Planning and Environmental Consultants

Environmental Impact Assessment Report (EIAR)

Ballydermot Wind Farm, Co. Offaly & Co. Kildare

Chapter 7 – Ornithology



Table of Contents

7. ORNITHOLOGY 7-1

7.1 Introduction 7-1
7.1.2 Description of the Proposed Project 7-2
7.1.3 Legislation, Guidance and Policy Context 7-3
7.1.4 Statement of Authority 7-4
7.2 Methodology 7-7
7.2.1 Desk Study 7-7
7.2.2 Scoping and Consultation 7-7
7.2.3 Field Surveys 7-9
7.2.4 Receptor Evaluation and Impact Assessment 7-15
7.2.5 Assessment Justification 7-20
7.3 Baseline Ornithological Conditions 7-20
7.3.1 Designated Sites 7-20
7.3.2 Bird Atlas Records 7-21
7.3.3 Bird Sensitivity Mapping Tool 7-23
7.3.4 National Biodiversity Data Centre Records 7-23
7.3.5 Irish Wetland Bird Survey Records 7-25
7.3.6 Rare and Protected Species Dataset 7-25
7.3.7 Field Survey Results 7-26
7.3.8 Likely Future Receiving Environment 7-63
7.4 Receptor Evaluation 7-65
7.4.1 Determination of Population Importance 7-65
7.4.2 Identification of Key Ornithological Receptors 7-78
7.4.3 Sensitivity Determination 7-92
7.5 Impact Assessment 7-92
7.5.1 'Do-Nothing' Scenario 7-93
7.5.2 Likely Effects of the Proposed Wind Farm 7-94
7.5.3 Likely Effects Associated with the Proposed Grid Connection 7-173
7.5.4 Likely Effects Associated with the Turbine Delivery Route 7-173
7.5.5 Likely Effects Associated with the Proposed Enhancement Areas 7-174
7.5.6 Likely Effects of the Proposed Project 7-176
7.5.7 Likely Effects on Designated Sites 7-177
7.6 Mitigation and Best Practice Measures 7-177
7.6.1 Mitigation Hierarchy 7-177
7.6.2 Design of the Proposed Project 7-177
7.6.3 Construction and Environmental Management Plan 7-178
7.6.4 Mitigation/Offsetting Measures 7-179
7.7 Residual Effects 7-181
7.8 Cumulative Impacts 7-184
7.8.1 Plans Considered in the Cumulative Impact Assessment 7-184
7.8.2 Projects Considered in the Cumulative Impact Assessment 7-189
7.8.3 Cumulative Impact Assessment 7-201
7.9 Monitoring 7-232
7.9.1 Construction Phase 7-232
7.9.2 Operational Phase 7-233
7.9.3 Decommissioning Phase 7-233
7.9.4 Data Sharing 7-233
7.10 Summary 7-233

TABLES OF TABLES

Table 7-1 Consultation responses 7-7

Table 7-2 Vantage point survey duration 7-10

Table 7-3 Summary of survey types and duration between 2020 and 2026 7-14

Table 7-4 Evaluation of sensitivity for birds 7-17
Table 7-5 Determination of magnitude (from Percival, 2003) 7-17
Table 7-6 Significance matrix 7-18
Table 7-7 Breeding Bird Atlas data 7-21
Table 7-8 Wintering Bird Atlas data 7-22
Table 7-9 National Biodiversity Data Centre records 7-24
Table 7-10 Target species recorded within 500m of the Core Ornithology Survey Area 7-26
Table 7-11 Receptor evaluation and selection criteria rational 7-78
Table 7-12 Residual effects for KORs where significant effects were predicted before mitigation or offsetting. 7-182
Table 7-13 Wind Farms within 25km of the Proposed Turbines 7-190
Table 7-14 Cumulative Collision Risk Totals 7-204

TABLE OF TABLES

Figure 7-1 Core Ornithology Study Area 7-5
Figure 7-2 Core Ornithology Survey Area 7-6
Figure 7-3 Landscape Level Cumulative Assessment Map 7-203

GLOSSARY OF TERMS

Term	Meaning
Breeding Season	April to September
Winter Season	October to March
Target Species	The species recorded during surveys and presented in the results of this chapter.
Collision Risk Model	A mathematical model to predict the number of birds that may be killed by collision with moving wind turbine rotor blades
Key Ornithological Receptor	A bird species upon which potential impacts are anticipated and assessed
Potential Collision Height	The rotor-swept area of the proposed turbines

GLOSSARY OF ACORNYMS

Acronym	Meaning
BoCCI	Birds of Conservation Concern in Ireland
BMP	Biodiversity Management Plan
BTO	British Trust for Ornithology
CRA	Collision Risk Assessment
CRM	Collision Risk Model
I-WeBS	Irish Wetland Bird Survey
KCDP	Kildare County Development Plan
KOR	Key Ornithological Receptor
NBAP	National Biodiversity Action Plan
NPWS	National Parks and Wildlife Service
OCDP	Offaly County Development Plan
PCH	Potential Collision Height
SCI	Special Conservation Interest
SNH	Scottish Natural Heritage
SPA	Special Protection Area
VP	Vantage Point

7. ORNITHOLOGY

7.1 Introduction

This chapter assesses the likely significant impacts of the Proposed Project on ornithological receptors. Particular attention has been paid to bird species with national and international protection under the Irish Wildlife Acts 1976-2022 and the European Union (EU) Birds Directive (2009/147/EC). Where potential impacts on ornithological receptors are identified, mitigation is described and the residual effects are assessed.

Study Area

For the purposes of this EIAR, the various project components are described and assessed using the terminology in Section 1.1.1 in Chapter 1. The following additional definitions are used in this chapter:

- '**Core Ornithology Study Area**' refers to the area which is assessed for impacts on birds. This is defined as the Project Site, inclusive of the Proposed Wind Farm, the Proposed Enhancement Areas, the Proposed Grid Connection and the accommodation work areas associated with the Proposed Turbine Delivery Route. The remaining elements of the Proposed Turbine Delivery Route and Proposed Construction Haul Routes are not included as there is no construction proposed within these areas and therefore no potential for impacts on birds.
- '**Core Ornithology Survey Area**' refers to the focal area during on-site field surveys. This is defined as the Proposed Wind Farm, inclusive of the Proposed Enhancement Areas and the Proposed Onsite Substation. The remaining elements of the Proposed Grid Connection, Proposed Construction Haul Routes and Proposed Turbine Delivery Route are not included as these were surveyed as part of the multidisciplinary ecological walkover survey and not subject to dedicated bird surveys, See Section 7.2.3.2.11 for further details. Surveys extended beyond this core area when targeting specific species as per NatureScot (2025) recommendations.
- '**Hinterland Maximum Ornithology Survey Area**' refers to the full extent of ornithological surveys, which include the Project Site and hinterland area up to 12km from the Project Site. For example, surveys were carried out at radii of 2km, 5km and 12km (refer to Section 7.2.3 for details on survey methodology).
- '**Ornithology Cumulative Study Area**' refers to a 25km radius of the Proposed Turbines in which cumulative impacts on birds are assessed for relevant plans or projects within this radius.
- '**Key Ornithological Receptor**' (KOR) is defined as a species occurring within the Ornithology Survey Area upon which potential impacts are anticipated and assessed.

The chapter is structured as follows:

- The Introduction provides a description of the Proposed Project and the relevant legislation, guidance and policy context.
- The Methodology section is a comprehensive description of the ornithological surveys and impact assessment methodology used to inform a robust assessment of potential impacts of the Proposed Project on birds.
- The Baseline Ornithological Conditions section describes the existing bird population at the Proposed Project.
- The Receptor Evaluation section identifies key ornithological receptors and determines their sensitivity.
- The Impact Assessment section assesses the impact of the Proposed Project on birds, including direct habitat loss, disturbance/displacement and collision risk. Impacts are

described with regard to each phase of the Proposed Project: construction, operation and decommissioning.
- The Mitigation and Best Practice Measures section describes proposed mitigation, best practice and enhancement measures to ameliorate the identified impacts and considers the residual effects.
- The Cumulative Effects section fully assesses potential in combination and incremental effects of the Proposed Project with other proposed, permitted or existing projects.
- The Monitoring section outlines a schedule for monitoring birds during each phase of the Proposed Project if planning permission is granted: construction, operation and decommissioning.
- The Conclusion provides a summary statement on the overall significance of predicted effects on birds.

This chapter is supported by Appendices 7-1 to 7-8:

- Appendix 7-1 Survey Effort - contains details of survey effort, including all survey dates, times and weather conditions, and maps of the survey locations.
- Appendix 7-2 Species List contains a list of all bird species recorded during surveys.
- Appendix 7-3 Summary Data presents a summary of bird records from surveys.
- Appendix 7-4 Survey Data contains the raw survey data and maps.
- Appendix 7-5 Confidential Survey Data[1] contains any ecologically sensitive raw survey data and maps, such as important breeding or resting locations.
- Appendix 7-6 Collision Risk Assessment provides the methodology and results of the collision risk assessment.
- Appendix 7-7 Bird Monitoring Programme presents the proposed Bird Monitoring Programme.
- Appendix 7-8 Ornithology Surveyors List and Biographies.

7.1.2 Description of the Proposed Project

A full description of the Proposed Project is provided in Chapter 4 of this EIAR. In brief, the Proposed Project consists of the Proposed Turbines, Proposed Onsite Substation, Proposed Offsite Substation, 13.1km underground electrical cabling and OHL cabling, peat and spoil areas, 2 no. meteorological masts, 1 no. relay mast, internal site access roads and hardstand areas, temporary construction compounds, Proposed Enhancement Areas, amenity track, car parks and all ancillary works and apparatus. Detailed site layout drawings of the Proposed Project are included in Appendix 4-1 to this EIAR.

There will be 19 no. Proposed Turbines with the following dimensions:

- Turbine Tip Height – 200 metres
- Hub Height – 115 metres
- Blade Rotor Diameter – 170 metres

There will be 27 no. Proposed Turbines with the following dimensions:

- Turbine Tip Height – 220 metres
- Hub Height – 135 metres
- Blade Rotor Diameter – 170 metres

[1] *This Appendix contains sensitive information related to bird breeding and roosting locations, which could potentially be at increased risk of disturbance and/or persecution should this information be made publicly available. It is therefore recommended that this Appendix is only made available to interested parties upon request, and is not uploaded to the publicly accessible planning file for the reasons stated above.*

The Proposed Project will have an operation life of 35 years from the date of commissioning.

7.1.3 Legislation, Guidance and Policy Context

This EIAR is prepared in accordance with the requirements of EU Environmental Impact Assessment Directive 2011/92/EU, as amended by Directive 2014/52/EU. The following key legislative provisions are applicable to habitats and fauna in Ireland:

- The Wildlife Act 1976. This Act was revised in October 2022 to present amendments since enactment.
- The Birds Directive (EU Directive 2009/147/EC on the conservation of wild birds)
- Nature Restoration Regulation (EU) 2024/1991
- The European Communities (Birds and Natural Habitats) Regulations 2011, as amended (S.I. no. 477 of 2011). These regulations transpose the EU Birds Directive into Irish law.

The following treaties are applicable to habitats and fauna in Ireland:

- The International Convention on Wetlands of International Importance (the Ramsar Convention), 1971. This convention protects 45 wetland sites of significant value for nature in Ireland.

In the absence of specific national ornithological survey guidance for Ireland, the following guidance documents published by NatureScot have been followed to inform this assessment:

- Goodship, N.M. and Furness, R.W. (MacArthur Green) Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species. NatureScot Research Report 1283.
- SNH (2009). Monitoring the impact of onshore wind farms on birds. Scottish Natural Heritage, Inverness, Scotland. Available at: https://www.nature.scot/sites/default/files/2025-05/guidance-note-monitoring-the-impact-of-onshore-windfarms-on-birds.pdf
- SNH (2016). Assessing connectivity with Special Protection Areas (SPAs). Scottish Natural Heritage, Inverness, Scotland. Available at: https://www.nature.scot/sites/default/files/2022-12/Assessing%20connectivity%20with%20special%20protection%20areas.pdf
- NatureScot (2024). Guidance on using an updated collision risk model to assess bird collision risk at onshore wind farms. NatureScot, Inverness, Scotland. Available at: https://www.nature.scot/doc/guidance-using-updated-collision-risk-model-assess-bird-collision-risk-onshore-wind-farms
- NatureScot (2025). Recommended bird survey methods to inform impact assessment of onshore wind farms. Scottish Natural Heritage, Inverness, Scotland. Available at: https://www.nature.scot/doc/recommended-bird-survey-methods-inform-impact-assessment-onshore-windfarms
- NatureScot (2025a). Assessing the cumulative impacts of onshore wind farms on birds. NatureScot, Inverness, Scotland. Available at: https://www.nature.scot/doc/guidance-assessing-cumulative-impacts-onshore-wind-farms-birds
- NatureScot (2025b). Assessing the significance of impacts on bird populations from onshore wind farms that do not affect protected areas. NatureScot, Inverness, Scotland. Available at: https://www.nature.scot/doc/guidance-note-assessing-significance-impacts-bird-populations-onshore-wind-farms-do-not-affect

The following Irish guidance documents were also consulted:

- Percival, S.M. (2003). Birds and wind farms in Ireland: A review of potential issues and impact assessment. Ecology Consulting, Durham, UK. Available at: https://tethys.pnnl.gov/sites/default/files/publications/Percival_2003.pdf
- McGuinness, D., Muldoon, C., Tierney, N., Cummins, S., Murray, A., Egan, S. and Crowe, O. (2015). Bird Sensitivity Mapping for Wind Energy Developments and Associated Infrastructure in the Republic of Ireland. Birdwatch Ireland, Wicklow, Ireland. Available at: https://birdwatchireland.ie/app/uploads/2019/09/BWI-Bird-Wind-Energy-devt-Sensitivity-Mapping-Guidance_document.pdf
- Gilbert, G., Stanbury, A. and Lewis, A. (2021). Birds of Conservation Concern in Ireland 4: 2020-2026. Irish Birds, 43:1-22. Available at: https://birdwatchireland.ie/birds-of-conservation-concern-in-ireland/

Furthermore, this assessment has been prepared with respect to the various planning policies and strategy guidance documents listed below and as detailed in Section 1.2 in Chapter 1 of this EIAR:

- European Commission (2002). Assessment of plans and projects significantly affecting Natura 2000 sites. Publications Office of the European Union, Luxembourg.
- European Commission (2020). Guidance document on wind energy developments and EU nature legislation. Publications Office of the European Union, Luxembourg.
- Planning and Development Acts 2000 (as amended).
- NRA (2009). Guidelines for Assessment of Ecological Impacts of National Road Schemes. National Roads Authority, Ireland.
- EPA (2022). Guidelines on the information to be contained in Environmental Impact Statement reports. Environmental Protection Agency, Johnstown Castle Estate, Wexford.
- DoHPLG (2018). Guidelines for planning authorities and An Bord Pleanála on carrying out Environmental Impact Assessment. Department of Housing, Planning and Local Government, Government of Ireland, Dublin.
- Offaly County Development Plan 2021-2027.
- Offaly Biodiversity Action Plan 2025-2030.
- Kildare County Development Plan 2023-2029.
- Kildare County Council Draft Biodiversity Action Plan 2026-2031.
- The Curragh Plains Conservation Management Plan

7.1.4 Statement of Authority

This ornithology chapter has been prepared by Kathryn Sheridan (MSc), Senior Ornithologist of MKO with assistance from Shawn Dowdall (MSc), Project Ornithologist of MKO and reviewed by Patrick Manley (BSc, MCIEEM), Project Director. The scope of works and survey methodology was devised by Padraig Cregg (MSc), Principal Ornithologist of MKO, and is fully compliant with recent NatureScot guidance (NatureScot, 2025; and SNH, 2017 for surveys prior to April 2025).

Field surveys were undertaken by Alan Lauder (B.Sc.), Bernard Burke (B.A), Conor Berney (M.Sc.), Cian Cahalin (B.Sc.), Cora Twomey (B.Sc), Declan Manley, Donal Moriarty (B.Sc), Donnacha Woods (M.Sc.), Eamonn O'Brien (B.Sc.), Ellen Tuck (B.Sc.), Franck Le Moënner, Fionn O'Donoghue (B.A.), Hannah Keogh, Hannah O'Donoghue (B.Sc.), Ian Hynes (B.Sc), James Corcoran Hodgins (M.Sc), Jonah Gaine (B.Sc.), Kate Bismilla (B.Sc.), Kathryn Sheridan (M.Sc.), Katy Beckett (M.Sc.), Laura Gránicz (M.Sc.), Laura McEntegart (B.Sc), Louis de Vries (M.Sc.), Matthew Kieran (B.Sc.), Neil Bourke, Neil Campbell (M.Sc.), Niall Murray (B.Sc.), Niall McHugh (B.Sc), Oisin Casasin (B.Sc), Padraig Cregg (M.Sc.), Padraig Webb (B.Sc), Patrick Manley (B.Sc., MCIEEM), Sheriene Acun (B.Sc.), Susan Doyle (M.Sc., Ph.D), Shawn Dowdall (M.Sc.), Shay Fennelly (B.Sc.), Tom Ryan (M.Sc.) and Zuzana Erosova (B.Sc.). Surveyors are suitably qualified competent experts for the purposes of undertaking field surveys; refer to Appendix 7-8 for the relevant statement of authority for all surveyors.



