight negative effect		Long Term, Slight negative effect
	Mallard	Low	Negligible	Long Term, Imperceptible negative effect		Long Term, Imperceptible negative effect
	Merlin	Medium	Negligible	Long Term, Imperceptible negative effect		Long Term, Imperceptible negative effect
	Mute Swan	Low	Negligible	Long Term, Imperceptible negative effect		Long Term, Imperceptible negative effect
	Peregrine Falcon	Medium	Negligible	Long Term, Imperceptible negative effect		Long Term, Imperceptible negative effect
	Pintail	Very High	Negligible	Long Term, Slight negative effect		Long Term, Slight negative effect
	Snipe	Medium	Low	Long Term, Slight negative effect		Long Term, Slight negative effect



Potential Impact	Key Ornithological Receptor (KOR)	Sensitivity of KOR receptor	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
	Sparrowhawk	Low	Low	Long Term, Not Significant negative effect		Long Term, Not Significant negative effect
	Teal	Very High	Negligible	Long Term, Slight negative effect		Long Term, Slight negative effect
	Whooper Swan	Very High	Negligible	Long Term, Slight negative effect		Long Term, Slight negative effect
	Wigeon	Very High	Negligible	Long Term, Slight negative effect		Long Term, Slight negative effect
	Rarely recorded target species.	Very High to Low	Negligible	Long Term, Slight to imperceptible negative effect		Long Term, Slight to imperceptible negative effect
	All other species of lower conservation concern	Medium to Very Low	Low	Long Term, Slight to imperceptible negative effect		Long Term, Slight to imperceptible negative effect
Habitat Degradation Due to Surface Water Quality Impacts, Air Quality Impacts the Spread or Introduction of Invasive Non-Native Species	Barn Owl	Medium	Negligible	Short-term, Imperceptible negative effects	No Mitigation Required	Short-term, Imperceptible negative effects
	Black-headed Gull	Very High	Low	Short-term, Moderate negative effects	No Mitigation Required	Short-term, Moderate negative effects



Potential Impact	Key Ornithological Receptor (KOR)	Sensitivity of KOR receptor	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
	Black-tailed Godwit	Very High	Low	Short-term, Moderate negative effects	<b>Mitigation in relation to the management of water quality impacts will be implemented (see section 7.7.1.4)</b>	Short-term, Slight negative effects
	Buzzard	Low	Low	Short-term, Not Significant negative effect	No Mitigation Required	Short-term, Not Significant negative effect
	Cormorant	Low	Low	Short-term, Not Significant negative effect	No Mitigation Required	Short-term, Not Significant negative effect
	Golden Plover	Very High	Low	Short-term, Moderate negative effect	<b>Mitigation in relation to the management of water quality effects will be implemented (see section 7.7.1.4)</b>	Short-term, Slight negative effects
	Grey Heron	Low	Low	Short-term, Not Significant negative effect	No Mitigation Required	Short-term, Not Significant negative effect
	Hen Harrier	Very High	Negligible	Short-term, Slight negative effect	No Mitigation Required	Short-term, Slight negative effect
	Kestrel	Medium	Negligible	Short-term, Imperceptible negative effect	No Mitigation Required	Short-term, Imperceptible negative effect



Potential Impact	Key Ornithological Receptor (KOR)	Sensitivity of KOR receptor	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
	Lapwing	Very High	Negligible	Short-term, Slight negative effect	No Mitigation Required	Short-term, Slight negative effect
	Lesser Black-backed Gull	Low	Negligible	Short-term, Imperceptible negative effect	No Mitigation Required	Short-term, Imperceptible negative effect
	Little Egret	Medium	Low	Short-term, Slight negative effect	No Mitigation Required	Short-term, Slight negative effect
	Mallard	Low	Low	Short-term, Not Significant negative effect	No Mitigation Required	Short-term, Not Significant negative effect
	Merlin	Medium	Negligible	Short-term, Imperceptible negative effect	No Mitigation Required	Short-term, Imperceptible negative effect
	Mute Swan	Low	Low	Short-term, Not Significant negative effect	No Mitigation Required	Short-term, Not Significant negative effect
	Peregrine Falcon	Medium	Low	Short-term, Slight negative effect	No Mitigation Required	Short-term, Slight negative effect
	Pintail	Very High	Low	Short-term, Moderate negative effects	<b>Mitigation in relation to the management of water quality effects will be implemented (see section 7.7.1.4)</b>	Short-term, Slight negative effects