Map Legend

Ornithology Study Area

N

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Drawing Title

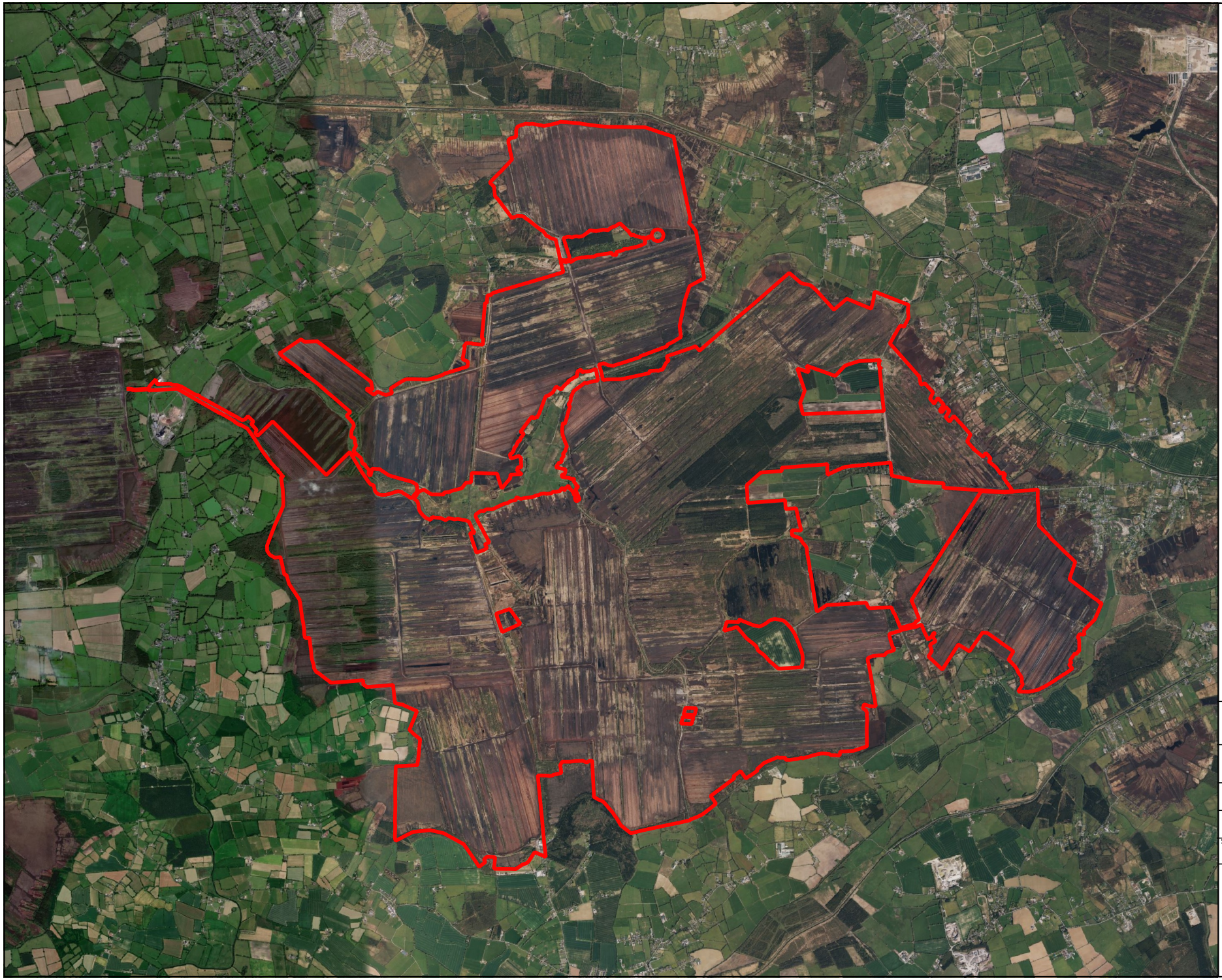
Core Ornithology Survey Area

Project Title

Ballydermot Wind Farm,
Co. Offally and Co. Kildare

Drawn By	Checked By
SD	PM
Project No.	Drawing No.
250708	Figure 7-1
Scale	Date
1:180,000	15/07/2026

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Map Legend

Core Ornithology Study Area

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N

Drawing Title
Core Ornithology Study Area

Project Title
Ballydermot Wind Farm,
Co. Offaly and Co. Kildare

Drawn By	Checked By
SD	PM
Project No.	Drawing No.
250708	Figure 7-2
Scale	Date
1:65,000	15/07/2026

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7.2 Methodology

7.2.1 Desk Study

A comprehensive desk study was undertaken to search for any relevant information on species of conservation concern that may use the Core Ornithology Study Area. The assessment included a thorough review of the available ornithological data including:

- Designated sites within the likely Zone of Influence of the Core Ornithology Study Area. The Zone of Influence is defined in the Natura Impact Statement (NIS) of this EIAR.
- Bird atlases (Section 7.3.2 below).
- Bird sensitivity mapping tool (Section 7.3.3).
- Online web-mappers from the National Biodiversity Data Centre (Section 7.3.4).
- Irish Wetland Bird Survey data (Section 7.3.5).
- Review of specially requested records from the National Parks and Wildlife Service Rare and Protected Species Database (Section 7.3.6).

7.2.2 Scoping and Consultation

Scoping and consultation was undertaken with the relevant statutory and non-statutory organisations to inform the current assessment. Full details can be found in Chapter 2 of this EIAR. Table 7-1 provides a list of the organisations consulted with regard to ornithology during the scoping process and notes where scoping responses were received.

Copies of all scoping responses are included in Appendix 2-1 of this EIAR. The recommendations of the consultees have informed the EIAR preparation process and the contents of this chapter; Chapter 2 describes where the comments raised in the scoping responses received have been addressed.

Table 7-1 Consultation responses

Consultee	Response	Issued Raised	Addressed in
An Taisce	Acknowledgement Received 05/05/2021 and 12/04/2026 – no formal response received	n/a	n/a
BirdWatch Ireland	No Response Received	n/a	n/a
Butterfly Conservation Ireland	Response Received on 18/12/2025	The scoping response outlined concerns with regards to the following: › The presence of 15 amber-listed and 11 red-listed birds of conservation concern in the area. › The accuracy of collision risk modelling, citing recent collisions of white-tailed eagle in Co. Donegal.	Results are presented in Section 7.3.7 below which outlined the species of conservation concern observed during surveys. The collision risk assessment is presented in Appendix 7-6

Consultee	Response	Issued Raised	Addressed in
		▪ The collision risk impact of turbines for whooper swan which forage, roost and commute in the area.	
Department of Agriculture, Food and the Marine	Response received 05/05/2021 and 13/01/2026	No issued raised in relation to birds.	n/a
Department of Housing, Local Government and Heritage (includes National Parks & Wildlife Service, National Monuments Service)	Response received 05/05/2021 and 21/01/2026 Meeting held on 26/05/2026 w/ NPWS.	The scoping response outlined concerns with regards to the following: ▪ Visibility analysis for vantage point surveys ▪ Breeding curlew surveys ▪ Contextualization of any impacts on breeding curlew ▪ Breeding nightjar surveys at Long Derries SAC ▪ Potential for biodiversity enhancement measures within the Project Site Please see Chapter 2, Section 2.9.4.3 for further details on the meeting held on 26/05/2026.	Viewshed analysis is discussed in Section 7.2.3.2.1. The results of surveys, including curlew and nightjar observations are presented in Section 7.3.7. Proposed enhancement measures are presented in Appendix 6-5.
Irish Peatland Conservation Council	Response Received 26/01/2026	The scoping response outlined concerns with regards to the following: ▪ Breeding Curlew at Lodge Bog Nature Reserve. ▪ Breeding Lapwing and Wintering Waterfowl at Lodge Bog Wetlands. ▪ The population of Lapwing at Lullymore Wetlands ▪ Nightjar and Grey Partridge within the Long Derries SAC. ▪ Kestrel, Skylark, Meadow Pipit, and Red Grouse at Mouds Bog SAC. ▪ Golden Plover, Marsh Harrier, and Greenland White-fronted Goose at Pollardstown Fen SAC. ▪ Breeding Ringed Plover and Lapwing, and wintering Hen Harrier at Umeras Peatland Park.	Results are presented in Section 7.3.7 below which outlined the species of conservation concern observed during surveys.

Consultee	Response	Issued Raised	Addressed in
Inland Fisheries Ireland	Response received 16/06/2021 and 09/12/2025	No issued raised in relation to birds.	n/a
Irish Red Grouse Association	No Response Received	n/a	n/a
Irish Raptor Study Group	No Response Received	n/a	n/a
Irish Wildlife Trust	No Response Received	n/a	n/a
Waterways Ireland	Response received 12/02/2021	No issued raised in relation to birds.	n/a

7.2.3 Field Surveys

7.2.3.1 Identification of Target Species

Based on the results of the desk study, consultation and initial site visits (in March 2020 to establish likely bird assemblages at the Project Site and inform survey scope), the assemblage of bird species in the Core Ornithology Study Area and hinterland, and the likely importance of the Core Ornithology Study Area for these species was ascertained. A list of target species likely to occur at the Core Ornithological Study Area and hinterland was compiled. The list was drawn from:

- Species listed on Annex I of the EU Birds Directive.
- Special Conservation Interests (SCI) of Special Protection Areas (SPA) within 15km of the Project Site.
- Red listed Birds of Conservation Concern in Ireland (BoCCI).
- Raptors and species that are particularly sensitive to wind farm developments (Drewitt and Langston, 2006, 2008; Band, 2024).

Then, adopting a precautionary approach, a site-specific scope for field surveys was devised. These were specifically designed to survey for the target species.

7.2.3.2 Survey Methodology

Field surveys were undertaken during the survey period April 2020 to March 2026, consisting of six breeding seasons (April to September inclusive) and six winter seasons (October to March inclusive). This survey work forms the core dataset for the assessment of impacts on ornithology. Survey dates for each survey type are outlined in Appendix 7-1 and a summary of surveys, years surveyed and survey period is presented in Table 7-3 below. The data provided in the field surveys is robust and allows clear, precise and definitive conclusions to be made on the ornithological receptors identified. In the absence of specific national bird survey guidelines, the ornithological surveys were designed and undertaken in full accordance with the guidance document 'Recommended bird survey methods to inform impact assessment of onshore wind farms' from NatureScot (formerly Scottish Natural Heritage [SNH]) outlined in SNH (2017), which was revised in NatureScot (2025). Surveys remain in accordance with the updated guidance.

The various field surveys undertaken are described in detail below including a description of the area surveyed and its radius from the Core Ornithology Survey Area, which depended on the methodology and focal species. The Core Ornithology Survey Area was defined for the purposes of bird surveys and is covering the Proposed Wind Farm. Whilst the site boundary evolves to account for ancillary

infrastructure (i.e. site entrances and grid connections etc) the core of the Proposed Wind Farm and fundamentally the Proposed Turbines are reviewed as the EIA design process progresses against the Core Ornithology Survey Area to ensure appropriate coverage during the EIA Process. 'Hinterland Maximum Ornithology Survey Area' refers to the full extent of ornithological surveys, which include the Project Site and hinterland area up to 12km from the Project Site. For example, surveys were carried out to radii of 2km, 5km and 12km (refer to Section 7.2.3 for details on survey methodology). All survey effort and location maps are presented in Appendix 7-1. Survey data is presented in Appendix 7-4 and Confidential Appendix 7-5. This data undergoes a process of review and validation however it is unfiltered survey information presented in raw form.

7.2.3.2.1 *Vantage Point Surveys*

Vantage point surveys were undertaken in accordance with SNH (2017; revised in NatureScot, 2025) to monitor flight activity. The area surveyed was the viewsheds within the Core Ornithology Survey Area, providing coverage to a 500m radius of the potential turbine positions. Surveys were conducted from 16 fixed vantage points. The vantage point locations were selected by undertaking a viewshed analysis (described below) and confirmed by a reconnaissance visit and initial field surveys to ensure that the Proposed Turbines were entirely covered.

Viewsheds were calculated using the Visibility Analysis plugin (Version 1.8) over a raster digital terrain model (DTM) in QGIS (Version 3.28). Note that while the relevance of being able to view as much of the site to ground level is acknowledged, the NatureScot guidance emphasises the importance of visibility of the 'collision risk volume' when the data is to be used to estimate the risk of collision with turbines by birds. Therefore, the viewshed analysis aims to identify the most suitable locations to site vantage points such that the airspace of the turbine rotor swept area is in view using the fewest possible number of vantage points. As no specific turbine model was confirmed at the outset of surveys, the viewsheds were based on a notional layer suspended 20m above the ground. The vantage point locations were tested for visibility coverage by creating a point 1.75m in height (to represent the height of the surveyor) on a map using 10m contours terrain data. The relative height of any surrounding landscape features (e.g., trees) and their effects on visibility was also accounted for in the analysis. The software produced a 360° viewshed 20m from ground level up to a 2km radius around the vantage point. This viewshed was then cropped to a 180° arc representing the area visible to the surveyor. Once the turbine model was confirmed to have a lowest swept height of 30m or 50m, the viewsheds were recalculated using a notational layer suspended at 30m and 50m. The viewsheds provided adequate coverage of the Core Ornithology Survey Area for a collision risk assessment to be undertaken. Details on coverage of viewsheds are provided in Appendix 7-6 and presentation of viewsheds are provided in Appendix 7-1.

Survey methodology followed SNH (2017; revised in NatureScot, 2025). The surveyor collected data on bird observations and flight activity from the scanning arc of 180° to a 2km radius at the fixed vantage point locations for two 3 hour watches separated by a minimum 30 minute break (i.e., 6 hours total) per month. Surveys were conducted from April 2020 to March 2026 inclusive, and were scheduled to provide a minimum of 36 hours per winter or breeding season and spread over the full daylight period, including dawn and dusk watches, to coincide with the highest periods of bird activity (Table 7-2).

Table 7-2 Vantage point survey duration

Survey Season and Number of Vantage Points	Effort per Vantage Point
Breeding Season 2020 (16 vantage points)	36 hours per vantage point
Winter Season 2020/2021 (16 vantage points)	36 hours per vantage point
Breeding Season 2021 (16 vantage points)	36 hours per vantage point
Winter Season 2021/2022 (16 vantage points)	36 hours per vantage point
Breeding Season 2022 (16 vantage points)	36 hours per vantage point
Winter Season 2022/2023 (16 vantage points)	36 hours per vantage point
Breeding Season 2023 (16 vantage points)	36 hours per vantage point

Survey Season and Number of Vantage Points	Effort per Vantage Point
Winter Season 2023/2024 (16 vantage points)	36 hours per vantage point
Breeding Season 2024 (16 vantage points)	36 hours per vantage point
Winter Season 2024/2025 (16 vantage points)	36 hours per vantage point
Breeding Season 2025 (16 vantage points)	36 hours per vantage point
Winter Season 2025/2026 (16 vantage points)	36 hours per vantage point

Flight activity of target species was mapped and recorded as per defined flight bands which were chosen in relation to the dimensions of potential turbine models at the outset of surveys. From April 2020 to February 2022 bands were split into 0-15m, 15-25m, 25-200m and >200m, then from February 2022 until March 2026 the bands were updated to include an additional height band as follows 0-15m, 15-25m, 25-50m, 50-200m, and >200m. All flight activity within height bands 25-50m, 25-200m and 50-200m were considered to be within the potential collision height with regard to the turbine swept area for the Proposed Turbines with a tip height of 200m and within height bands 25-200m, 50-200m and >200m were considered to be within the potential collision height with regard to the turbine swept area for the Proposed Turbines with a tip height of 220m. In addition, the presence of any non-target species was recorded to inform the evaluation of supporting habitat.

7.2.3.2.2 Winter Walkover Surveys

Winter walkover surveys were undertaken to record the presence of bird species within or in proximity to the Core Ornithology Study Area as well as areas between vantage point locations. The area surveyed covers a 500m radius of the majority of the Proposed Wind Farm. These transects covered the extent of 13 of the 14 bogs forming the Proposed Wind Farm site, with the exception of Killina bog which is largely closed forest habitat and the open habitat section of this bog was surveyed. The methodology was adapted from the breeding walkover methodology outlined in Brown and Shepherd (1993) and Calladine *et al.* (2009), combined with Common Bird Census methods (British Trust for Ornithology, 2021). Winter walkover surveys were conducted in daylight hours over four visits between October and March (i.e., four visits in winter 2020/2021, four visits in winter 2021/2022, four visits in winter 2022/2023, four visits in winter 2023/2024, four visits in winter 2024/2025, and four visits in winter 2025/2026).

Transect routes were walked across different habitat complexes within the Core Ornithology Survey Area, where access allowed. All target species were recorded and mapped. In addition, the presence of any non-target species was recorded to inform the evaluation of supporting habitat.

7.2.3.2.3 Breeding Walkover Surveys

Breeding walkover surveys were undertaken to determine possible, probable or confirmed breeding bird activity within or in proximity to the Core Ornithology Survey Area. The area surveyed covers a 500m radius of the majority of the Proposed Wind Farm. These transects covered the extent of 8 of the 14 bog groups. The methodology was based on adapted Brown and Shepherd (1993) and Calladine *et al.* (2009), with a focus on breeding waders including curlew, combined with Common Bird Census methods (British Trust for Ornithology, 2021) for dense habitat. Breeding walkover surveys were conducted in daylight hours beginning at dawn and the majority finishing no later than 18:00, over four visits during the core breeding season months April to July.

Transect routes were walked across different habitat complexes within the Core Ornithology Survey Area where access allowed. Using binoculars, the surveyor regularly scanned the surroundings of each transect for target species. All target species were mapped and breeding status was assigned following

British Trust for Ornithology breeding status codes[2]. In addition, the presence of any non-target species was recorded to inform the evaluation of supporting habitat.

7.2.3.2.4 Waterbird Distribution and Abundance Surveys

Waterbirds include: swans, geese and ducks; cormorant, shag, divers and grebes; auks and seabirds; gulls, terns and skuas; herons, egrets and crane; rails and crakes; waders; and kingfisher. Due to their strong association with aquatic habitats, the species chough, grey wagtail and dipper were also treated as waterbirds for the purposes of these surveys. Significant wetlands and waterbodies (presented in Appendix 7-1, Figure 7-1-5) on and within 5km of the Core Ornithology Survey Area were surveyed for waterbirds during the 2020/2021, 2021/2022, 2022/2023, 2023/2024, 2024/2025, and 2025/2026 winter and passage seasons (August to May inclusive) to provide information on their distribution in relation to the Core Ornithology Survey Area. The area surveyed exceeds the 500m for foraging waterbirds and 1km for roosting waterbirds requirements of NatureScot (2025) and follows the recommendations of SNH (2016).

Survey methodology follows Gilbert *et al.* (1998) and the Irish Wetland Bird Survey (BirdWatch Ireland, 2021) with surveys carried out fortnightly (as per NatureScot, 2025). Surveys were undertaken during daylight hours from suitable vantage points or transects overlooking wetlands and waterbodies. All target waterbird species were recorded and mapped (see Appendix 7-4 and Confidential Appendix 7-5 for details.).

7.2.3.2.5 Hen Harrier Roost Surveys

Hen harrier roost surveys were undertaken on and within 2km of the Core Ornithology Survey Area. These surveys aimed to identify active winter hen harrier roosts near or within the Core Ornithology Survey Area. Survey methodology followed Gilbert *et al.* (1998) and O'Donoghue (2019). Each hen harrier vantage point was surveyed at potential roost habitats within the 2km radius once per month during the winter season between October and March inclusive (in winter 2021/2022, 2022/2023, 2023/2024, 2024/2025, and 2025/2026)

Roost watches of 2-3 hours were conducted at 18 hen harrier vantage point locations from dusk until last visible light. All hen harrier observations were recorded and mapped (see Appendix 7-4 and Confidential Appendix 7-5 for details.).

7.2.3.2.6 Breeding Raptor Surveys

Raptors include all harrier, falcon, buzzard, eagle, hawk, owl, kite and osprey species. Breeding raptor surveys were undertaken within 2km of the Core Ornithology Survey Area to identify occupied territories and monitor their breeding success near or within the Core Ornithology Survey Area. Survey methodology followed Hardey *et al.* (2013). Each breeding raptor location was surveyed once per month during the core breeding season between April and July.

Breeding raptor watches of 3 hours (supplemented by transects if necessary) were conducted during daylight at 12 breeding raptor locations, consisting of seven vantage point locations and five transects. All raptor species observed were recorded and mapped and, in addition to species specific methodologies described by Hardey *et al.* (2013) breeding status was assigned following British Trust for Ornithology breeding status codes. Surveyors did not approach nest sites to avoid disturbance.

7.2.3.2.7 Breeding Woodcock Surveys

Breeding woodcock surveys were undertaken to identify breeding woodcock territories in suitable habitats within or in proximity to the Core Ornithology Survey Area by locating roding (breeding

[2] https://www.bto.org/our-science/projects/birdatlas/methods/breeding-evidence

display) males. The area surveyed was the Core Ornithology Survey Area to a 500m radius. Survey methodology followed Gilbert *et al.* (1998): the surveyor walked transects within the survey area for 2 hours from dusk until last visible light during which all woodcock observations were mapped, with particular reference to roding observations. Each transect was surveyed three times during the core breeding season of May and June.

7.2.3.2.8 *Wintering Golden Plover Survey*

Wintering golden plover surveys were conducted to provide information on golden plover abundance and distribution in relation to the Maximum Ornithology Survey Area. Surveys followed Gillings and Fuller (1999) guidance along with Gilbert *et al.* (1998) and Irish Wetland Bird Survey (BirdWatch Ireland, 2021) detection and count methods. Potential golden plover habitats such as lakes, rivers, bogs and large agricultural fields within 12km of the Core Ornithology Survey Area were visited by the surveyor during daylight hours. Any golden plover observed at or between these sites were recorded and mapped (see Appendix 7-4 and Confidential Appendix 7-5 for details.). Surveys were conducted during the 2020/2021, 2021/2022, 2022/2023, 2023/2024, 2024/2025, and 2025/2026 winter seasons (August to April[3] inclusive).

7.2.3.2.9 *Breeding Barn Owl Survey*

Breeding barn owl surveys were undertaken to identify breeding barn owl territories near or within the Core Ornithology Survey Area by locating nest sites. Known nest sites within and adjacent to the Core Ornithology Survey Area were surveyed. Survey methodology followed Transport Infrastructure Ireland (2021). The surveyor conducted a watch at potential nest sites from 30 mins before sunset until 1 hour after sunset, searching for barn owls provisioning young, listening for the sound of chicks, and observing for barn owl pellets, feathers or whitewash. All such observations were recorded and mapped and a breeding status was assigned following Transport Infrastructure Ireland (2021). Each potential nest site was surveyed four times during the core breeding season April to July.

7.2.3.2.10 *Breeding Nightjar Surveys*

Following an observation of nightjar during a breeding woodcock survey in 2023, dedicated breeding nightjar surveys were conducted in the same area of suitable habitat within the Core Ornithology Survey Area. Survey methodology followed Gilbert *et al.* (1998): the surveyor walked transects for two hours from dusk until last visible light during which all nightjar observations would be mapped, with particular reference to display observations. The transect was surveyed on two occasions during the core breeding season of June and July 2023.

7.2.3.2.11 *Multidisciplinary Walkover Survey*

The Proposed Grid Connection and Proposed Turbine Delivery Route was surveyed in June 2021, August 2021, May 2022, June 2022, July 2022, March 2023, April 2023, July 2024, August 2024, December 2025, May 2026 and July 2026 through a multidisciplinary walkover survey. The Project Site was systematically walked, while the surveyor recorded a range of protected species, including birds. Further details on these surveys are available in Section 6.2.3.1 of Chapter 6 of this EIAR.

[3] *These surveys began to include August/September surveys in August 2023.*

7.2.3.2.12 Survey Summary

Table 7-3 Summary of survey types and duration between 2020 and 2026

Survey Type	Purpose	Years Surveyed	Survey Months
Vantage Point Surveys	Quantification of flight activity, flight height and activity of target species to inform collision risk and displacement assessment.	2020 - 2026	All
Winter Walkover Surveys	To inform the distribution and abundance of wintering target species at the Project Site.	2020/21 – 2025-26	October - March
Breeding Walkover Surveys	To inform the distribution and abundance of breeding target species at the Project Site and identify breeding territories.	2020 - 2025	April - July
Waterbird Distribution and Abundance Surveys	To inform the distribution and abundance of passage and wintering target species in the hinterlands of the Project Site.	2020/21 – 2025-26	August - May
Hen Harrier Roost Surveys	To identify roosting locations of hen harrier up to a 2km radius of the Project Site.	2021/22 – 2025-26	October - March
Breeding Raptor Surveys	To inform the distribution and abundance of breeding raptors up to a 2km radius of the Project Site and identify breeding territories.	2020-2025	April - July
Breeding Woodcock Surveys	To inform the distribution and abundance of breeding woodcock at the Project Site and identify breeding territories.	2020-2025	May - June
Wintering Golden Plover Surveys	To inform the distribution and abundance of passage and wintering golden plover in the hinterlands of the Project Site up to a	2020/21 – 2025-26	August - April

Survey Type	Purpose	Years Surveyed	Survey Months
	12km radius and inform a regional population for this species.		
Breeding Barn Owl Surveys	To inform the distribution and abundance of breeding barn owl at the Project Site and identify breeding territories.	2021-2025	April - July
Breeding Nightjar Surveys	To inform the distribution and abundance of breeding nightjar at the Project Site and identify breeding territories.	2023	June - July
Multidisciplinary Surveys	To inform the distribution and abundance of target species at the Proposed Turbine Delivery Route and Proposed Grid Connection	2021 - 2026	June 2021, August 2021, May 2022, June 2022, July 2022, March 2023, April 2023, July 2024, August 2024, December 2025, May 2026 and July 2026

7.2.4 Receptor Evaluation and Impact Assessment

7.2.4.1 Geographical Context

'Guidelines for Ecological Impact Assessment in the UK and Ireland' (CIEEM, 2024) recommends categories of ornithological value that relate to a geographical context (e.g., international through to local). This EIAR utilises the geographical context described in 'Guidelines for Assessment of Ecological Impact of National Road Schemes' (NRA, 2009) which is the industry standard for a project of this scale. The following geographic frame of reference should be used when determining the value of a bird population:

- International Importance
- National Importance
- County Importance
- Local Importance (Higher Value)
- Local Importance (Lower Value)

Locally Important (Lower Value) receptors are habitats and species that are widespread and of low ecological significance and important only in the local area. In contrast, Internationally Important sites are designated for conservation as part of the Natura 2000 Network (Special Area of Conservation or Special Protection Area) or provide the best examples of habitats or internationally important populations of protected flora and fauna.

7.2.4.2 Identification of Key Ornithological Receptors

Following the analysis of field survey data, a precautionary screening approach was followed to identify KORs. A KOR is defined as a species occurring within the Core Ornithology Survey Area or

hinterland upon which potential impacts are anticipated and assessed. All target species recorded during surveys are described in Section 7.3.7 and listed in Appendix 7-2. The list of target species was refined to KORs, excluding those for which pathways for a significant effect could not be identified (by having no population of ecological significance within the extent of potential impacts from the Proposed Wind Farm).

7.2.4.3 Potential Impacts Associated with Proposed Project

Wind farms present three potential risks to birds (Drewitt and Langston 2006; 2008; Band, 2024):

- Direct habitat loss due to wind farm infrastructure.
- Disturbance/displacement (sometimes called indirect habitat loss) if birds avoid the wind farm and its surrounding area due to construction works or turbine operation. Displacement may also include barrier effects in which birds are deterred from using normal routes to feeding or roosting grounds.
- Death through collision or interaction with turbine blades and other infrastructure.

For each of these risks, the detailed knowledge of bird distribution and activity within and surrounding the Core Ornithology Survey Area has been used to predict potential impacts of the Proposed Project on birds.

7.2.4.4 Collision Risk Assessment

Collision risk is calculated using a mathematical model to predict the number of individual birds of a particular species that may be killed by collision with moving wind turbine rotor blades. The modelling method used in this collision risk calculation follows the Band Model (Band, 2024) and NatureScot (2024) methodology. The Band Model first determines the number of birds transits through the air space swept by the rotor blades of the wind turbines. Then it calculates the collision risk for the birds. The product of the transits multiplied by the collision risk provides a collision rate. An avoidance factor is applied to this to account for birds actively avoiding turbines, providing a final 'real world' annual collision rate for each species. See Appendix 7-6 for full details on the collision rate modelling method.

7.2.4.5 Description of Impacts

The sensitivity, magnitude and significance of impacts on bird populations resulting from the Proposed Project was quantified according to three assessment criteria: Percival (2003), the Environmental Protection Agency (EPA, 2022) and CIEMM (2024). The three assessment criteria have been used to independently characterise impacts to inform a robust assessment of potential impacts. EPA and CIEEM impact assessment criteria has been used for consistency within this EIAR, while Percival (2003) has also been followed given its specific focus on birds. The Percival guidance, the full title of which is: *Birds and Wind Farms in Ireland: A Review of Potential Issues and Impact Assessment*, remains the only guidance that specifically concerns birds and the Irish wind farm industry. It provides a transparent framework for describing the significance of effects on birds of conservation concern in Ireland. Fulfilling the requirements of the EIA Directive. It remains the most relevant guidance document in the Irish jurisdiction for describing the significance of effects resulting from wind farm and bird interactions.

7.2.4.5.1 *Percival 2003 criteria*

The Percival (2003) methodology quantifies the sensitivity of a given species to the development type, the magnitude of the effect and the significance of the potential impact. Table 7-4, Table 7-5 and Table 7-6 outline the assessment criteria for each stage.

Table 7-4 Evaluation of sensitivity for birds (from Percival, 2003)

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 integrity of a SPA but which are not cited as a species for which the site is designated. Ecologically sensitive species including the following: divers, common scoter, hen harrier, golden eagle, red necked phalarope, roseate tern and chough. Species present in nationally important numbers (>1% of the Irish population).
Medium	Species listed on Annex 1 of the EU Birds Directive. Species present in regionally important numbers (>1% 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.

Table 7-5 Determination of magnitude (from Percival, 2003)

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 will 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 will 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 will be partially changed. Guide: 5-20% of population/ habitat lost.
Low	Minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible but underlying character/composition/attributes of baseline condition will 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.

Table 7-6 Significance matrix combining magnitude and sensitivity to assess significance (from Percival, 2003)

Significance		Sensitivity			
		Very High	High	Medium	Low
Magnitude	Very High	Very High	Very High	High	Medium
	High	Very High	Very High	Medium	Low
	Medium	Very High	High	Low	Very Low
	Low	Medium	Low	Low	Very Low
	Negligible	Low	Very Low	Very Low	Very Low

7.2.4.5.2 EPA (2022) Criteria

EPA criteria as outlined in Section 7.1.3 above, use the following terms to describe the quality of the effect:

- **Positive** - a change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).
- **Neutral** - no effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
- **Negative** - a change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).

The significance of the effect is quantified as:

- **Imperceptible** - an effect capable of measurement but without significant consequences.
- **Not Significant** – an effect which causes noticeable changes in the character of the environment but without significant consequences.
- **Slight** - an effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
- **Moderate** - an effect that alters the character of the environment that is consistent with existing and emerging baseline trends.
- **Significant** - an effect which, by its character, magnitude, duration or intensity significantly alters a sensitive aspect of the environment.
- **Very Significant**– an effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
- **Profound** - an effect which obliterates sensitive characteristics.

The duration of effects can be:

- **Momentary** – effects lasting from seconds to minutes.
- **Brief** – effects lasting less than a day.
- **Temporary** – effects lasting less than a year.
- **Short-term** – effects lasting 1 to 7 years.
- **Medium term** – effects lasting 7 to 15 years.
- **Long term** – effects lasting 15 to 60 years.
- **Permanent** – effects lasting over 60 years.
- **Reversible** – effects that can be undone (e.g. through remediation or restoration).

The frequency of effects (i.e. how often the effect will occur) can be:

- **Once, rarely, occasionally, frequently** or **constantly**
- **Hourly, daily, weekly, monthly** or **annually**

The probability of the effect may be:

- **Likely** – the effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
- **Unlikely** – the effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.

The effects may also be described in relation to their extent and context. Extent describes the population affected by an effect, while context relates the effect to the established baseline conditions.

7.2.4.5.3 *CIEEM (2024) Criteria*

The Proposed Project will result in a number of impacts. The ecological effects of these impacts are characterised as per the CIEEM 'Guidelines for Ecological Impact Assessment in the UK and Ireland' (2024) (hereafter referred to as the CIEEM 2024 Guidelines). The CIEEM 2024 Guidelines are the industry standard for the completion of Ecological Impact Assessment in the UK and Ireland. This chapter has also been prepared in accordance with the corresponding EPA guidance (EPA, 2022). The headings under which the impacts are characterised follow those listed in the guidance document and are applied where relevant. A summary of the impact characteristics considered in the assessment is provided below:

- **Positive or Negative**. Assessment of whether the Proposed Project results in a positive or negative effect on the ecological receptor.
- **Extent**. Description of the spatial area over which the effect has the potential to occur.
- **Magnitude** to size, amount, intensity and volume. It should be quantified if possible and expressed in absolute or relative terms e.g. the amount of habitat lost, percentage change to habitat area, percentage decline in a species population.
- **Duration** is defined in relation to ecological characteristics (such as the lifecycle of a species) as well as human timeframes. For example, five years, which might seem short-term in the human context or that of other long-lived species, would span at least five generations of some invertebrate species.
- **Frequency and Timing**. This relates to the number of times that an impact occurs and its frequency. A small-scale impact can have a significant effect if it is repeated on numerous occasions over a long period.
- **Reversibility**. This is a consideration of whether an effect is reversible within a 'reasonable' timescale. What is considered to be a reasonable timescale can vary between receptors and is justified where appropriate in the impact assessment section of this report.

7.2.4.6 Cumulative Assessment

As per NatureScot guidance 'Assessing the Cumulative Impacts of onshore Wind Energy Developments' (NatureScot, 2025a), cumulative effects arising from two or more developments may be:

- **Additive** a multiple independent additive model;
- **Antagonistic** the sum of impacts are less that in a multiple independent additive model;
- **Synergistic** the cumulative impact is greater than the sum of the multiple individual effects.

NatureScot (2025a) guidance was consulted while undertaking a cumulative impact assessment. This guidance emphasises that its priority is to 'maintain the conservation status of the species' population at the national scale.' 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 this, the cumulative assessment has been carried out at the geographical scale of the importance rating of the KOR. For the purposes of this cumulative assessment, the regional/county scale is considered to be a 25km radius of the Proposed Turbines and the local scale is considered to be a 5km radius.

Assessment material was compiled for other plans and projects within 25km of the Proposed Turbines, as described in Section 2.10 of Chapter 2 of this EIAR. The material was gathered through a search of relevant online Planning Registers, reviews of relevant EIS/EIAR or other ecological reports. These are then considered for in-combination or cumulative effects with the Proposed Project.

7.2.5 Assessment Justification

7.2.5.1 Survey Data

A comprehensive suite of bird surveys was undertaken at the Core Ornithology Survey Area between April 2020 and March 2026. Results derived from a continuous six years of surveying at the Core Ornithology Survey Area and hinterland, undertaken in line with NatureScot guidance, are analysed to inform this assessment. As such, the surveys undertaken provide the information necessary to allow a complete, comprehensive and robust assessment of the potential impacts of the Proposed Project on ornithological receptors.

7.2.5.2 Mitigation

The development has been designed to specifically avoid, reduce and minimise impacts on all ornithological receptors. Where potential impacts on KORs are predicted, mitigation has been prescribed to avoid, reduce and remove such impacts. Proposed best practice design and mitigation measures are specifically set out and are realistic in terms of cost and practicality. They have been subject to detailed design and will effectively address the effects on the identified KORs. As such, the potential impacts of the Proposed Project have been considered and assessed to ensure that all impacts on KORs are adequately addressed, and no significant residual effects are likely to remain following the implementation of mitigation/enhancement measures and best practices (refer to Section 7.6 for further details).

7.2.5.3 Limitations

The information provided in this chapter accurately and comprehensively describes the baseline environment and provides an informed prediction of the likely impacts of the Proposed Project. It also prescribes mitigation and enhancement as necessary and describes the predicted residual effects. Furthermore, the desk study, surveys, analysis and reporting have been undertaken in accordance with the appropriate guidelines. Therefore, no significant limitations in the scope, scale or context of the assessment have been identified.

7.3 Baseline Ornithological Conditions

7.3.1 Designated Sites

A Stage 1 Appropriate Assessment Screening Report (AASR) and Stage 2 Natura Impact Statement (NIS) have been prepared to provide the competent authority with the information necessary to complete an Appropriate Assessment for the Proposed Project in compliance with Article 6(3) of the EU Habitats Directive (92/43/EEC). According to EPA (2022) 'A biodiversity section of an EIAR ... should not repeat the detailed assessment of potential effects on European sites contained in documentation prepared as part of the Appropriate Assessment process, but it should refer to the findings of that separate assessment'. Therefore, this section provides a summary of the key findings

regarding SPAs. For a detailed assessment of any potential impacts on SPAs, refer to the AASR and NIS prepared in respect of the Proposed Project, which accompany this planning application.

No potential for residual adverse effects on the integrity of any SPAs, in view of their Conservation Objectives, was identified as a result of the Proposed Project.

As concluded in the NIS:

"*Where the potential for any adverse effect on the integrity of any European Site has been identified, the pathway by which any such effect may occur has been robustly blocked through the use of avoidance, appropriate design and mitigation measures as set out within this report and its appendices. The measures ensure that the construction, operation and decommissioning of the Proposed Project will not have an adverse effect on the integrity of any European Sites in view of their Conservation Objectives.*

Following an examination, evaluation and analysis, in light of best scientific knowledge and the Conservation Objectives of the relevant European Sites, and, on the basis of objective information, having taken into account the relevant mitigation measures, it can be concluded beyond reasonable doubt that the Proposed Project will not have an adverse effect on the integrity of any European Sites, either alone or in combination with other plans or projects."

Additionally, potential pathways for likely significant effects on the Curragh (Kildare) pNHA [000392] and Poulaphouca Reservoir pNHA [000392] were identified in Table 6-6 of Chapter 6 Biodiversity of this EIAR, as a result of potential ex-situ effects on golden plover and lesser black-backed gulls, respectively, which are listed as features of interest. Potential impacts on these species are considered further within Section 7.5.

7.3.2 Bird Atlas Records

'Bird Atlas 2007-11: The breeding and wintering birds of Britain and Ireland' (Balmer *et al.*, 2013) is the most recent comprehensive work on wintering and breeding birds in Ireland. The Project Site lies within hectads N62, N63, and N72, with the Proposed Grid Connection and Proposed Turbine Delivery Route extends into hectads N52 and N82. Table 7-7 and Table 7-8 present a list of species of conservation interest recorded from the relevant hectads, with regard to breeding and wintering respectively.