Potential Impact	Key Ornithological Receptor (KOR)	Sensitivity of KOR receptor	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
	Snipe	Medium	Low	Short-term, Slight negative effects	No Mitigation Required	Short-term, Slight negative effects
	Sparrowhawk	Low	Negligible	Short-term, Imperceptible negative effect	No Mitigation Required	Short-term, Imperceptible negative effect
	Teal	Very High	Low	Moderate Short-term, Moderate negative effects	<b>Mitigation in relation to the management of water quality effects will be implemented (see section 7.7.1.4)</b>	Short-term, Slight negative effects
	Whooper Swan	Very High	Low	Short-term, Moderate negative effects	<b>Mitigation in relation to the management of water quality effects will be implemented (see section 7.7.1.4)</b>	Short-term, Slight negative effects
	Wigeon	Very High	Low	Short-term, Moderate negative effects	<b>Mitigation in relation to the management of water quality effects will be implemented (see section 7.7.1.4)</b>	Short-term, Slight negative effects
	Rarely recorded target species.	Very High to Low	Negligible	Long Term, Slight to imperceptible negative effect	No Mitigation Required	Long Term, Slight to imperceptible negative effect



Potential Impact	Key Ornithological Receptor (KOR)	Sensitivity of KOR receptor	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
	All other species of lower conservation concern	Medium to Very Low	Low	Long Term, Slight to imperceptible negative effect	No Mitigation Required	Long Term, Slight to imperceptible negative effect
Disturbance/Displacement	Barn Owl	Medium	Low	Short-term, Slight negative effects	No Mitigation Required	Short-term, Slight negative effects
	Black-headed Gull	Very High	Low	Short-term, Moderate negative effects	No Mitigation Required	Short-term, Moderate negative effects
	Black-tailed Godwit	Very High	Low	Short-term, Moderate negative effects	No Mitigation Required	Short-term, Moderate negative effects
	Buzzard	Low	Low	Short-term, Not Significant negative effect	No Mitigation Required	Short-term, Not Significant negative effect
	Cormorant	Low	Low	Short-term, Not Significant negative effect	No Mitigation Required	Short-term, Not Significant negative effect
	Golden Plover	Very High	Medium	Short-term, Significant negative effect	Mitigation in relation to the management of disturbance/displacement effects will be implemented (see section 7.7.1.5)	Short-term, Slight negative effects



Potential Impact	Key Ornithological Receptor (KOR)	Sensitivity of KOR receptor	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
	Grey Heron	Low	Low	Short-term, Not Significant negative effect	No Mitigation Required	Short-term, Not Significant negative effect
	Hen Harrier	Very High	Low	Short-term, Moderate negative effects	No Mitigation Required	
	Kestrel	Medium	Low	Short-term, Slight negative effects	No Mitigation Required	Short-term, Slight negative effects
	Lapwing	Very High	Low	Short-term, Moderate negative effects	<b>Mitigation in relation to the management of disturbance/displacement effects will be implemented (see section 7.7.1.5)</b>	Short-term, Slight negative effects
	Lesser Black-backed Gull	Low	Low	Short-term, Not Significant negative effect	No Mitigation Required	Short-term, Not Significant negative effect
	Little Egret	Medium	Low	Short-term, Slight negative effects	No Mitigation Required	Short-term, Slight negative effects
	Mallard	Low	Low	Short-term, Not Significant negative effect	No Mitigation Required	Short-term, Not Significant negative effect
	Merlin	Medium	Low	Short-term, Slight negative effects	No Mitigation Required	Short-term, Slight negative effects