Table 7-7 Breeding Bird Atlas data

Species	Breeding Atlas 2007-2011				
	N52	N62	N63	N72	N82
Barn Owl	-	poss	poss	-	-
Black-headed Gull	prob	-	-	-	-
Buzzard	prob	poss	prob	conf	poss
Common Sandpiper	-	-	-	-	poss
Coot	-	-	-	-	prob
Curlew	-	-	-	conf	prob
Dipper	-	-	-	-	-
Grey Heron	poss	prob	conf	prob	poss
Grey Partridge	-	poss	-	-	-
Grey Wagtail	-	conf	conf	conf	conf
Kestrel	poss	poss	conf	conf	conf
Kingfisher	poss	poss	-	poss	conf

Species	Breeding Atlas 2007-2011				
	N52	N62	N63	N72	N82
Lapwing	conf	conf	-	conf	poss
Little Grebe	conf	poss	poss	poss	conf
Long-eared Owl	-	-	conf	conf	conf
Mallard	conf	conf	conf	conf	conf
Meadow Pipit	prob	poss	conf	conf	conf
Merlin	-	-	-	poss	-
Moorhen	prob	prob	conf	conf	conf
Mute Swan	prob	conf	conf	-	conf
Peregrine Falcon	conf	-	-	conf	-
Redshank	prob	-	-	-	-
Ringed Plover	conf	-	-	-	-
Snipe	prob	prob	prob	conf	prob
Sparrowhawk	-	prob	conf	conf	conf
Stock Dove	-	prob	-	-	conf
Swift	prob	poss	prob	poss	conf
Teal	prob	conf	-	poss	poss
Tufted Duck	poss	-	prob	-	prob
Water Rail	poss	poss	-	-	prob
Whinchat	-	-	-	conf	prob
Woodcock	poss	prob	-	prob	-
Yellowhammer	prob	prob	prob	prob	conf

conf = confirmed breeding; prob = probable breeding; poss = possible breeding

Table 7-8 Wintering Bird Atlas data

Species	Wintering Atlas 2007-2011				
	N52	N62	N63	N72	N82
Barn Owl	-	pres	pres	-	pres
Black-headed Gull	-	-	-	-	pres
Buzzard	pres	pres	pres	pres	pres
Common Gull	-	-	-	pres	-
Coot	-	-	-	-	pres
Cormorant	-	-	pres	-	pres
Crane	pres	-	-	-	-
Curlew	-	pres	-	pres	pres
Dipper	-	-	-	-	-
Golden Plover	pres	-	pres	pres	pres
Great Black-backed Gull	-	-	-	-	-
Green Sandpiper	-	-	-	-	-
Grey Heron	pres	pres	pres	pres	pres
Grey Wagtail	-	-	pres	pres	pres
Hen Harrier	pres	pres	-	pres	pres
Herring Gull	-	-	-	pres	-
Jack Snipe	pres	-	pres	-	pres
Kestrel	pres	pres	pres	pres	pres

Species	Wintering Atlas 2007-2011				
	N52	N62	N63	N72	N82
Kingfisher	-	-	-	pres	pres
Lapwing	pres	pres	pres	pres	pres
Lesser Black-backed Gull	-	-	-	-	pres
Little Egret	-	-	-	pres	pres
Little Grebe	-	pres	pres	-	pres
Long-eared Owl	-	-	pres	-	-
Mallard	pres	pres	pres	pres	pres
Meadow Pipit	pres	pres	pres	pres	pres
Merlin	-	pres	pres	pres	pres
Moorhen	pres	pres	pres	pres	pres
Mute Swan	pres	pres	pres	pres	pres
Peregrine Falcon	pres	-	pres	pres	pres
Redwing	pres	pres	pres	pres	pres
Snipe	pres	pres	pres	pres	pres
Sparrowhawk	-	pres	pres	pres	pres
Stock Dove	-	pres	-	pres	pres
Teal	-	pres	pres	pres	pres
Water Rail	pres	pres	-	-	pres
Whooper Swan	pres	pres	-	-	-
Wigeon	-	-	-	-	pres
Woodcock	-	pres	pres	pres	pres
Yellowhammer	pres	pres	pres	pres	pres

Pres = presented within the hectad

7.3.3 Bird Sensitivity Mapping Tool

A Bird Sensitivity Mapping Tool for wind energy development was developed by BirdWatch Ireland to provide a measured spatial indication of where protected birds are likely to be sensitive to wind energy developments. The tool can be accessed via the National Biodiversity Data Centre Website (www.biodiversityireland.ie) and is accompanied by a guidance document (McGuiness *et al.*, 2015). The criteria for estimating a zone of sensitivity (i.e. 'low', 'medium', 'high' and 'highest') is based on a review of the behavioural, ecological and distributional data available for each species.

The Core Ornithology Survey Area is located within areas where there is currently no data on bird sensitivity to wind energy developments. The Core Ornithology Survey Area is 32km from the nearest area of high sensitivity. The Proposed Grid Connection is also within areas where there is currently no data on sensitivity and is 22km from the nearest area of high sensitivity.

7.3.4 National Biodiversity Data Centre Records

The National Biodiversity Data Centre (NBDC) Biodiversity Maps provide records of flora and fauna within 10km hectads across Ireland. Data is available from the map viewer on the NBDC website (https://maps.biodiversityireland.ie/Map). The Core Ornithology Survey Area lies within hectads N62, N63, and N72, while the Proposed Grid Connection and Proposed Turbine Delivery Route extend into hectads N52 and N82. Table 7-9 lists species of conservation interest that have been recorded in these 10km Grids.

Table 7-9 National Biodiversity Data Centre records

Species	NBDC Dataset
Barn Owl	Bird Atlas 2007 - 2011, Birds of Ireland
Corncrake	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972., The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991
Curlew	Birds of Ireland, Bird Atlas 2007 - 2011, The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991
Golden Plover	Bird Atlas 2007 - 2011, eBIRD Bird Records for Ireland, Birds of Ireland
Goldeneye	Birds of Ireland
Grey Partridge	Bird Atlas 2007 - 2011, The First Atlas of Wintering Birds in Britain and Ireland: 1981/82-1983/84., The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991
Grey Wagtail	Birds of Ireland, eBIRD Bird Records for Ireland, The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.
Hen Harrier	Birds of Ireland, eBIRD Bird Records for Ireland, Bird Atlas 2007 - 2011
Kestrel	Birds of Ireland, eBIRD Bird Records for Ireland
Kingfisher	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991, eBIRD Bird Records for Ireland, Birds of Ireland
Lapwing	Birds of Ireland, eBIRD Bird Records for Ireland
Little Egret	eBIRD Bird Records for Ireland, Birds of Ireland
Marsh Harrier	Birds of Ireland
Meadow Pipit	Birds of Ireland, eBIRD Bird Records for Ireland
Merlin	Bird Atlas 2007 - 2011, eBIRD Bird Records for Ireland, Birds of Ireland
Nightjar	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.
Peregrine	Bird Atlas 2007 - 2011, eBIRD Bird Records for Ireland, Birds of Ireland
Pochard	Irish Wetland Birds Survey (I-WeBS) 1994-2001.
Quail	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991, eBIRD Bird Records for Ireland
Red Grouse	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991
Red Kite	Birds of Ireland
Redshank	Birds of Ireland, eBIRD Bird Records for Ireland
Redwing	eBIRD Bird Records for Ireland, Bird Atlas 2007 - 2011, Birds of Ireland
Shoveler	Birds of Ireland, Irish Wetland Birds Survey (I-WeBS) 1994-2001.
Snipe	Birds of Ireland, eBIRD Bird Records for Ireland
Sparrowhawk	eBIRD Bird Records for Ireland
Stock Dove	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991, Bird Atlas 2007 - 2011, The First Atlas of Wintering Birds in Britain and Ireland: 1981/82-1983/84.
Swift	Bird Atlas 2007 - 2011, eBIRD Bird Records for Ireland, Swifts of Ireland, Birds of Ireland
Whinchat	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991, eBIRD Bird Records for Ireland, Bird Atlas 2007 - 2011
White-fronted Goose	eBIRD Bird Records for Ireland
White-tailed Eagle	eBIRD Bird Records for Ireland
Whooper Swan	eBIRD Bird Records for Ireland, Birds of Ireland

Species	NBDC Dataset
Woodcock	Birds of Ireland, eBIRD Bird Records for Ireland, Bird Atlas 2007 - 2011
Yellowhammer	Birds of Ireland, eBIRD Bird Records for Ireland

7.3.5 Irish Wetland Bird Survey Records

The Irish Wetland Bird Survey (IWeBS), coordinated by BirdWatch Ireland, monitors wintering waterbird populations at their wetland sites across Ireland. IWeBS site locations are available at https://birdwatchireland.ie/our-work/. Datasets for the following sites were sourced from www.birdwatchireland.ie and reviewed:

- Lullybeg (Within the Core Ornithology Survey Area)
- Timahoe Wetlands South (4.89km from the Core Ornithology Survey Area)
- Derrylea North of Monasterevin (6.91km from the Core Ornithology Survey Area)
- Grange West (6.94km from the Core Ornithology Survey Area)
- Drehid (Timahoe Wetlands North) (7.6km from the Core Ornithology Survey Area)
- Kilglass Quarry (7.67km from the Core Ornithology Survey Area)
- The Mill Pond (8.1km from the Core Ornithology Survey Area)
- Ballynafagh Lake (Prosperous) (8.18km from the Core Ornithology Survey Area)
- Pollardstown Fen (8.22km from the Core Ornithology Survey Area)
- River Barrow (Monasterevin-Portarlington) (8.9km from the Core Ornithology Survey Area)
- Kildare Curragh (10.97km from the Core Ornithology Survey Area)
- Blackwater Bridge - Donegans Quarry (12.13km from the Core Ornithology Survey Area)
- Donadea Forest (12.18km from the Core Ornithology Survey Area)
- Ballycarn Wetlands (Triangle) (13.62km from the Core Ornithology Survey Area)
- Derrygreenagh (14.12km from the Core Ornithology Survey Area)
- Millennium Park (Whole Site) (14.8km from the Core Ornithology Survey Area)
- Derryarkin (15.53km from the Core Ornithology Survey Area)
- Cloncurry Wetlands (16.19km from the Core Ornithology Survey Area)
- Lakelands Naas (16.69km from the Core Ornithology Survey Area)
- Croboy Lough & fields (17.49km from the Core Ornithology Survey Area)
- Derryoughter West (17.68km from the Core Ornithology Survey Area)
- Quarry site at Croboy/Derrymore (19.22km from the Core Ornithology Survey Area)
- River Barrow: Mountmellick (Clonterry) (20.38km from the Core Ornithology Survey Area)
- Friarstown Straffan (21.66km from the Core Ornithology Survey Area)

7.3.6 Rare and Protected Species Dataset

An information request was sent to NPWS requesting records from the Rare and Protected Species Database. The following records were obtained from the NPWS on the 20/06/2022 and/or 12/05/2026:

Curlew

Records of nest locations or estimated centres of territory (up to 2020):

- Hectad N51: one record in 2016
- Hectad N61: one record in 2020
- Hectad N62: one record in 2016
- Hectad N63: two records in 2015
- Hectad N71: two records in 2015

- Hectad N72: one record in 2023, one record in 2021, one records in 2020; two records in 2019; two records in 2018; three records in 2015

Peregrine

As recorded during the 2017 National Peregrine Survey (with information as to whether they were recorded as nest sites in the previous National Survey in 2002):

- Hectad N51: One occupied nest site (not known in 2002)
- Hectad N53: One unoccupied nest site (known in 2002)
- Hectad N61: One occupied nest site (not known in 2002)
- Hectad N62: One occupied nest site (known in 2002)
- Hectad N71: One occupied nest site (not known in 2002)
- Hectad N72: One occupied nest site (known in 2002)

Black-headed Gull

- Hectad N63: Two apparently occupied nest sites in 2018

7.3.7 Field Survey Results

A list of all bird species recorded during surveys is provided in Appendix 7-2. Appendix 7-3 presents a summary of the results for each survey type.

The target species recorded within 500m of the Core Ornithology Survey Area during field surveys are listed in

Table 7-10, along with a summary of key findings. Detailed species accounts are then provided under individual headings. This includes incidental records of species which were not the target species of a survey or were observed outside of survey times.

Table 7-10 Target species recorded within 500m of the Core Ornithology Survey Area

Species	Key findings
Kingfisher (Annex I & SCI of River Boyne and River Blackwater SPA)	**Non-breeding**. There was no evidence of breeding during surveys. **No roosts identified.** There was no evidence of roosting during surveys. **No key foraging areas.**
Crane (Annex I)	**Non-breeding**. There was no evidence of breeding during surveys. **No roosts identified.** There was no evidence of roosting during surveys. **No key foraging areas.**
Golden Plover (Annex I)	**Non-breeding**. There was no evidence of breeding during surveys. **No regularly used roosts identified.** There were 109 observations of birds landing or roosting within, or adjacent to the Core Ornithology Survey Area, with numbers ranging from 5 to 344 birds in various locations throughout the area.

Species	Key findings
	No key foraging areas. Golden plover were observed foraging at several locations within, and adjacent to, the Core Ornithology Survey Area. There is an abundance of foraging habitats within the Core Ornithology Survey Area and in the wider area, and foraging was not concentrated to one specific location, with flocks regularly moving around the Project Site.
Great Northern Diver (Annex I)	**Non-breeding**. Does not breed in Ireland. **No roosts identified.** There was no evidence of roosting during surveys. **No key foraging areas.**
Great White Egret (Annex I)	**Non-breeding**. There was no evidence of breeding during surveys. **No roosts identified.** There was no evidence of roosting during surveys. **No key foraging areas.**
Greenland White-fronted Goose (Annex I)	**Non-breeding**. Does not breed in Ireland. **No roosts identified.** There was no evidence of roosting during surveys. **No key foraging areas.**
Hen Harrier (Annex I)	**Non-breeding**. There was no evidence of breeding during surveys. **No regularly used roosts identified.** Hen harrier were recorded at 10 different areas within the Core Ornithology Survey Area and surrounding hinterland (<5km) during the crepuscular period. No regularly used roosts were identified. All records comprised single individuals and were considered indicative of opportunistic roosting. **No key foraging areas.**
Little Egret (Annex I)	**Non-breeding**. There was no evidence of breeding during surveys. **No regularly used roosts identified.** There was no evidence of roosting during surveys. **No key foraging areas.**
Merlin (Annex I)	**Non-breeding**. There was no evidence of breeding during surveys. **No regularly used roosts identified.** There was no evidence of roosting during surveys. **No key foraging areas.**
Nightjar	**Non-breeding**. There was no evidence of breeding during surveys. **No roosts identified.** There was no evidence of roosting during surveys.

Species	Key findings
(Annex I)	**No key foraging areas.**
Peregrine Falcon (Annex I)	**Confirmed Breeding**. A nest box was observed to be utilised by a breeding pair in 2020, 660m from the boundary of the Core Ornithology Survey Area. Breeding at this location was confirmed in 2020, 2022, 2023 and 2025 and probable in 2021 and 2024. An additional probable territory was identified in 2024, 1.7km from the Core Ornithology Survey Area. **No regularly used roosts identified.** There was no evidence of roosting during surveys. **No key foraging areas.**
Red Kite (Annex I)	**Non-breeding**. There was no evidence of breeding during surveys. **No roosts identified.** There was no evidence of roosting during surveys. **No key foraging areas.**
Short-eared Owl (Annex I)	**Non-breeding**. There was no evidence of breeding during surveys. **No regularly used roosts identified. T**here were two consecutive observations of a single bird flying from roost at dawn, however there was no evidence of regular roosting during surveys. **No key foraging areas.**
White-tailed Eagle (Annex I)	**Non-breeding**. There was no evidence of breeding during surveys. **No roosts identified.** There was no evidence of roosting during surveys. **No key foraging areas.**
Whooper Swan (Annex I)	**Non-breeding**. There was no evidence of breeding during surveys. **No regularly used roosts identified.** Roosting was recorded across a total of 10 areas within the Core Ornithology Survey Area over six years of surveying, with a maximum of seven areas being used in any one season. The Core Ornithology Survey Area was used for overnight roosting; however roosts regularly moved around the Core Ornithology Study Area due to varying water levels throughout the bogs and there were no specific roost locations consistently used because of this. **No key foraging areas.** Whooper swan were observed foraging at several locations within, and adjacent to, the Core Ornithology Survey Area. There is an abundance of foraging habitats within the Core Ornithology Survey Area and in the wider area, and foraging was not concentrated to one specific location, with flocks regularly moving around the Project Site.
Lesser Black-backed Gull	**Non-breeding**. There was no evidence of breeding during surveys.

Species	Key findings
(SCI of Poulaphouca Reservoir SPA)	**No regularly used roosts identified.** There was no evidence of roosting during surveys. **No key foraging areas.**
Barn Owl (Red-listed)	**Confirmed Breeding**. Breeding was confirmed within a building during the 2021 and 2022 breeding seasons, situated 487m from the Core Ornithology Survey Area. Breeding was confirmed at a second location, 1.5km from the Core Ornithology Survey Area in 2025. **No regularly used roosts identified.** There was no evidence of roosting during surveys. **No key foraging areas.**
Curlew (Red-listed)	**Probable Breeding**. There were two probable breeding territories identified within, or adjacent to, the Core Ornithology Survey Area. One territory associated with a known historic breeding location was identified in 2020 and 2023. A second probable territory was identified in 2021. **No regularly used roosts identified.** There was no evidence of roosting during surveys. **No key foraging areas.**
Grey Partridge (Red-listed)	**Non-breeding**. There was no evidence of breeding during surveys. **No regularly used roosts identified.** There was no evidence of roosting during surveys. **No key foraging areas.**
Kestrel (Red-listed)	**Confirmed Breeding**. Breeding was identified in each year surveyed. There were up to eight breeding territories (including confirmed and probable territories) identified within the Core Ornithology Survey Area and wider vicinity in any one season over the six breeding seasons surveyed. **No regularly used roosts identified.** There was no evidence of roosting during surveys. **No key foraging areas.** There is an abundance of suitable foraging habitats within, and adjacent to, the Core Ornithology Survey Area. Hunting activity was ubiquitous throughout the Project Site for this species as a result and no key foraging area was identified.
Lapwing (Red-listed)	**Confirmed Breeding**. Breeding was identified in each year surveyed. There were up to 14 breeding areas (including confirmed and probable) identified within the Core Ornithology Survey Area and wider vicinity in any one season over the six breeding seasons surveyed. **No regularly used roosts identified.** Lapwing were observed roosting at several locations within, and adjacent to, the Core Ornithology Survey

Species	Key findings
	Area. There are an abundance of roosting habitats within the Core Ornithology Survey Area and in the wider area, and foraging was not concentrated to one specific location, with flocks regularly moving around the Project Site. **No key foraging areas.** Lapwing were observed foraging at several locations within, and adjacent to, the Core Ornithology Survey Area. There are an abundance of foraging habitats within the Core Ornithology Survey Area and in the wider area, and foraging was not concentrated to one specific location, with flocks regularly moving around the Project Site.
Redshank (Red-listed)	**Non-breeding**. There was no evidence of breeding during surveys. **No regularly used roosts identified.** There was no evidence of roosting during surveys. **No key foraging areas.**
Shoveler (Red-listed)	**Non-breeding**. There was no evidence of breeding during surveys. **No regularly used roosts identified.** There was no evidence of roosting during surveys. **No key foraging areas.**
Snipe (Red-listed)	**Confirmed Breeding**. Breeding was identified in each year surveyed. There was evidence of several breeding territories throughout the Core Ornithology Survey Area in areas of suitable habitat, indicated by displaying males. **No regularly used roosts identified.** There was no evidence of roosting during surveys. **No key foraging areas.**
Woodcock (Red-listed)	**Confirmed Breeding**. Breeding was identified in each year surveyed. There was evidence of several breeding territories throughout the Core Ornithology Survey Area in areas of suitable habitat, indicated by displaying males. **No regularly used roosts identified.** There was no evidence of roosting during surveys. **No key foraging areas.**
Buzzard (Raptor)	**Confirmed Breeding**. Breeding was identified in each year surveyed. There were up to 18 breeding territories (including confirmed and probable) identified within the Core Ornithology Survey Area and wider vicinity in any one season over the six breeding seasons surveyed. **No regularly used roosts identified.** There was no evidence of roosting during surveys.

Species	Key findings
	No key foraging areas. There is an abundance of suitable foraging habitats within, and adjacent to, the Core Ornithology Survey Area. Hunting activity was ubiquitous throughout the Project Site for this species as a result and no key foraging area was identified.
Hobby	**Non-breeding**. There was no evidence of breeding during surveys. **No regularly used roosts identified.** There was no evidence of roosting during surveys. **No key foraging areas.**
Long-eared Owl (Raptor)	**Confirmed Breeding**. Breeding was identified in 2020, 2021, 2023 and 2024. There were up to two breeding territories (including confirmed and probable) identified within the Core Ornithology Survey Area and wider vicinity in any one season over the six breeding seasons surveyed. **No regularly used roosts identified.** There was no evidence of roosting at the Project Site during surveys. **No key foraging areas.**
Sparrowhawk (Raptor)	**Confirmed Breeding**. Breeding was identified in each year surveyed. There were up to six breeding territories (including confirmed and probable) identified within the Core Ornithology Study Area and wider vicinity in any one season over the six breeding seasons surveyed. **No regularly used roosts identified.** There was no evidence of roosting at the Project Site during surveys. **No key foraging areas.** There is an abundance of suitable foraging habitats within, and adjacent to, the Core Ornithology Survey Area. Hunting activity was ubiquitous throughout the Project Site for this species as a result and no key foraging area was identified.

7.3.7.1 Kingfisher

Kingfisher were observed in the winter and breeding seasons. Raw survey data and maps are provided in Appendix 7-4.

Vantage Point Surveys

Kingfisher were observed on 28 occasions during vantage point surveys. Kingfisher were observed on average once every 248 hours of the vantage point survey. Observations were of individuals and the majority were of birds calling or travelling. All observations of kingfisher were within the Core Ornithology Survey Area and 27 were within 500m of the Proposed Turbines.

Winter Walkover Survey

Kingfisher were observed on two occasions during winter walkover surveys (on 2 out of 24 survey visits). Observations comprised single birds flushed, perched, foraging and calling. Of the two

observations, both were within the Core Ornithology Study Area but outside the Proposed Project permanent infrastructure footprint.

Breeding Walkover Survey

Kingfisher were observed on 14 occasions during breeding walkover surveys (on 8 out of 24 survey visits). Observations were of one or two birds calling, perched, flushed or travelling. Of the 14 observations, 11 were within the Core Ornithology Survey Area and two overlap with the Proposed Project permanent infrastructure footprint.

Waterbird Distribution and Abundance Survey

Kingfisher was observed on 10 occasions during the waterbird distribution and abundance surveys (on 9 out of 118 survey rounds). Observations comprised of one or two birds travelling and foraging. Observations ranged from 37m to 12km from the Core Ornithology Survey Area.

Incidental Observations

Kingfisher were observed on 23 occasions as incidental observations. Observations comprised individual birds calling, travelling, foraging and perched. Of the 23 observations, 10 were within/partially within the Core Ornithology Survey Area and nine were within/partially within 500m of the Proposed Turbines.

7.3.7.2 Crane

Crane were observed in the breeding season. A single bird was seen by multiple observers on the same day in August 2024. Raw survey data and maps are provided in Appendix 7-4.

Vantage Point Surveys

Crane were observed on one occasion during vantage point surveys, in August 2024. Crane were observed on average once every 6,958 hours of the vantage point survey. The observation was of an individual bird landing within the Core Ornithology Survey Area and 3.7km from the nearest Proposed Turbine.

Incidental Observations

Crane were observed on two occasions as incidental observations. The observations were of the same individual on the same day in August 2024, landing within the Core Ornithology Survey Area and 2.4km from the nearest Proposed Turbine.

7.3.7.3 Golden Plover

Golden plover were observed in the winter and passage seasons. Raw survey data and maps are provided in Appendix 7-4. Survey data and maps relating to roost and foraging areas are provided in Confidential Survey Data Appendix 7-5.

Vantage Point Surveys

Golden plover were observed on 609 occasions during vantage point surveys, comprising of 569 flight observations and 40 non-flight observations. Of these observations, 78 were considered to be on ground for roosting and/or foraging. Golden plover were observed on average once every eight hours of the vantage point survey over the core months when present (i.e. September to April). The majority of

observations were recorded across the months of September to April inclusive, with only four observations of non-breeding birds between May and August. Observations ranged from individuals to 856 birds, with most of which were of birds calling or travelling. There were 50 observations of birds landing or roosting within, or adjacent to the Core Ornithology Survey Area, with numbers ranging from 5 to 344 birds in various locations throughout the Core Ornithology Survey Area. Birds were observed flying at the potential collision height on 330 occasions, with 91,214 seconds recorded at the Potential Collision Height. Of the total 609 observations of golden plover, 507 were within the Core Ornithology Survey Area and 365 were within 500m of the Proposed Turbines.

Winter Walkover Survey

Golden plover were observed on 51 occasions during winter walkover surveys (on 21 out of 24 survey visits). Observations ranged from 1 to 400 birds, with the majority of observations comprising of birds travelling or circling. There were 11 observations of birds roosting within the Core Ornithology Survey Area, comprising flocks of up to 66 birds. Of the 51 observations, 46 were within the Core Ornithology Survey Area and 12 overlap with the Proposed Project permanent infrastructure footprint.

Breeding Walkover Survey

Golden plover were observed on eight occasions during breeding walkover surveys (on 3 out of 24 survey visits). Observations comprised birds travelling, circling or roosting and ranged from an individual up to 200 birds. All observations were in the month of April (2021, 2024 and 2025) and are considered to comprise birds from the winter population, given the behaviour of the birds and the size of the flocks. There were three observations of birds roosting within the Core Ornithology Survey Area, two of which were outside of the 500m radius of Proposed Turbines. Of the eight observations, six were within the Core Ornithology Survey Area and four overlapped with the Proposed Project permanent infrastructure footprint.

Waterbird Distribution and Abundance Survey

Golden plover were observed on 83 occasions during the waterbird distribution and abundance surveys (on 41 out of 118 survey rounds[4]). Observations comprised up to 800 birds circling, travelling and roosting. Of the 83 observations, 18 were within the Core Ornithology Survey Area and eight were within 500m of the Proposed Turbines, with off-site observations up to 12km from the Core Ornithology Survey Area.

Wintering Golden Plover Survey

Golden plover were observed on 307 occasions during the wintering golden plover surveys (on 39 of 47 survey rounds). Observations comprised up to 8,500 birds circling, travelling and roosting. Observations ranged from 1.1km to 15.4km from the Core Ornithology Survey Area.

Incidental Observations

Golden plover were observed on 80 occasions as incidental observations. Observations ranged from individuals up to 2,988 birds and the majority of observations comprised birds calling, travelling or circling. There were 17 observations of birds roosting or on land, ranging from 2 to 2,988 birds. Of the 80 observations, 55 were within/partially within the Core Ornithology Survey Area and 43 were within/partially within 500m of the Proposed Turbines.

[4] *A survey round is defined as one fortnightly visit to the survey area.*

Roost Summary

The maximum flock sizes recorded at each of the roosting areas within the Core Ornithology Survey Area across the six winter seasons surveys are provided below:

- **Winter 2020/21** – Roosting recorded at nine areas within the Core Ornithology Survey Area, with a maximum count of 174 birds (Refs: GP-1, GP-2, GP-3, GP-5, GP-7, GP-9, GP-13, GP-19, GP-20).
- **Winter 2021/22** – Roosting recorded at seven areas within the Core Ornithology Survey Area, with a maximum count of 265 birds (Refs: GP-1, GP-3, GP-6, GP-7, GP-10, GP-15, GP-19).
- **Winter 2022/23** – Roosting recorded at five areas within the Core Ornithology Survey Area, with a maximum count of 65 birds (Refs: GP-2, GP-9, GP-10, GP-12, GP-19).
- **Winter 2023/24** – Roosting recorded at four areas within the Core Ornithology Survey Area, with a maximum count of 66 birds (Refs: GP-2, GP-4, GP-5, GP-9).
- **Winter 2024/25** – Roosting recorded at eight areas within the Core Ornithology Survey Area, with a maximum count of 400 birds (Refs: GP-1, GP-2, GP-3, GP-4, GP-7, GP-9, GP-11, GP-20).
- **Winter 2025/26** – Roosting recorded at eight areas within the Core Ornithology Survey Area, with a maximum count of 39 birds (Refs: GP-1, GP-2, GP-4, GP-5, GP-7, GP-9, GP-10, GP-12).
- There were a further 37 roosting sites recorded outside the Core Ornithology Survey Area, ranging from 1.3km to 15.6km from the Core Ornithology Survey Area. The largest flock of 8,500 birds was recorded 7.4km from the nearest Proposed Turbines at Cushina (Ref: GP-31), with other notably large flocks regularly recorded at the Curragh (Ref: GP-39, maximum flock recorded was 5,600 birds), 10.6km from the nearest Proposed Turbine.

Roosting locations are shown in Confidential Survey Data Appendix 7-5, Figure 7-5-7 and 7-5-7a.

7.3.7.4 Great Northern Diver

Great norther diver were observed in the breeding/passage seasons. Raw survey data and maps are provided in Appendix 7-4.

Waterbird Distribution and Abundance Survey

Great northern diver was observed on one occasion during the waterbird distribution and abundance surveys (on 1 out of 118 survey rounds). The observation comprised a non-breeding individual present on water in May 2020, 960m from the Core Ornithology Survey Area and 4.2km from the Proposed Turbines.

7.3.7.5 Great White Egret

Great white egret were observed in the winter and passage seasons. Raw survey data and maps are provided in Appendix 7-4.

Vantage Point Surveys

Great white egret was observed on one occasion during vantage point surveys in February. Great white egret was observed on average once every 6,958 hours of the vantage point survey. This observation was of an individual bird travelling 200m from the Core Ornithology Survey Area and 4.2km from the nearest Proposed Turbine.

Incidental Observations

Great white egret was observed on one occasion as incidental observations. The observations comprised an individual bird travelling 1.2km from Core Ornithology Survey Area in December 2025.

7.3.7.6 Greenland White-fronted Goose

Greenland white-fronted geese were observed in the winter season. Raw survey data and maps are provided in Appendix 7-4.

Vantage Point Surveys

Greenland white-fronted geese were observed on two occasions during vantage point surveys. Greenland white-fronted geese were observed on average once every 2,284 hours of the vantage point survey over the core months when present (i.e. September to April inclusive). Observations were of 4 and 104 birds, and both were of birds travelling over the Core Ornithology Survey Area. The birds were observed flying at potential collision height on both occasions, within 500m of the Proposed Turbines.

Waterbird Distribution and Abundance Survey

Greenland white-fronted geese were heard on one occasion during the waterbird distribution and abundance surveys (on 1 out of 118 survey rounds). The observation comprised an unknown number of birds heard calling from high while migrating over the Proposed Project permanent infrastructure in the Core Ornithology Survey Area.

7.3.7.7 Hen Harrier

Hen harrier were observed in the winter and passage seasons (August to April) with one additional observation of an individual in July 2020. Raw survey data and maps are provided in Appendix 7-4. Survey data and maps relating to roosts are provided in Confidential Survey Data Appendix 7-5.

Vantage Point Surveys

Hen harrier were observed on 140 occasions during vantage point surveys. Hen harrier were observed on average once every 50 hours of the vantage point survey. Observations were of individuals and the majority were of birds travelling or hunting. Observations were of both male and female birds. There were three observations of birds roosting within the Core Ornithology Survey Area, with birds flushed from a roost area in Glashabaun North in January 2024, and a different roost area in Barnaran in January 2026 and March 2026. The majority of observations were from the passage and winter season months of August to March, with four observations during the breeding seasons, comprising individual birds travelling in May 2020, April 2022 and April 2023. Birds were observed flying at potential collision height on 13 occasions. Of the total 140 observations of hen harrier, 135 were within the Core Ornithology Survey Area and 117 were within 500m of the Proposed Turbines.

Winter Walkover Survey

Hen harrier were observed on 11 occasions during winter walkover surveys (on 7 of 24 survey visits). Observations were of individual birds flushed, perched, hunting or travelling. All observations were within the Core Ornithology Survey Area and four overlapped with the Proposed Project permanent infrastructure footprint.

Hen Harrier Roost Survey

Hen harrier were observed on 54 occasions during hen harrier roost surveys (on average, one observation per 25 hours of survey). The majority of observations were of one or two birds flushed, perched, hunting or travelling. There were 15 observations of birds roosting, 11 of which were within the Core Ornithology Survey Area and 10 were within 500m of the Proposed Turbines. These were opportunistic roost areas in various locations and no regularly used roost was identified. Due to the nature of these surveys which were at dusk with low visibility, many observations of roosting hen harrier were isolated to general areas of suitable habitat but were not precisely located to an exact roost location. Of the 54 total observations, 40 were within/partially within the Core Ornithology Survey Area and 38 were within/partially within 500m of the Proposed Turbines.

Incidental Observations

Hen harrier were observed on 17 occasions as incidental observations. Observations comprised individual birds hunting and travelling. Of the 17 observations, nine were within/partially within the Core Ornithology Survey Area and seven were within/partially within 500m of the Proposed Turbines.

Roost Summary

There were 18 observations of hen harrier roosting, with 11 roost areas identified over five of the six winters surveyed. There were no regularly used roosts identified, with opportunistic roost areas distributed throughout the Core Ornithology Survey Area. There were some roost areas with repeated observations of birds (such as HH-c, HH-i and HH-f), however these are large areas of suitable habitat where birds were not seen going to an exact roost location, but an entire area of suitable habitat has been indicated on a precautionary basis.

- **Winter 2020/21** – No roosting observed.
- **Winter 2021/22** – Roosting recorded at three areas within, or adjacent to, the Ornithology Survey Area (Refs: HH-a, HH-d, HH-j).
- **Winter 2022/23** – Roosting recorded at four areas within, or adjacent to, the Ornithology Survey Area (Refs: HH-b, HH-f, HH-g, HH-h).
- **Winter 2023/24** – Roosting recorded at one area within, or adjacent to, the Ornithology Survey Area (Refs: HH-k).
- **Winter 2024/25** – Roosting recorded at three areas within, or adjacent to, the Ornithology Survey Area (Refs: HH-c, HH-e, HH-f).
- **Winter 2025/2026** - Roosting recorded at one area within, or adjacent to, the Ornithology Survey Area (Refs: HH-i).

Roosting areas are shown in Confidential Survey Data Appendix 7-5, Figure 7-5-10.

7.3.7.8 Little Egret

Little egret were observed in the winter and breeding seasons. Raw survey data and maps are provided in Appendix 7-4.

Vantage Point Surveys

Little egret were observed on 47 occasions during vantage point surveys. Little egret were observed on average once every 139 hours of the vantage point survey. Observations ranged from one to seven birds and the majority were of birds travelling or foraging. Birds were observed flying at potential collision height on four occasions. Of the total 47 observations of little egret, 46 were within the Core Ornithology Survey Area and 10 were within 500m of the Proposed Turbines.

Winter Walkover Survey

Little egret were observed on six occasions during winter walkover surveys (on 4 of 24 survey visits). Observations were of one or two birds, with the majority of observations comprising birds flushed, foraging or travelling. Of the six observations, all were within the Core Ornithology Survey Area and three overlapped with the Proposed Project permanent infrastructure footprint.

Breeding Walkover Survey

Little egret were observed on eight occasions during breeding walkover surveys (on 4 out of 24 survey visits). Observations were of one or two birds, comprising birds circling, perched, foraging or travelling. All observations were within the Core Ornithology Survey Area, but none overlapped with the Proposed Project permanent infrastructure footprint.

Waterbird Distribution and Abundance Survey

Little egret were observed on 10 occasions during the waterbird distribution and abundance surveys (on 7 out of 118 survey rounds). Observations comprised one or two birds foraging, travelling, flushed or perched. Of the 10 observations, four were within the Core Ornithology Survey Area and one was within 500m of the Proposed Turbines, with off-site observations up to 4.5km from the Core Ornithology Survey Area.

Incidental Observations

Little egret were observed on 13 occasions as incidental observations. The majority of observations comprised individuals foraging and travelling, with up to four birds observed. Of the 13 observations, seven were within/partially within the Core Ornithology Survey Area and three were within/partially within 500m of the Proposed Turbines.

7.3.7.9 Merlin

Merlin were observed in the winter and breeding seasons. Raw survey data and maps are provided in Appendix 7-4. Survey data and maps relating to breeding activity are provided in Confidential Survey Data Appendix 7-5.

Vantage Point Surveys

Merlin were observed on 35 occasions during vantage point surveys. Merlin were observed on average once every 199 hours of the vantage point survey. The majority observations were of individuals. There were two birds were observed chasing each other in September 2020, possibly indicating that these are juveniles or an adult and juvenile bird. Juvenile birds were also observed on two occasions, in September 2022 and December 2024. Given that these juveniles were observed during the passage and winter seasons, it is most likely that these birds are part of the wintering population and originated from breeding territories some distance from the Core Ornithology Survey Area. The majority of observations were of birds travelling or hunting. Observations were of both male and female birds. The majority of observations were from the passage and winter season months of August to March, with two observations during the breeding seasons, comprising individual birds hunting and travelling in July 2023 and April 2024. Birds were observed flying at potential collision height on two occasions. Of the total 35 observations of merlin, 33 were within the Core Ornithology Survey Area and 19 were within 500m of the Proposed Turbines.

Winter Walkover Survey

Merlin were observed on 15 occasions during winter walkover surveys (on 9 out of 24 survey visits). Observations were of individuals travelling, perched or hunting. Of the 15 observations, 13 were within the Core Ornithology Survey Area and one overlapped with the Proposed Project permanent infrastructure footprint.

Breeding Walkover Survey

Merlin were observed on three occasions during breeding walkover surveys (on 3 out of 24 survey visits). Observations were of individuals hunting or travelling. All observations were within the Core Ornithology Survey Area and two overlapped with the Proposed Project permanent infrastructure footprint

Incidental Observations

Merlin were observed on 43 occasions as incidental observations. Observations comprised individual birds hunting, perched and travelling. Of the 43 observations, 19 were within/partially within the Core Ornithology Survey Area and 16 were within/partially within 500m of the Proposed Turbines.

7.3.7.10 Nightjar

Nightjar were observed in the breeding season. Raw survey data and maps are provided in Appendix 7-4.

Incidental Observations

Nightjar were observed on one occasion as incidental observations in June 2023. This observation comprised individual bird calling within the Core Ornithology Survey Area and within 500m of the Proposed Turbines. Further surveys were conducted in this area following this observation in June and July 2023, however there were no further observations. It is therefore concluded that this observation was of an individual on migration and did not remain within the Core Ornithology Study Area for any length of time.

7.3.7.11 Peregrine

Peregrine were observed in the winter and breeding seasons. Raw survey data and maps are provided in Appendix 7-4. Survey data and maps relating to breeding activity are provided in Confidential Survey Data Appendix 7-5.

Vantage Point Surveys

Peregrine were observed on 84 occasions during vantage point surveys. Peregrine were observed on average once every 83 hours of the vantage point survey. Observations were of one or two birds, with the majority of observations of travelling or hunting. There were five observations of breeding activity, all within the Core Ornithology Survey Area. A female bird was observed carrying prey in March 2022, flying in a southwest direction away from the known nest site (ref: PE-a). This indicates a second confirmed breeding territory, with the most probable location within a quarry approximately 1.7km from the Core Ornithology Survey Area (ref: PE-b). A bird was observed displaying in the west of the Project Site in July 2022 and a juvenile was observed in July 2022, confirming successful breeding at a nest box in 2022. In June 2024, two birds were observed chasing each other, indicating a probable breeding territory in the area. There were two observations of peregrine mobbing other birds, once in March 2025 and once in January 2026. All of which are assumed to be related to the known pair that are resident at the nest box located approximately 600m from the Core Ornithology Survey Area. Birds

were observed flying at potential collision height on 35 occasions. Of the total 84 observations of peregrine, 76 were within the Core Ornithology Survey Area and 50 were within 500m of the Proposed Turbines.

Winter Walkover Survey

Peregrine were observed on six occasions during winter walkover surveys (on 4 out of 24 survey visits). Observations were of one or two birds, with the majority of observations comprising birds travelling or perched. There was one observation of a bird mobbing in October 2024, however this is not considered to indicate breeding activity due to the timing of the observation. Of the six observations, five were within the Core Ornithology Survey Area and one overlapped with the Proposed Project permanent infrastructure footprint.