Potential Impact	Key Ornithological Receptor (KOR)	Sensitivity of KOR receptor	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
	Mute Swan	Low	Low	Short-term, Not Significant negative effect	No Mitigation Required	Short-term, Not Significant negative effect
	Peregrine Falcon	Medium	Low	Short-term, Slight negative effects	No Mitigation Required	Short-term, Slight negative effects
	Pintail	Very High	Low	Short-term, Moderate negative effects	<b>Mitigation in relation to the management of disturbance/displacement effects will be implemented (see section 7.7.1.5)</b>	Short-term, Slight negative effects
	Snipe	Medium	Medium	Short-term, Moderate negative effects	<b>Mitigation in relation to the management of disturbance/displacement effects will be implemented (see section 7.7.1.5)</b>	Short-term, Slight negative effects
	Sparrowhawk	Low	Medium	Short-term, Slight negative effects	No Mitigation Required	Short-term, Slight negative effects
	Teal	Very High	Low	Short-term, Moderate negative effects	<b>Mitigation in relation to the management of disturbance/displacement effects will be implemented (see section 7.7.1.5)</b>	Short-term, Slight negative effects



Potential Impact	Key Ornithological Receptor (KOR)	Sensitivity of KOR receptor	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
	Whooper Swan	Very High	Low	Short-term, Moderate negative effects	<b>Mitigation in relation to the management of disturbance/displacement effects will be implemented (see section 7.7.1.5)</b>	Short-term, Slight negative effects
	Wigeon	Very High	Low	Short-term, Moderate negative effects	<b>Mitigation in relation to the management of disturbance/displacement effects will be implemented (see section 7.7.1.5)</b>	Short-term, Slight negative effects
	Rarely recorded target species.	Very High to Low	Negligible	Long Term, Slight to imperceptible negative effect	No Mitigation Required	Long Term, Slight to imperceptible negative effect
	All other species of lower conservation concern	Medium to Very Low	Low	Long Term, Slight to imperceptible negative effect	No Mitigation Required	Long Term, Slight to imperceptible negative effect



## 7.12 CUMULATIVE EFFECTS

NatureScot guidance “Assessing the Cumulative Impacts of onshore Wind Energy Developments” (SNH, 2012; 2018) was followed while undertaking the cumulative assessment. SNH guidance (2012; 2018) emphasises that its priority is to ‘maintain the conservation status of the species populations at the national level’. However, it is acknowledged that consideration should also be allowed for impacts at the regional level ‘where regional impacts have national implications (for example where a specific region holds the majority of the national population)’. Following the guidance of SNH (2012), the cumulative impact assessment has been carried out at the scale of the importance rating of the receptor. As discussed in Chapter 4 (Planning Development and Policy), a study area was identified for other developments for the purpose of the cumulative assessment. This was set at a 20 km radius from the proposed wind farm site, based on IWEA (2012) guidelines and the largest core foraging distance for any SCI bird given by NatureScot (2016) guidance. Within this area, ‘other development’ includes existing developments, developments with planning permission (i.e. consented), and developments subject to live planning applications at the time of assessment. These other developments included searches for any renewable energy developments, electricity infrastructure, quarries, wastewater treatment plants, piggeries, power plants, biomass developments and any other large developments.

To conduct the cumulative impact assessment, the online planning registers for Offaly and Tipperary County Councils as well as An Coimisiún Pleanála (ACP), were used. Relevant EIAR (or historical EIS) documents, planning application details and planning drawings within the study area of the Wind Farm Site and all associated works were reviewed to identify past and future projects, their activities and their environmental impacts.

### 7.12.1 Projects

#### 7.12.1.1 Other wind farms

Existing and proposed windfarms within proximity to the proposed project are discussed hereunder. Six wind farms have been located within the study area for the cumulative assessment; see Table 7-23.