Breeding Walkover Survey

Peregrine were observed on eight occasions during breeding walkover surveys (on 7 out of 24 survey visits). Observations were of one or two birds, the majority of which were of birds hunting or travelling. There was one observation of two adults perched at the known nest site 600m from the Core Ornithology Survey Area. Of the eight observations, seven were within the Core Ornithology Survey Area and two overlapped with the Proposed Project permanent infrastructure footprint.

Breeding Raptor Survey

Peregrine were observed on 97 occasions during breeding raptor surveys (on 19 out of 24 survey visits). Observations were of between one and three birds, the majority of which were of birds travelling or perched. All observations were outside the Core Ornithology Survey Area and within 500m of the Proposed Turbines.

There were several observations of breeding behaviour, largely located at a nest box located 600m from the Core Ornithology Survey Area. In 2020, there were 29 observations confirming breeding at this nest box site (including food provisioning and observation of juveniles). In 2021, there was one observation of behaviour indicating probable breeding at this nest box site (adult pair perched at nest site). In 2022, there were 13 observations of breeding behaviour at the nest box, including observations confirming breeding (food provisioning and observations of juveniles). There was one further observation in July 2024of two birds mobbing, indicating probable breeding and likely associated with the second territory (ref: PE-b), 1.7km from the Core Ornithology Survey Area. In 2023, there were six observations of breeding behaviour at the nest box, including observations confirming breeding (food provisioning). In 2024, there were three observations of behaviour indicating probable breeding at the nest box (adult perched at nest site). In 2025, there were three observations of breeding behaviour at the nest box site, including an observation confirming breeding at the nest box (observation of juveniles).

Incidental Observations

Peregrine were observed on 50 occasions as incidental observations. Observations were of between one and three birds and the majority of observations comprised birds hunting, perched and travelling. There were two observations of juvenile birds, confirming breeding in 2020 and 2023. There were also two observations of birds carrying prey, however these are not considered to indicate breeding activity due to the timing of the observations (December 2023 and February 2026) and were likely of birds travelling to a regular plucking post. Of the 50 observations, 13 were within the Core Ornithology Survey Area and 10 were within/partially within 500m of the Proposed Turbines.

Breeding Summary

A nest box was observed to be utilised by a breeding pair in 2020, 600m from the Core Ornithology Survey Area (ref: PE-a). Breeding at this location was confirmed in 2020, 2022, 2023 and 2025 and probable in 2021 and 2024. An additional confirmed territory (ref: PE-b) was identified in 2022, 1.7km from the Core Ornithology Survey Area, with probable breeding at this location again in 2024.

Breeding territories and nest sites are shown in Confidential Survey Data Appendix 7-5, Figure 7-5-16.

7.3.7.12 Red Kite

Red kite were observed in the winter season. Raw survey data and maps are provided in Appendix 7-4.

Vantage Point Surveys

Red kite were observed on one occasion during vantage point surveys. Red kite were observed on average once every 6,958 hours of the vantage point survey. This observation was of an individual travelling within the Core Ornithology Survey Area and within 500m of the Proposed Turbines.

7.3.7.13 Short-eared Owl

Short-eared owl were observed in the winter and breeding seasons. Raw survey data and maps are provided in Appendix 7-4. Survey data and maps relating to roosts are provided in Confidential Survey Data Appendix 7-5.

Vantage Point Surveys

Short-eared owl were observed on five occasions during vantage point surveys. Short-eared owl were observed on average once every 1,392 hours of the vantage point survey. Observations were all of individual birds, the majority of which were of birds travelling. Three observations were in April 2021, comprising three consecutive observations of a bird travelling close to dusk. In November 2023, there were two consecutive observations of a single bird flying from a roost location at dawn and travelling across the bog. Of the total five observations of short-eared owl, all were within the Core Ornithology Survey Area and four were within 500m of the Proposed Turbines.

Incidental Observations

Short-eared owl were observed on four occasions as incidental observations. Observations comprised individual birds hunting and travelling. Of the four observations, two were within/partially within the Core Ornithology Survey Area and one was within 500m of the Proposed Turbines.

7.3.7.14 White-tailed Eagle

White-tailed eagle were observed in the winter and breeding seasons. Raw survey data and maps are provided in Appendix 7-4.

Vantage Point Surveys

White-tailed eagle were observed on four occasions during vantage point surveys. White-tailed eagle were observed on average once every 1,739 hours of the vantage point survey. Observations were of individual birds travelling and calling during daylight hours and no roosting was evident. All observations were from the winter and passage months, from October to April. Birds were observed flying at potential collision height on two occasions. Of the total four observations of white-tailed eagle,

three were within the Core Ornithology Survey Area and two were within 500m of the Proposed Turbines.

Incidental Observations

White-tailed eagle was observed on one occasion as an incidental observation, in February 2025. This observation was of an individual bird soaring and travelling within the Core Ornithology Survey Area and within 500m of the Proposed Turbines.

7.3.7.15 Whooper Swan

Whooper swan were observed in the winter and passage seasons. Raw survey data and maps are provided in Appendix 7-4. Survey data and maps relating to roost and foraging areas are provided in Confidential Survey Data Appendix 7-5.

Vantage Point Surveys

Whooper swan were observed on 271 occasions during vantage point surveys, comprising of 230 flight observations and 41 non-flight observations. Whooper swan were observed on average once every 17 hours of the vantage point survey over the months when present (i.e. September – April). Observations ranged from 1 to 92 birds and the majority were of birds calling or travelling. There were 51 observations of birds landing or roosting on flooded sections of the bog or adjacent lands within, or adjacent to the Core Ornithology Survey Area, with numbers ranging from 1 to 92 birds in various locations throughout the Core Ornithology Survey Area. Roosts regularly moved around the Core Ornithology Survey Area due to varying water levels throughout the bogs and there were no specific roost used consistently because of this.

Birds were observed flying at potential collision height on 66 occasions. Of the total 271 observations of whooper swan, 233 were within the Core Ornithology Survey Area and 186 were within 500m of the Proposed Turbines.

Winter Walkover Survey

Whooper swan were observed on 38 occasions during winter walkover surveys (on 17 out of 24 survey visits). Observations ranged from 1 to 117 birds, with the majority of observations comprising birds travelling or calling. There were 19 observations of birds roosting within the Core Ornithology Survey Area, comprising flocks of up to 117 birds. Of the 38 observations, 30 were within the Core Ornithology Survey Area and 10 overlapped with the Proposed Project permanent infrastructure footprint.

Breeding Walkover Survey

Whooper swan were observed on four occasions during breeding walkover surveys (on 4 out of 24 survey visits). Observations ranged from one to three birds foraging, perched or swimming. Observations were in the month of April (2024), May (2023, 2025) and June (2025) and comprise birds from the winter population. All observations were within the Core Ornithology Survey Area, but none overlapped with the Proposed Project permanent infrastructure footprint.

Waterbird Distribution and Abundance Survey

Whooper swan were observed on 120 occasions during the waterbird distribution and abundance surveys (on 46 out of 118 survey rounds). Observations comprised up to 133 birds calling, travelling, foraging and roosting. Of the 120 observations, 34 were within the Core Ornithology Survey Area and

25 were within 500m of the Proposed Turbines, with off-site observations up to 12.2km from the Core Ornithology Survey Area.

Incidental Observations

Whooper swan were observed on 149 occasions as incidental observations. Observations ranged from 1 to 500 birds with the majority of observations of birds travelling, foraging and roosting. Of the 149 observations, 87 were within/partially within the Core Ornithology Survey Area and 69 were within/partially within 500m of the Proposed Turbines.

Roost Summary

There were a total of 33 areas used for roosting and/or foraging by whooper swan, with ten located within the Core Ornithology Survey Area. The maximum flock sizes recorded at each of the roosting areas within the Core Ornithology Survey Area across the six winter seasons surveys are provided below:

- **Winter 2020/21** – Roosting/foraging recorded at four areas within the Core Ornithology Survey Area, with max counts of 10, 6, 16 and 1 respectively (Refs: WS-f, WS-h, WS-I, WS-p).
- **Winter 2021/22** – Roosting/foraging recorded at three areas on-site with max counts of 80, 50 and 22 respectively (Refs: WS-h, WS-i, WS-j).
- **Winter 2022/23** – Roosting/foraging recorded at two areas on-site with max counts of 4, 12 (Refs: WS-h, WS-j).
- **Winter 2023/24** – Roosting/foraging recorded at four areas on-site with max counts of 2, 117, 12 and 3 respectively (Refs: WS-h, WS-i, WS-j and WS-p).
- **Winter 2024/25** – Roosting/foraging recorded at eight areas on-site with max counts of 6, 35, 10, 55, 22, 67, 16 and 5 respectively (Refs: WS-f, WS-h, WS-i WS-j, WS-k, WS-l, WS-m, WS-n).
- **Winter 2025/2026** - Roosting/foraging recorded at three areas on-site with max counts of 60, 131 and 60 respectively (Refs: WS-g, WS-h, WS-l).
- There were a further 23 roosting/foraging sites recorded outside the Core Ornithology Survey Area, ranging from 150m to 14km from the Core Ornithology Survey Area. The largest flock recorded at these sites was 500 birds recorded feeding 7.4km from the nearest Proposed Turbine.

Roosting locations are shown in Confidential Survey Data Appendix 7-5, Figure 7-5-22 and Figure 7-5-22a-22c.

7.3.7.16 Lesser Black-backed Gull

Lesser black-backed gull were observed in the winter and breeding seasons. Raw survey data and maps are provided in Appendix 7-4.

Vantage Point Surveys

Lesser black-backed gull were observed on 124 occasions during vantage point surveys. Lesser black-backed gull were observed on average once every 56 hours of the vantage point survey. Observations ranged from 1 to 125 birds with the majority were of birds calling or travelling. There were two observations of birds landing on the ground. The majority of observations were during the breeding season months (66) with 58 observations during winter months. Birds were observed flying at the potential collision height on 48 occasions during the breeding season and on 46 occasions in the winter season. Of the 124 observations of lesser black-backed gull, 86 were within the Core Ornithology Study Area and 48 were within 500m of the Proposed Turbines.

Winter Walkover Surveys

Lesser black-backed gull were observed on three occasions during winter walkover surveys (on 2 out of 24 survey visits). Observations ranged from three to four birds, with two of observations comprising birds travelling and one observation of birds wading on the ground. All observations were within the Core Ornithology Survey Area and none overlapped with the Proposed Project permanent infrastructure footprint.

Breeding Walkover Surveys

Lesser black-backed gull were observed on 20 occasions during breeding walkover surveys (on 7 out of 24 survey visits). Observations were of birds travelling, ranging from 1 to 48 birds. Of the 20 observations, 13 were within the Core Ornithology Study Area and nine overlapped with the Proposed Project permanent infrastructure footprint.

Waterbird Distribution and Abundance Surveys

Lesser black-backed gull were observed on 40 occasions during the waterbird distribution and abundance surveys (on 33 out of 118 survey rounds). Observations were of birds calling, travelling, foraging, wading and roosting. Of the 40 observations, six were within the Core Ornithology Survey Area and four were within 500m of the Proposed Turbines, with off-site observations up to 4.3km from the Core Ornithology Survey Area.

Incidental Observations

Lesser black-backed gull were observed on 70 occasions as incidental observations. Observations ranged from one to 203 birds and comprised of birds travelling, circling, foraging and roosting. Of the 70 observations, 15 were within/partially within the Core Ornithology Survey Area and 11 were within 500m of the Proposed Turbines.

7.3.7.17 Barn Owl

Barn owl were observed in the winter and breeding seasons. Raw survey data and maps are provided in Appendix 7-4. Survey data and maps relating to nests are provided in Confidential Survey Data Appendix 7-5.

Vantage Point Surveys

Barn owl were observed on one occasion during vantage point surveys. Barn owl were observed on average once every 6,958 hours of the vantage point survey. The observation was of an individual bird hunting in October 2023. The observation was within the Core Ornithology Survey Area and within 500m of the Proposed Turbines.

Breeding Walkover Survey

Barn owl was observed on one occasion during breeding walkover surveys (on average, one observation per 975 hours of survey). The observation was of an individual preening within the Core Ornithology Survey Area but did not overlap with the Proposed Project permanent infrastructure footprint.

Breeding Barn Owl Survey

Barn owl was observed on 21 occasions during breeding barn owl surveys (on 1 out of 24 survey visits). Observations comprised barn owl activity at a suitable nesting structure, with young heard

begging/snoring from inside the structure, confirming breeding at this location in the 2021 breeding season, situated 487m from the Core Ornithology Survey Area and 1km from the nearest Proposed Turbine. Further dedicated surveys were undertaken at this location in the 2022, 2023, 2024 and 2025 breeding seasons. Breeding was confirmed at this location in 2022. Calling was heard at the location in 2023 however no breeding activity was confirmed. There was no barn owl activity recorded at this location in 2024 or 2025. Following the previous nest location becoming unsuitable, an owl was observed entering an abandoned cottage 1.5km from the Core Ornithology Survey Area (and 4.5km from the nearest proposed turbine) in 2025 and an active nest site at this location was confirmed. It is likely that this pair are the same birds that bred at the previous nest site mentioned before the 2022 nest site became unsuitable for barn owl. Breeding territories are shown in Confidential Survey Data Appendix 7-5, Figure 7-5-25.

Incidental Observations

Barn owl were observed on 15 occasions as incidental observations. Observations comprised individual birds hunting, perched, calling and travelling. Of the 15 observations, five were within/partially within the Core Ornithology Survey Area and one was within/partially within 500m of the Proposed Turbines.

7.3.7.18 Curlew

Curlew were observed in the winter and breeding seasons. Raw survey data and maps are provided in Appendix 7-4. Survey data and maps relating to breeding activity are provided in Confidential Survey Data Appendix 7-5.

Vantage Point Surveys

Curlew were observed on 33 occasions during vantage point surveys. Curlew were observed on average once every 211 hours of the vantage point survey. Observations ranged from one to eight birds with the majority were of birds calling or travelling. The majority of observations were during the breeding season months (29) with only four observations during winter months. There were three observations of behaviour indicating potential breeding activity, within, or adjacent to, the Core Ornithology Survey Area. Two observations of bubbling calls were heard, indicating probable breeding, in April 2020 (two consecutive calls) (Ref: CU-a) and May 2021 (Ref: CU-b, within the Blackriver bog and Core Ornithology Survey Area). On a precautionary basis, this calling is considered to indicate probable breeding, however no further breeding activity was observed during these surveys. The activity in April 2020 was associated with a historic breeding territory, however no further breeding activity was observed despite a comprehensive suite of surveys in the Lodge Bog area. Birds were observed flying at potential collision height on two occasions. Of the total 33 observations of curlew, 21 were within the Core Ornithology Study Area and 12 were within 500m of the Proposed Turbines.

Winter Walkover Survey

Curlew were observed on seven occasions during winter walkover surveys (on 3 out of 24 survey visits). Observations ranged from one to two birds, with the majority of observations comprising birds travelling, circling, foraging or calling. Of the seven observations, six were within the Core Ornithology Survey Area and none overlapped with the Proposed Project permanent infrastructure footprint.

Breeding Walkover Survey

Curlew were observed on seven occasions during breeding walkover surveys (on 3 out of 24 survey visits). Observations were of individuals calling or travelling. There was one observation of a bird displaying agitated behaviour close to a known historic nest site in May 2022 (Ref: CU-a) adjacent to the Core Ornithology Study Area, indicating probable breeding in this area. Of the seven observations,

four were within the Core Ornithology Study Area, but did not overlap with the Proposed Project permanent infrastructure footprint.

Waterbird Distribution and Abundance Survey

Curlew were observed on 14 occasions during the waterbird distribution and abundance surveys (on 7 out of 118 survey rounds). Observations were of one or two birds calling, travelling, foraging and roosting. Of the 14 observations, seven were within the Core Ornithology Survey Area and two were within 500m of the Proposed Turbines, with off-site observations up to 4.3km from the Core Ornithology Survey Area.

Incidental Observations

Curlew were observed on 19 occasions as incidental observations. Observations ranged from one to five birds and comprised of birds travelling, calling, foraging and roosting. Of the 19 observations, three were within/partially within the Core Ornithology Survey Area and one was within 500m of the Proposed Turbines.

Breeding Summary

There is a known historic curlew breeding site adjacent to the Core Ornithology Survey Area at Lodge Bog (ref: CU-a). There was probable breeding curlew at this location in 2020 and 2022. Despite a comprehensive suite of surveys at this location in each breeding season, breeding was never confirmed. There has been no curlew activity recorded in this area since 2022. There was a probable breeding territory identified within the Core Ornithology Survey Area in 2021 (ref: CU-b); however, breeding was not confirmed. There has been no curlew activity recorded in this area since 2021 and this area is unlikely to be used due to disturbance from turbary.

Breeding territories are shown in Confidential Survey Data Appendix 7-5, Figure 7-5-29.

7.3.7.19 Grey Partridge

Grey Partridge were observed in the winter and breeding seasons. Raw survey data and maps are provided in Appendix 7-4.

Vantage Point Surveys

Grey partridge were observed on one occasion during vantage point surveys. Grey partridge were observed on average once every 6,958 hours of the vantage point survey. The observation was of an individual travelling in October 2022. The observation was adjacent to the Core Ornithology Survey Area and 512m from the nearest Proposed Turbine.

Breeding Walkover Survey

Grey partridge was observed on one occasion during breeding walkover surveys (on 1 out of 24 survey visits). The observation was of an individual present within the Core Ornithology Survey Area in 2020 but did not overlap with the Proposed Project permanent infrastructure footprint.

7.3.7.20 Kestrel

Kestrel were observed in the winter and breeding seasons. Raw survey data and maps are provided in Appendix 7-4. Survey data and maps relating to nests are provided in Confidential Survey Data Appendix 7-5.

Vantage Point Surveys

Kestrel were observed on 1,818 occasions during vantage point surveys. Kestrel were observed on average once every four hours of the vantage point survey. The majority of observations comprised individuals perched, hunting or travelling, with a maximum of three birds recorded. Birds were observed flying at potential collision height on 690 occasions. Of the total 1,818 observations of kestrel, 1,643 were within the Core Ornithology Survey Area and 1,203 were within 500m of the Proposed Turbines.

There were several observations of breeding activity.

In 2020, there were 11 observations of behaviours indicating probable territories (mobbing and chasing) which indicated probable breeding at four locations (Refs: K-a, K-b, K-d and K-e). There were four observations of behaviours indicating confirmed breeding territories including one male carrying prey which confirmed breeding at Barnaran (Ref: K-c) and three observations of juveniles. The observations of juveniles were of mobile birds but were likely associated with two territories based on probable breeding behaviours observed also at Ticknevin and Derrybrennan (Refs: K-b and K-d).

In 2021, there were three observations of behaviours indicating probable territories (displaying, mobbing and chasing), one which was associated with a confirmed breeding area (K-f) and two which indicate probable breeding at one other location (Refs K-h:). There were two separate observations of birds carrying prey Derrybrennan which confirmed breeding (Ref: K-f). There were nine observations of juvenile birds travelling, eight of which were in Derrybrennan (Ref: K-f) and one Ballydermot South, with a record of juvenile likely associated with one territory (Ref: K-h) based on probable breeding behaviours observed also.

In 2022, there were five observations of behaviours that confirmed breeding territories including an observation of a bird carrying prey, confirming breeding at a previously used territory in Derrybrennan (Ref: K-f) and four observations of juveniles, two of which indicated a confirmed territory in Codd 2 (Ref: K-m), one was associated with K-f and another was of a very mobile birds and therefore cannot be identified with a specific breeding location. There was also one observation of behaviours indicating probable breeding territories (male calling near possible nest) (Ref: K-k).

In 2023, there were six observations of behaviours that confirmed breeding territories including one observation of a bird carrying prey to a nest with begging juveniles beside Ballydermot North (Ref: K-p) and five observations of juveniles, one which was likely associated with a previously used territory in Derrybrennan (Ref: K-f) and four which were of very mobile birds and therefore cannot be identified with a specific breeding location.

In 2024, there were four observations of behaviours that confirmed breeding territories including observations of juveniles, two of which are likely associated with a confirmed territory in Ticknevin (K-b) and one associated with a previously used confirmed territory in Barnaran (K-c), while one was not identified with a specific breeding location as the bird was mobile and not associated with a probable territory. There were three observations of behaviours indicating probable breeding territories (displaying and chasing) associated with two probable breeding territories (K-s and K-u).

In 2025, there was an observation of behaviours that confirmed a breeding territory with an observation of a juvenile however, this was not identified with a specific breeding location as the bird was mobile and not associated with a probable territory. There was one observation of a bird carrying prey, confirming a previously used breeding territory in Derrybrennan (Ref: K-f). There was also an observation of behaviours indicating a probable territory used previously (two kestrel mobbing and chasing each other) (Ref: K-p).

There were three further observations of behaviours (carrying prey, chasing, mobbing) which occurred in winter seasons (November 2021, November 2022 and November 2024) and therefore are not considered to indicate breeding activity due to the timing of the observations.

Winter Walkover Survey

Kestrel were observed on 72 occasions during winter walkover surveys (on 21 out of 24 survey visits). Observations were of one or two birds, with the majority of observations comprising of birds travelling, hunting or perched. There was one observation of a bird mobbing in October 2024, however this is not considered to indicate breeding activity due to the timing of the observations. Of the 72 observations, 65 were within the Core Ornithology Survey Area and 14 overlapped with the Proposed Project permanent infrastructure footprint.

Breeding Walkover Survey

Kestrel were observed on 116 occasions during breeding walkover surveys (on 23 out of 24 survey visits). Observations ranged from one to three birds, the majority of which were of birds hunting, perched or travelling. Of the 116 observations, 28 overlapped with the Proposed Project permanent infrastructure footprint.

There were several observations of breeding activity. In 2020, there were two observations of behaviours that confirmed breeding territories including one male carrying prey at Blackriver (confirming territory K-a) and an observation of two juveniles flying with an adult, which was not identified with a specific breeding location as the bird was mobile and not associated with a probable territory.

In 2021, there were two observations of behaviours that confirmed breeding territories including birds at a nest at Glashabaun (Ref: K-g) and an observation of two juveniles in the vicinity of a previous territory in Ticknevin (K-b).

In 2022, there were three observations of behaviours that confirmed breeding territories including an observation of chicks at a nest in Codd 2 (Ref: K-m) and two observations of fledged juveniles (one likely associated with K-m and the second was not identified with a specific breeding location as the bird was mobile and not associated with a probable territory). There were two observations of a behaviours indicating probable territories (male occupying a territory (Ref: K-c) and agitated calling (Ref: K-l)).

In 2023, there was one observation of behaviour indicating a confirmed breeding in Killina (observation of a juvenile) which was not identified with a specific breeding location as the bird was mobile and not associated with a probable territory.

In 2024, there were two observations of behaviours that confirmed breeding territories including observations of juveniles near Lodge bog (likely associated with the territory K-l) as well as two observations of behaviours indicating probable territories (mobbing (Ref: K-s) and agitated behaviour (Ref: K-r)).

In 2025, there were six observations of behaviours that confirmed breeding territories including observations of birds carrying prey to two separate previously used territories in Ticknevin and Ballydermot South (Ref: K-b and K-h) and four observations of juveniles (two of which likely associated with K-b, one with K-t and one with a previously used K-c).

Breeding Raptor Survey

Kestrel were observed on 104 occasions during breeding raptor surveys (on 24 out of 24 survey visits). Observations ranged from individual birds up to three birds, the majority of which were of birds travelling, hunting or perched. Of the 104 observations, 86 were within the Core Ornithology Study Area and nine were within 500m of the Proposed Turbines.

There were several observations of breeding behaviour. In 2020, there was one observation indicating probable breeding behaviour (mobbing) (Ref: K-d).

In 2021, there were two observations of behaviour indicating probable breeding (mobbing and chasing) at the same territory (Ref: K-i).

In 2022, there were four observations of behaviours that confirmed breeding including observations of a bird carrying prey to a nest offsite with juveniles and an observation of birds present at the nest (Ref: K-j), as well as two observations of juveniles hunting, which were not identified with a specific breeding location as the birds were mobile and not associated with a probable territory.

In 2023, there was one observation of breeding behaviour that confirmed breeding (observation of a juvenile hunting with two adults, indicating breeding in Drehid (Ref: K-o)).

In 2024, there were three observations of behaviours that confirmed breeding (carrying prey) at three separate territories (Refs: K-b, K-o and K-q), as well as one observation of behaviour indicating probable breeding (mobbing) (Ref: K-o).

In 2025, there was one observation of behaviour that confirmed breeding (observation of a juvenile in Barnaran, likely associated with K-c), as well as one observation indicating probable breeding (displaying) at a previously used territory (Ref: K-o).

Incidental Observations

Kestrel were observed on 287 occasions as incidental observations. Observations ranged from one to four birds and the majority of observations comprised birds hunting, perched and travelling. Of the 287 observations, 142 were within/partially within the Core Ornithology Survey Area and 110 were within/partially within 500m of the Proposed Turbines.

There were several observations of breeding behaviour. In 2021, a bird was observed displaying, indicating a probable breeding territory in Glashabaun (Ref: K-g).

In 2022, a bird was observed chasing a peregrine in Ballydermot North, indicating a probable breeding territory (Ref: K-k).

In 2023, there were two observations that confirmed breeding territories (observations of juveniles) at Blackriver and Rathlumber (Ref: K-n and K-v).

In 2024, a pair were observed chasing each other, indicating a probable breeding territory at Ballydermot South (Ref: K-u).

Breeding Summary

There were several observations of breeding activity across the six breeding season surveys, as detailed below:

- **2020 (Five territories)** – Four confirmed (Refs: K-a, K-b, K-c, K-d) and one probable (Ref: K-e) breeding territories, all of which were partially within the Core Ornithology Survey Area.
- **2021 (Five territories)** – Four confirmed (Refs: K-b, K-f, K-g, K-h) and one probable (Ref: K-i) breeding territories, four of which were within the Core Ornithology Survey Area.
- **2022 (Six territories)** – four confirmed breeding territories (Refs: K-c, K-f, K-j, K-k, K-l, K-m) and two probable (Ref: K-c, K-l), three being with the Core Ornithology Survey Area.

- **2023 (Five territories)** – Five confirmed breeding territories (Refs: K-f, K-n, K-o, K-p, K-v), two being within/partially within the Core Ornithology Survey Area.
- **2024 (Eight territories)** – five confirmed (Refs: K-b, K-c, K-l, K-o, K-q) and three probable (Refs: K-r, K-s, K-u) breeding territories, six being within/partially within the Core Ornithology Survey Area.
- **2025 (Seven territories)** - four confirmed (Refs: K-b, K-c, K-h, K-t) and three probable (Ref: K-o, K-p, K-u) breeding territories, all within the Core Ornithology Survey Area.

Breeding territories are shown in Confidential Survey Data Appendix 7-5, Figure 7-5-34.

7.3.7.21 Lapwing

Lapwing were observed in the winter and breeding seasons. Raw survey data and maps are provided in Appendix 7-4. Survey data and maps relating to nest/roosts are provided in Confidential Survey Data Appendix 7-5.

Vantage Point Surveys

Lapwing were observed on 290 occasions during vantage point surveys. Lapwing were observed on average once every 24 hours of the vantage point survey. Observations ranged from 1 to 280 birds and the majority were of birds travelling, foraging or calling. Birds were observed flying at the potential collision height on 93 occasions. Of the total 290 observations of lapwing, 250 were within the Core Ornithology Survey Area and 140 were within 500m of the Proposed Turbines.

There were several observations of breeding activity. In 2020, there were six observations of behaviours indicating probable breeding territories (mobbing and displaying).

In 2021, there were five observations of behaviours indicating probable breeding territories (displaying and calling from possible nests) at Derrybrennan (Ref: L-a).

In 2022, there were three observations of behaviours indicating probable breeding territories (displaying) at Ballydermot North and Codd 2 (Refs: L-e and L-g).

In 2023, there was one observation of behaviours indicating probable breeding territories (displaying) at Blackriver (Ref: L-j).

In 2024, there were nine observations of behaviours indicating a probable breeding territories (displaying), eight of which were at Lodge bog and one at Ballydermot North (Refs: L-e, L-b and L-f).

In 2025, there were eight observations of behaviours indicating probable breeding territories (mobbing and displaying), seven of which were at Lodge bog and one at Glashabaun South (Refs: L-b, L-f, L-t and L-u).

There were 19 observations of between 3 and 164 birds roosting in several locations within the Core Ornithology Survey Area during the winter periods surveyed.

Winter Walkover Survey

Lapwing were observed on 40 occasions during winter walkover surveys (on 15 out of 24 survey visits). Observations ranged from 1 to 150 birds, with the majority of observations comprising birds travelling, circling, calling or foraging. There were four observations of birds displaying (March 2021, March 2023, March 2025 and March 2026), indicating probable breeding at Lodge bog, Glashabaun South and Ballydermot South (Refs: L-b, L-e and L-s). There were 16 observations of up to 27 birds roosting within the Core Ornithology Survey Area. Of the 40 observations, 30 were within the Core Ornithology Survey Area and four overlapped with the Proposed Project permanent infrastructure footprint.

Breeding Walkover Survey

Lapwing were observed on 162 occasions during breeding walkover surveys (on 24 out of 24 survey visits). Observations ranged from 1 to 36 birds, the majority of which were of birds calling, flushed, circling, perched or travelling. Of the 162 observations, 161 were within the Core Ornithology Survey Area and 24 overlapped with the Proposed Project permanent infrastructure footprint.

There were several observations of breeding activity. In 2020, there was one observation of behaviour that confirmed a breeding territory at Lodge bog (observation of fledged young) (Ref: L-b), as well as three observations of behaviours indicating probable breeding territories (displaying and adults pairs holding territories) in the same area (Ref: L-b).

In 2021, there were three observations of behaviours that confirmed breeding territories (observations of fledged young) at Ballydermot North (Ref: L-e), as well as nine observations of behaviours indicating probable breeding territories (displaying, alarm calling and adults pairs holding territories) at Lodge Bog and Ballydermot North (Refs: L-b, L-f and L-e).

In 2022, there were three observations of behaviours that confirmed breeding territories (observations of fledged young) at Glashabaun South and Ballydermot South (Refs: L-h and L-i), as well as 19 observations of behaviours indicating probable breeding territories (mobbing, displaying, distraction displays and adult pairs holding territories at Lodge bog, Ballydermot North and South, Blackriver and Codd 1 (Refs: L-b, L-e, L-g, L-h and L-j)).

In 2023, there was one observation of behaviours that confirmed a breeding territory (birds on nests) at Blackriver (Ref: L-j) as well as 10 observations of behaviours indicating probable breeding territories (displaying, agitated behaviour) at Lodge bog, Blackriver and Ballydermot North (Refs: L-b, L-k, L-e and L-j).

In 2024, there was one observation of behaviours that confirmed a breeding territory (observations of fledged young) at Lodge bog (Ref: L-k) as well as 10 observations of behaviours indicating probable territories (mobbing, holding territories and agitated behaviour) at Lodge bog, Blackriver and Ballydermot North (Refs: L-b, L-f, L-k, L-e and L-j).

In 2025, there was one observation of behaviours that confirmed a breeding territory (observation of fledged young) at Lodge bog (Ref: L-b), as well as 17 observations of behaviours indicating probable breeding territories (agitation, mobbing) at Lodge bog, Blackriver, Codd 1 and Glashabaun South (Refs: L-b, L-f, L-k, L-t, L-j, L-g, L-s).

Waterbird Distribution and Abundance Survey

Lapwing were observed on 143 occasions during the waterbird distribution and abundance surveys (on 53 out of 118 survey rounds). Observations comprised up to 195 birds with the majority of birds circling, travelling, foraging and roosting. There were 28 observations of breeding behaviours (displaying, mobbing, agitated behaviour, juveniles present), 14 of which were at Lodge bog (Refs: L-b and L-m), two at Blackriver (Ref: L-j), one at Lullymore (Ref: L-aa), three at Ballycon (Ref: L-r), six at Rathlumber (Ref: L-q), one at Rathvilla (Ref: L-p) and one at Aisling Lakes (Ref: L-n). Of the 143 observations, 51 were within the Core Ornithology Survey Area and nine were within 500m of the Proposed Turbines, with off-site observations up to 6.4km from the Core Ornithology Survey Area.

Incidental Observations

Lapwing were observed on 180 occasions as incidental observations. Observations ranged from 1 to 1,000 birds with the majority of observations comprised of birds circling, foraging and travelling. Of the 180 observations, 61 were within/partially within the Core Ornithology Survey Area and 22 were within/partially within 500m of the Proposed Turbines.

There were several observations of breeding behaviour. In 2020, there was one observation of behaviour indicating a probable breeding territory (mobbing) at Lodge bog (Ref: L-m).

In 2021, there were four observations of behaviours indicating probable breeding territories (chasing, displaying, alarm calling) at Lodge bog (Refs: L-b and L-f).

In 2023, there were two observations of behaviours indicating probable breeding territories (displaying, mobbing) at agricultural grassland fields to the southwest of Lodge bog (Ref: L-l) and Derylea (Ref: L-y).

In 2024, there were six observations of behaviours indicating probable territories (agitation, holding territories and displaying) at Lodge bog (Refs: L-b and L-f), Ballyteigh (Ref: L-z), Drehid (Ref: L-o), Rathvilla (Ref: L-p) and Derrylea (Ref: L-y).

In 2025, there was one observation of behaviour indicating confirmed breeding territories (an observation of fledged young) at agricultural grasslands to the southwest of Lodge (Ref: L-x) as well as three observations of behaviours indicating probable breeding territories (displaying, probable nests) at Lodge bog (Ref: L-m), Cloncumber (Ref: L-w), and Rathmore (Ref: L-v).

Breeding Summary

Breeding areas were identified by reviewing data from late winter throughout the breeding season (to account for early signs of breeding which align with phenology of this species) for any signs of breeding activity and grouping these signs as discrete breeding areas. There were several observations of breeding activity across the six breeding season surveys, as detailed below:

- **2020 (Three breeding areas/Min seven pairs)** – Two probable (Ref: L-a and L-m) and one confirmed (Ref: L-b) breeding area were identified in within Core Ornithology Survey Area. There was an estimate of three pairs at L-a and four pairs at L-b.
- **2021 (Five breeding areas/Min eight pairs)** - Three probable (Refs: L-c, L-d, L-f) and two confirmed (Refs: L-b, L-e) breeding areas were identified in within the Core Ornithology Survey Area. There was an estimate of three pairs at L-b (confirmed area), two pairs at L-e (confirmed area), one pair each at L-c, L-d and L-f.
- **2022 (Seven breeding areas/Min 15 pairs)** – Four probable (Refs: L-b, L-e, L-g, L-j) and two confirmed (Refs: L-h, L-i) breeding areas were identified in within the Core Ornithology Survey Area as well as one breeding area outside the Core Ornithology Survey Area (L-q). There was an estimate of two pairs at L-b, four pairs at L-e, one pair at L-g, three pairs at L-h, one pair at L-I, three pairs at L-j and one pair at L-q.
- **2023 (Nine breeding areas/Min 15 pairs)** – Seven probable breeding areas were identified within/adjacent to the Core Ornithology Survey Area (Refs: L-b, L-e, L-k, L-j. L-l, L-m, L-n). There was an estimate of three pairs at L-b, three pairs at L-e, one pair at each L-k, L-j, L-l, L-m and L-n, as well as one pair outside the Core Ornithology Survey Area at L-p and three pairs at L-y.
- **2024 (10 breeding areas/Min 25 pairs)** – Four probable (Refs: L-b, L-e, L-f, L-j) and one confirmed (Ref: L-k) breeding area were identified within/adjacent to the Core Ornithology Survey Area. There was an estimate of two pairs at L-b, one pair at L-e, two pairs at L-f, two pairs at L-j, and three pairs at L-k. Five off site probable breeding areas were also identified with one pair at L-o, three pairs at L-p, three at L-q and five at L-r and two pairs at L-z.
- **2025 (14 breeding area/Min 24 pairs)** – One confirmed (Ref: L-aa) and 10 probable breeding areas were identified within/adjacent to the Core Ornithology Survey Area (Refs: L-b, L-e, L-f, L-g, L-j, L-k, L-m, L-s, L-t, L-u). There was an estimate of one pair at L-aa, four pairs at L-b, three pairs at L-e, one pair at L-f, two pairs at L-g, one pair at L-j, three pairs at L-k, one pair at L-m, three pairs at L-s, one pair at L-t, one pair at L-u. Three probable breeding areas outside the Core Ornithology Survey Area were also identified with one pair at L-v, one pair at L-w and one pair at L-x.

- **2026 (Three breeding area/Min three pair)** – three probable breeding areas for the 2026 breeding season were identified within the Core Ornithology Survey Area (Ref: L-b, L-e and L-s.).

Breeding areas are shown in Confidential Survey Data Appendix 7-5, Figure 7-5-41.

Roost Summary

The maximum flock sizes recorded at each of the roosting areas within the Core Ornithology Survey Area across the six winter/passage seasons surveys are provided below:

- **Winter/Passage 2020/21** – Roosting/foraging recorded at x areas within the Core Ornithology Survey Area, with a maximum count of 2, 8, 12 birds (Refs: L-b, L-h, L-s).
- **Winter/Passage 2021/22** – Roosting/foraging recorded at x areas within the Core Ornithology Survey Area, with a maximum count of 7, 26 birds (Refs: L-a, L-h).
- **Winter/Passage 2022/23** – Roosting/foraging recorded at x areas within the Core Ornithology Survey Area, with a maximum count of 13 birds (Refs: L-h).
- **Winter/Passage 2023/24** – Roosting/foraging recorded at x areas within the Core Ornithology Survey Area, with a maximum count of 15, 58, 13, 37 birds (Refs: L-a, L-b, L-h, L-s).
- **Winter/Passage 2024/25** – Roosting/foraging recorded at x areas within the Core Ornithology Survey Area, with a maximum count of 6, 3, 54, 3 birds (Refs: L-b, L-c, L-h, L-s).
- **Winter/Passage 2025/26** – Roosting/foraging recorded at x areas within the Core Ornithology Survey Area, with a maximum count of 16, 85 birds (Refs: L-a, L-h).
- There were a further 31 roosting/foraging sites recorded outside the Core Ornithology Survey Area, ranging from directly adjacent to the Core Ornithology Survey Area up to 13.8km from the Core Ornithology Survey Area. The largest flock of 1000 birds was recorded 7km from the nearest Proposed Turbines at Derrylea (Ref: L-ah).

Roost/foraging areas are shown in Confidential Survey Data Appendix 7-5, Figure 7-5-40.