**Table 7-23: List of Select Granted/Undecided Applications within 20 km from the proposed wind farm site.**

Wind Farm	Consenting Authority	Planning Reference	Decision	No. Turbines	Distance from site approx. Km
Carrig Wind Farm	ACP	318689	Granted - 30/06/2025	7	c.3.9km
Skehanagh/Lacka Wind Farm	Tipperary	5123495/512496	Granted (Conditional) - May- June 2001	8	c.1.7km to 2.7km
Cush Wind Farm	ACP	318816-24	Granted - 04/11/2024	8	c.10 km
Derrinlough Wind Farm	ACP	306706	Granted (Conditional) - 26/08/2021	21	c.13km



Wind Farm	Consenting Authority	Planning Reference	Decision	No. Turbines	Distance from site approx. Km
Monaincha Bog Wind Farm and Solar Farm	ACP	315975	Granted (Conditional) - 23/01/2024	10	c.15 km
Cloghan Wind Farm	ACP	244053, PL19.24405	Grant permission with revised conditions - 27/10/2016	9	c.16 km

### 7.12.1.1.1 Carrig Wind Farm (AIR)

A Natura Impact Statement (NIS) and Environmental Impact Assessment Report (EIAR) for the Carrig Wind Farm Project were prepared by MKO on behalf of Carrig Renewable Energy Limited. These reports identified the potential for likely significant effects on designated sites and potential significant effects to ornithological species.

The NIS concluded that, where the potential for any adverse effect on a European site was identified, the pathway for such an effect has been effectively eliminated through avoidance, appropriate design, and the implementation of mitigation measures set out in the report and its appendices. These measures ensure that the construction, operation, and decommissioning of the Proposed Project will not adversely affect the integrity of any European Site.

The ornithology chapter of the EIAR assessed potential impacts on birds from habitat loss, disturbance/displacement, collision risk, and cumulative effects during the construction, operation, and decommissioning of the Proposed Project. The following species were identified as KORs for the project: Golden Plover (wintering), Hen Harrier (wintering), Merlin (all seasons), Peregrine (all seasons), Whooper Swan (wintering), Lapwing (all seasons), Black-headed Gull (all seasons), Cormorant (all seasons), Teal (wintering), Barn Owl (all seasons), Curlew (breeding), Kestrel (all seasons), Snipe (all seasons), Woodcock (breeding), Buzzard (all seasons), and Sparrowhawk (all seasons).

The assessment determined that no significant effects were predicted on receptors of International, National, or County importance. Provided that the Proposed Project is implemented in accordance with the design specifications and best practice mitigation measures described in the application, significant individual or cumulative effects on the identified KORs are not anticipated.

**Given that the Carrig Wind Farm was assessed as having no significant residual effects on Key Ornithological Receptors, and that the Proposed Project is likewise predicted to result in no significant effects, along with the availability of extensive suitable habitat in the wider landscape, the combined effects do not materially increase overall impact magnitudes on the shared KORs. The cumulative effect therefore remains negligible and would not result in measurable impacts for any KOR. On this basis, significant cumulative effects are unlikely and no additional mitigation measures are required.**

### 7.12.1.1.2 Carrig (Lacka) Wind Farm

The Carrig (Lacka) Wind Farm has been operational since 2006 and comprises three turbines of a smaller scale and height than those proposed as part of the proposed project. A review of the



Carrig (Lacka) Wind Farm planning file on the Tipperary County Council Planning Register found no available information relating to potential effects on European sites. Nonetheless, the potential for the proposed project to give rise to cumulative or in-combination effects when considered alongside the Carrig (Lacka) Wind Farm was examined by comparing proposed potential impacts with the operational wind farm.

**As the Carrig (Lacka) Wind Farm is a long-established, operational development, it is considered to form part of the existing environmental baseline. The operational turbines are not subject to ongoing construction or new consent processes that could introduce additional pressures on the existing environment. With the implementation of the avoidance and mitigation measures outlined in Section 7.6.5, the potential for significant cumulative ornithological effects is negligible and unlikely.**

#### 7.12.1.1.3 Skehanagh Wind Farm

The Skehanagh Wind Farm has been operational since 2006 and comprises five turbines of a smaller scale and height than those proposed as part of the proposed project. A review of the Skehanagh Wind Farm planning file on the Tipperary County Council Planning Register found no available information relating to potential effects on European sites. Nonetheless, the potential for the proposed project to give rise to cumulative or in-combination effects when considered alongside the Skehanagh Wind Farm was examined by comparing proposed potential impacts with the operational wind farm.

**As the Skehanagh Wind Farm is a long-established, operational development, it is considered to form part of the existing environmental baseline. The operational turbines are not subject to ongoing construction or new consent processes that could introduce additional pressures on the existing environment. With the implementation of the avoidance and mitigation measures outlined in Section 7.6.5, the potential for significant cumulative ornithological effects is negligible and unlikely.**

#### 7.12.1.1.4 Cush Wind Farm

A NIS and EIAR for the Cush Wind Farm Project were prepared by SLR/Galetech Energy Services on behalf of Cush Wind Farm Limited. These reports identified the potential for likely significant effects on designated sites and potential significant effects to ornithological species.

The NIS concluded that, where the potential for any adverse effect on a European site was identified, the pathway for such an effect has been effectively eliminated through avoidance, appropriate design, and the implementation of mitigation measures set out in the report and its appendices. These measures ensure that the construction, operation, and decommissioning of the Proposed Project will not adversely affect the integrity of any European site.

The ecology chapter of the EIAR assessed potential effects on flora and fauna (including birds) from habitat loss, destruction of nests, habitat degradation, disturbance/displacement, collision risk, and cumulative effects during the construction, operation, and decommissioning of the Development. The following species were identified as KORs for the project: Black-headed gull, Common kestrel, Common snipe, Eurasian curlew, Eurasian teal, Eurasian wigeon, Great cormorant, Hen harrier, Mallard, Northern lapwing, Peregrine falcon, Whooper swan.

The assessment determined that no significant effects were predicted on receptors of International, National, or County importance. Provided that the proposed Cush Wind Farm



project is developed in accordance with the design specifications and best practice mitigation measures described in the application, significant individual or cumulative effects on the identified KORs are not anticipated.

**Given that the Cush Farm was assessed as having no significant residual effects on KORs and that the Ballincor proposed project is likewise predicted to result in no significant ornithological effects, along with the availability of extensive suitable habitat in the wider landscape, the combined effects do not materially increase overall impact magnitudes on the shared KORs. The cumulative effect therefore remains negligible and would not result in measurable impacts for any KOR. On this basis, significant cumulative effects are predicted as unlikely and no additional mitigation measures are required.**

#### **7.12.1.1.5 Derrinlough Wind Farm**

A NIS and EIAR for the Derrinlough Wind Farm Project were prepared by MKO on behalf of Bord Na Móna Powergen Limited. These reports identified the potential for likely significant effects on designated sites and potential significant effects to ornithological species.

The NIS concluded that, where the potential for any adverse effect on a European site was identified, the pathway for such an effect has been effectively eliminated through avoidance, appropriate design, and the implementation of mitigation measures set out in the report and its appendices. These measures ensure that the construction, operation, and decommissioning of the Proposed Project will not adversely affect the integrity of any European site.

The ornithology chapter of the EIAR assessed potential effects on birds from habitat loss, disturbance/displacement, collision risk, and cumulative effects during the construction, operation, and decommissioning of the Proposed Project. The following species were identified as KORs for the project: Whooper Swan (Wintering), Golden Plover (Wintering), Red-necked Phalarope (Breeding), Hen Harrier (Wintering), Little Egret (All Seasons), Merlin (All Seasons), Peregrine (All Seasons), Lapwing (Breeding & Wintering), Black-headed Gull (Breeding), Woodcock (Breeding), Curlew (Non-Breeding), Redshank (Breeding), Buzzard (All Seasons), Sparrowhawk (All Seasons), Kestrel (All Seasons), Snipe (All Seasons), Ringed Plover (Breeding) and Teal (All Seasons).

The assessment determined that no significant effects were predicted on receptors of International, National, or County importance. Provided that the Proposed Derrinlough Wind Farm is implemented in accordance with the design specifications and best practice mitigation measures described in the application, significant individual or cumulative effects on the identified KORs are not anticipated.

**Given that the Derrinlough Wind Farm was assessed as having no significant residual effects on KOR, and that the proposed project is likewise predicted to result in no significant effects, along with the availability of extensive suitable habitat in the wider landscape, the combined effects do not materially increase overall impact magnitudes on the shared KORs. The cumulative effect therefore remains negligible and would not result in measurable impacts for any KOR. On this basis, significant cumulative effects are predicted as unlikely and no additional mitigation measures are required.**



#### 7.12.1.1.6 Monaincha Bog wind Farm

A review of the Monaincha Bog Wind Farm planning file on the Tipperary County Council Planning Register and ACP found no available information relating to potential effects on birds. Nonetheless, the potential for the Ballincor proposed project to give rise to significant cumulative or in-combination effects when considered alongside Monaincha Wind Farm was assessed by comparing proposed potential impacts with the operational wind farm.

**Based on the Monaincha Bog wind farm's location, the nature of habitats present on site (as interpreted from publicly available aerial imagery), and the absence of significant effects on bird species from the Ballincor proposed project alone, significant cumulative or in-combination effects on KORs in relation to displacement or collision mortality are not anticipated.**

#### 7.12.1.1.7 Cloghan Wind Farm

A NIS and EIAR for the Cloghan Wind Farm Project were prepared by EcoFact on behalf of Galetech Energy Developments Cloghan Limited. These reports identified the potential for likely significant effects on designated sites and potential significant effects to ornithological species.

The NIS concluded that, where the potential for any adverse effect on a European site was identified, the pathway for such an effect has been effectively eliminated through avoidance, appropriate design, and the implementation of mitigation measures set out in the report and its appendices. These measures ensure that the construction, operation, and decommissioning of the Proposed Cloghan wind farm project will not adversely affect the integrity of any European site.

The ecology chapter of the EIAR assessed potential effects on the flora and fauna (including birds) from habitat loss, water quality, disturbance/displacement, collision risk, and cumulative effects during the construction, operation, and decommissioning of the Development. The following species were identified as KORs for the project: Golden Plover, Whooper Swan, Greenland White-fronted Goose, Lapwing, Curlew and Snipe.

The assessment determined that no significant effects were predicted on receptors of International, National, or County importance. Provided that the Proposed Cloghan wind farm development is implemented in accordance with the design specifications and best practice mitigation measures described in the application, significant individual or cumulative effects on the identified KORs are not anticipated.

**Given that the Cloghan Farm was assessed as having no significant residual effects on KORs and that the Ballincor proposed project is likewise predicted to result in no significant effects, along with the availability of extensive suitable habitat in the wider landscape, the combined effects do not materially increase overall impact magnitudes on the shared KORs. The cumulative effect therefore remains negligible and would not result in measurable impacts for any KOR. On this basis, significant cumulative effects are predicted as unlikely and no additional mitigation measures are required.**

#### *7.12.1.2 Other projects*

Clondallow BESS- Planning Ref 2560367



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Birr Renewable Ltd. have applied for a 100MW Battery Energy Storage Station with 53 battery containers and associated equipment, with a control room container, site entrance, and all associated works. The application was submitted in August 2025 and is located to the southwest of Dallow 110 kV substation.

Only an appropriate assessment (AA) screening report and a winter bird summary report has been submitted for this application. A review of the BESS and proposed cable route, and available reports found there to be no potential for likely significant effects on nearby SPAs and the birds that were recorded within the study area for the proposed project, did not occur in significant numbers or were not dependent on the site.

**Given that the Clondallow BESS was assessed as having no potential significant effects on KORs and that the Ballincor proposed project is likewise predicted to result in no significant effects, along with the availability of extensive suitable habitat in the wider landscape, the combined effects do not materially increase overall impact magnitudes on the shared KORs. The cumulative effect therefore remains negligible and would not result in measurable impacts for any KOR. On this basis, significant cumulative effects are predicted as unlikely and no additional mitigation measures are required.**



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