7.3.7.22 Redshank

Redshank was observed in the breeding/passage seasons. Raw survey data and maps are provided in Appendix 7-4.

Breeding Walkover Survey

Redshank was observed on one occasion in May during breeding walkover surveys (on 1 out of 24 survey visits). The observation was of an individual flushed within the Core Ornithology Survey Area and did not overlap with the Proposed Project permanent infrastructure footprint. There was no evidence of breeding observed during surveys.

7.3.7.23 Shoveler

Shoveler was observed in the winter seasons. Raw survey data and maps are provided in Appendix 7-4.

Waterbird Distribution and Abundance Survey

Shoveler were observed on one occasion during the waterbird distribution and abundance surveys (on 1 out of 118 survey rounds). The observation comprised of four birds feeding, 74m from the Core Ornithology Survey Area and 876m from the nearest Proposed Turbine.

7.3.7.24 Snipe

Snipe were observed in the winter and breeding seasons. Raw survey data and maps are provided in Appendix 7-4. Survey data and maps relating to breeding activity are provided in Confidential Survey Data Appendix 7-5.

Vantage Point Surveys

Snipe were observed on 1,115 occasions during vantage point surveys. Snipe were observed on average once every six hours of the vantage point survey. Observations ranged from 1 to 30 birds and the majority were of birds travelling, foraging or calling. Birds were observed flying at the potential collision height on 186 occasions. Of the total 1,115 observations of snipe, 1,081 were within the Core Ornithology Survey Area and 767 were within 500m of the Proposed Turbines.

There were several observations of breeding activity. In 2020, there were 41 observations of behaviours indicating probable breeding territories (drumming/displaying). In 2021, there were 28 observations of behaviours indicating probable breeding territories (drumming/displaying). In 2022, there were 19 observations of behaviours indicating probable breeding territories (drumming/displaying). In 2023, there were four observations of behaviours indicating probable breeding territories (drumming/displaying). In 2024, there were 137 observations of behaviours indicating probable breeding territories (drumming/displaying). In 2025, there were 102 observations of behaviours indicating probable breeding territories (drumming/displaying). There were a further 12 observations indicating breeding territories (drumming) in 2026 in February and March. Breeding territories were identified at 12 locations (Refs: SN-a, SN-b, SN-c, SN-d, SN-e, SN-f, SN-g, SN-h, SN-l, SN-m, SN-n and SN-u), all of which were within the Core Ornithology Study Area.

Winter Walkover Survey

Snipe were observed on 176 occasions during winter walkover surveys (on 24 out of 24 survey visits). Observations ranged from 1 to 17 birds, with the majority of observations comprising birds travelling, foraging, flushed or calling. There were four observations of birds displaying (March 2021) at Barnaran (Ref: SN-h). Of the 176 observations, 174 were within the Core Ornithology Survey Area and 19 overlapped with the Proposed Project permanent infrastructure footprint.

Breeding Walkover Survey

Snipe were observed on 212 occasions during breeding walkover surveys (on 24 out of 24 survey visits). Observations ranged from one to five birds, the majority of which were of birds calling, flushed or travelling. There were 36 observations of behaviours indicating probable breeding territories (displaying, drumming). In 2020, there were 10 observations of probable breeding at eight different locations (Refs: SN-a, SN-b, SN-d, SN-f, SN-h, SN-j, SN-m). In 2022, there were nine observations of probable breeding at six different locations (Ref: SN-b, SN-c, SN-d, SN-e, SN-t and SN-u). In 2024, there were 11 observations of probable breeding at five different locations (Refs: SN-a, SN-b, SN-d, SN-i and SN-x). In 2025, there were six observations of probable breeding at four different locations (Refs: SN-b,

SN-d, SN-e and SN-o). Of the 212 observations, 186 were within the Core Ornithology Survey Area and 19 overlapped with the Proposed Project permanent infrastructure footprint.

Waterbird Distribution and Abundance Survey

Snipe were observed on 131 occasions during the waterbird distribution and abundance surveys (on 46 out of 118 survey rounds). Observations comprised of up to 37 birds calling, travelling, foraging, flushed, calling, drumming and roosting. Probable territories were identified in two years (2021 and 2025) within the Core Ornithology Study Area (Refs: SN-a, SN-i and SN-x). Of the 131 observations, 61 were within the Core Ornithology Survey Area and 19 were within 500m of the Proposed Turbines, with observations up to 8.8km from the Core Ornithology Survey Area.

Incidental Observations

Snipe were observed on 803 occasions as incidental observations. Observations ranged from 1 to 21 birds and the majority of observations comprised of individual birds travelling, calling, flushed, drumming and roosting. In 2020, there were nine observations of probable breeding at three different locations (Refs: SN-d, SN-g and SN-m). In 2021, there were 27 observations of probable breeding at six different locations (Ref: SN-a, SN-e, SN-h, SN-k, SN-u and SN-x). In 2022, there were 31 observations of probable breeding at 13 different locations (Ref: SN-b, SN-c, SN-d, SN-e, SN-I, SN-j, SN-l, SN-m, SN-p, SN-s, SN-t, SN-u and SN-z). In 2023, there were six observations of probable breeding at five different locations (Ref: SN-b, SN-e, SN-j, SN-n and SN-x). In 2024, there were 86 observations of probable breeding at 10 different locations (Refs: SN-a, SN-d, SN-e, SN-h, SN-l, SN-r, SN-s, SN-u, SN-x and SN-z). In 2025, there were four observations of probable breeding at three different locations (Refs: SN-b, SN-e, and SN-h). In 2023, there were eight observations of probable breeding at six different locations (Ref: SN-c, SN-e, SN-h, SN-l, SN-u and SN-z). Of the 803 observations, 507 were within/partially within the Core Ornithology Survey Area and 322 were within 500m of the Proposed Turbines.

Breeding Summary

Probable breeding snipe were identified in all suitable breeding habitat within the areas surveyed. Probable breeding territories were identified at 26 different locations, 22 of which were within the Core Ornithology Study Area. There were 15 locations in 2020, 13 in 2021, 15 in 2022, five in 2023, 18 in 2024, 14 in 2025 and eight in 2026.Given how cryptic snipe are during the breeding season, the total number of breeding snipe is unknown within the Core Ornithology Survey Area, however they are widespread and breeding throughout the Core Ornithology Survey Area where suitable habitat exists.

Breeding areas are shown in Confidential Survey Data Appendix 7-5, Figure 7-5-47.

7.3.7.25 Woodcock

Woodcock were observed in the winter and breeding seasons. Raw survey data and maps are provided in Appendix 7-4. Survey data and maps relating to breeding activity are provided in Confidential Survey Data Appendix 7-5.

Vantage Point Surveys

Woodcock were observed on 208 occasions during vantage point surveys. Woodcock were observed on average once every 33 hours of the vantage point survey. Observations ranged from one to three birds and the majority were of birds travelling or calling. Birds were observed flying at potential collision height on 17 occasions. Of the total 208 observations of woodcock, 200 were within the Core Ornithology Survey Area and 171 were within 500m of the Proposed Turbines.

In 2021, there were two observations of behaviours indicating probable breeding territories (roding) (Refs: WK-m and WK-q).

In 2024, there were 26 observations of behaviours indicating probable breeding territories (roding) (Refs: WK-b, WK-d, WK-g, WK-i, WK-l, WK-m, WK-n, WK-o, WK-q).

In 2025, there were 42 observations of behaviours indicating probable breeding territories (roding) (Refs: WK-d, WK-e, WK-g, WK-l, WK-m, WK-n, WK-o, WK-p, WK-q, WK-t, WK-u)

There were six observations indicating breeding territories (roding) in 2026 in March (Refs: WK-g, WK-WK-m, WK-o).

Winter Walkover Survey

Woodcock were observed on three occasions during winter walkover surveys (on 2 out of 24 survey visits). Observations were of individuals being flushed by the observer. All observations were within the Core Ornithology Survey Area, but none overlapped with the Proposed Project permanent infrastructure footprint.

Breeding Walkover Survey

Woodcock was observed on one occasion during breeding walkover surveys (on 1 out of 24 survey visits). The observation was of an individual travelling within the Core Ornithology Survey Area, but did not overlap with the Proposed Project permanent infrastructure footprint.

Breeding Woodcock Survey

Woodcock was observed on 407 occasions during breeding woodcock surveys (on average, one observation per 0.5 hours of survey). Three hundred and sixty-six of these observations were between one and three birds roding, chasing or mobbing, indicating probable breeding territories. Of the 407 observations, 356 were within the Core Ornithology Survey Area and 273 were within 500m of the Proposed Turbines.

In 2020, there were four observations of behaviours indicating probable breeding territories (roding) in one breeding area (Refs: WK-a).

In 2021, there were 74 observations of behaviours indicating probable breeding territories (roding, mobbing, chasing) in 10 breeding areas (Refs: WK-a, WK-c, WK-f, WK-g, WK-h, WK-i, WK-j, WK-k, WK-l, WK-m)

In 2022, there were 64 observations of behaviours indicating probable breeding territories (roding, chasing) in 10 breeding areas (Refs: WK-a, WK-b, WK-d, WK-e, WK-f, WK-g, WK-h, WK-i, WK-k, WK-m).

In 2023, there were 71 observations of behaviours indicating probable breeding territories (roding, chasing) in 12 breeding areas (Refs: WK-a, WK-c, WK-d, WK-e, WK-f, WK-g, WK-h, WK-i, WK-j, WK-k, WK-l, WK-m).

In 2024, there were 79 observations of behaviours indicating probable breeding territories (roding, chasing) in 11 breeding areas (Refs: WK-a, WK-b, WK-c, WK-d, WK-e, WK-f, WK-g, WK-h, WK-i, WK-j, WK-m).

In 2025, there were 74 observations of behaviours indicating probable breeding territories (roding) in 12 breeding areas (Refs: WK-a, WK-b WK-c, WK-d, WK-e, WK-f, WK-g, WK-h, WK-i, WK-j, WK-k, WK-l, WK-m).

Waterbird Distribution and Abundance Survey

Woodcock were observed on two occasions during the waterbird distribution and abundance surveys (on 2 out of 118 survey rounds). Observations comprised of one to two birds calling, travelling or flushed. These observations were 401m and 3.7km from the Core Ornithology Survey Area.

Incidental Observations

Woodcock were observed on 142 occasions as incidental observations. Observations ranged from one to four birds and the majority of observations comprised individual birds travelling, calling, foraging and roding. Breeding territories were identified at 11 locations (Refs: WK-e, WK-g, WK-i, WK-l, WK-m, WK-o, WK-r, WK-u, WK-v, WK-w, WK-x). Of the 142 observations, 92 were within/partially within the Core Ornithology Survey Area and 76 were within/partially within 500m of the Proposed Turbines.

Breeding Summary

Probable woodcock was identified in all suitable breeding habitat within the areas surveyed. There was one location in 2020, 10 in 2021, 16 in 2022, 12 in 2023, 16 in 2024, 19 in 2025 and seven in 2026. Given the nature of breeding woodcock, estimating the total number of breeding woodcock within the Core Ornithology Survey Area is difficult, therefore the total number of breeding woodcock is unknown, however they are widespread and breeding across the Core Ornithology Survey Area where suitable habitat exists.

Breeding areas are shown in Confidential Survey Data Appendix 7-5, Figure 7-5-51.

7.3.7.26 Buzzard

Buzzard were observed in the winter and breeding seasons. Raw survey data and maps are provided in Appendix 7-4. Survey data and maps relating to breeding activity are provided in Confidential Survey Data Appendix 7-5.

Vantage Point Surveys

Buzzard were observed on 1,933 occasions during vantage point surveys. Buzzard were observed on average once every four hours of the vantage point survey. The majority of observations comprised birds perched, hunting or travelling, with a maximum of five birds recorded. Birds were observed flying at potential collision height on 841 occasions. Of the total 1,933 observations of buzzard, 1,446 were within the Core Ornithology Survey Area and 958 were within 500m of the Proposed Turbines.

There were several observations of breeding activity. In 2020, there were 10 observations of behaviours indicating probable breeding territories (mobbing and chasing) at two territories (BZ-4 and BZ-43). There were 18 observations of behaviours which confirmed breeding territories including observations of food passes, flying into nests and birds carrying prey which indicated breeding at two territories (Refs: BZ-1 and BZ-34) as well as observations of juveniles confirming breeding at BZ-4.

In 2021, there were six observations of behaviours indicating probable territories (displaying, mobbing and chasing), indicating three probable breeding territories (BZ-2, BZ-9 and BZ-11), as well as four observations of behaviours which confirmed breeding territories including observations of juveniles, however, these were not identified with specific breeding locations as the birds were mobile and not associated with a probable territory.

In 2022, two observations of behaviours indicating probable territories (birds calling near possible nest) (Ref: BZ-1) and three observations of behaviours which confirmed breeding territories including fledged birds at nests (Ref: BZ-24), birds carrying prey (Refs: BZ-1).

In 2023, there were eight observations of behaviours which confirmed breeding territories including birds carrying prey (Ref: BZ-1) and observations of juveniles (Ref: BZ-1, BZ-24), however, one observation was not identified with specific breeding locations as the bird was mobile and not associated with a probable territory, as well as one observation of behaviour indicating a probable territory (displaying) (Ref: BZ-2).

In 2024, there were 15 observations of behaviours which confirmed breeding territories including observations of birds carrying prey, nests and juveniles (Ref: BZ-1, BZ-4, BZ-28, BZ-34) however, one observation was not identified with specific breeding locations as the bird was mobile and not associated with a probable territory, as well as 12 observations of behaviours indicating probable territories (courtship, displaying, claw-grabbing and chasing) (Ref: BZ-15, BZ30).

In 2025, there was one observation of behaviour which confirmed breeding territory with an observation of a juvenile begging (Ref: BZ-39), as well as 10 observations of behaviours indicating a probable territory (mobbing and displaying) (Refs: BZ-1, BZ-31, BZ-40, BZ-41, BZ-42, BZ-43, BZ-44, BZ-45).

There were three further observations of behaviours indicating probable breeding territories (displaying, mobbing) in 2026 near three previously used territories (Refs: BZ-11, BZ-37 and BZ-43). There were also two observations of birds chasing and/or mobbing each other which occurred in winter seasons (November 2022, January 2026) and therefore are not considered to indicate breeding activity due to the timing of the observations.

Winter Walkover Survey

Buzzard were observed on 91 occasions during winter walkover surveys (on 22 out of 24 survey visits). Observations ranged from one to three birds, with the majority of observations comprising birds travelling, hunting, soaring or perched. There were two observations of birds displaying (in February 2026), indicating probable breeding near two previously used territories (Ref: BZ-7 and BZ-39). There was one further observation of birds chasing each other in November 2021; however, this is not considered to indicate breeding activity due to the timing of the observations. Of the 91 observations, 69 were within the Core Ornithology Survey Area and 10 overlapped with the Proposed Project permanent infrastructure footprint.

Breeding Walkover Survey

Buzzard were observed on 381 occasions during breeding walkover surveys (on 24 out of 24 survey visits). Observations ranged from one to four birds, the majority of which were of birds hunting, soaring, perched or travelling. Of the 381 observations, 282 were within the Core Ornithology Survey Area and 77 overlapped with the Proposed Project permanent infrastructure footprint.

There were several observations of breeding activity. In 2020, there were three observations of behaviours which confirmed breeding territories including observations of birds carrying prey (Ref: BZ-4, BZ-7) and observations of juveniles (Ref: BZ-2).

In 2021, there were two observations of behaviours which confirmed breeding territories including observations of birds carrying prey (Ref: BZ-15) and an observation of a juvenile (however, this was not identified with specific breeding locations as the bird was mobile and not associated with a probable territory), as well as four observations of behaviours indicating probable breeding territories (displaying and agitation) (Refs: BZ-13, BZ-14, BZ-19).

In 2022, there were six observations of a behaviours indicating probable territories (adults occupying a territory and displaying) (Refs: BZ-1, BZ-11, BZ-23, BZ-40) and 12 observations of behaviours which confirmed breeding territories including observations of juveniles (Refs: BZ-11, BZ-21, BZ-22, BZ-14 and BZ-40).

In 2023, there was one observation of behaviour which confirmed a breeding territory (observation of a juvenile) (Ref: BZ-25), as well as one observation of behaviour indicating a probable breeding territory (courtship) (Ref: BZ-26).

In 2024, there were seven observations of behaviours which confirmed breeding territories including observations of birds carrying prey, birds on nests and juveniles (Refs: BZ-1, BZ-11, BZ-25, BZ-28, BZ-29), as well as seven observations of behaviours indicating probable territories (displaying) (Refs: BZ-2, BZ-25, BZ-35, BZ-36).

In 2025, there were four observations of behaviours which confirmed breeding territories including observations of birds carrying prey (Refs: BZ-1, BZ-14, BZ-37, BZ-38) and observations of juveniles, as well as 15 observations of behaviours indicating probable breeding territories (displaying, adults holding territories) (Refs: BZ-1, BZ-31, BZ-33, BZ-38, BZ-39, BZ-40, BZ-42, BZ-45).

Breeding Raptor Survey

Buzzard were observed on 566 occasions during breeding raptor surveys (on 24 out of 24 survey visits). Observations ranged from one to six birds, the majority of which were of birds travelling, hunting, soaring, calling or perched. Of the 566 observations, 129 were within the Core Ornithology Survey Area and 47 were within 500m of the Proposed Turbines.

There were several observations of breeding behaviour. In 2020, there were 35 observations which confirmed breeding including observations of nests, juveniles and adults carrying prey (Refs: BZ-1, BZ-2, BZ-3, BZ-5, BZ-6, BZ-8 (some observations of juveniles were not identified with specific breeding locations as the birds were mobile and not associated with a probable territory), as well as eight observations of behaviours indicating probable breeding territories (nest building, adults holding territories and displaying) (BZ-2, BZ-5, BZ-9, BZ-10).

In 2021, there were nine observations of behaviour which confirmed breeding including observations of adults carrying prey (Ref: BZ-16), nests (Ref: BZ-11) and juveniles (Refs: BZ-12, BZ-13, BZ-17), as well as 10 observations of behaviours indicating probable breeding (chasing, agitation and adults holding territories) (Refs: BZ-11, BZ-16, BZ-17, BZ-18, BZ-20).

In 2023, there were four observations behaviours which confirmed breeding including observations of birds at a nest (Ref: BZ-1) and observations of juveniles (Refs: BZ-2, BZ-27) as well has four observations of breeding behaviour indicating probable breeding (nest building, agitation and adults holding territories) (Refs: BZ-1, BZ-2, BZ-27).

In 2024, there were seven observations of behaviours which confirmed breeding including carrying prey (Ref: BZ-30), birds at nests (Ref: BZ-1) and juveniles (Refs: BZ-11, BZ-32, BZ-33) as well as six observations of behaviours indicating probable breeding (visiting probable nest site, displaying, courtship) (Refs: BZ-12, BZ-25, BZ-28, BZ-30, BZ-35).

In 2025, there were two observations of behaviours which confirmed breeding including observations of juveniles, (Refs: BZ-33) one observations of a juvenile was not identified with specific breeding locations as the birds were mobile and not associated with a probable territory, as well as one observation of behaviour indicating probable breeding (agitation) (Ref: BZ-1).

Incidental Observations

Buzzard were observed on 469 occasions as incidental observations. Observations ranged from one to five birds and the majority of observations comprised birds circling, hunting, perched and travelling. Of the 469 observations, 162 were within/partially within the Core Ornithology Survey Area and 114 were within/partially within 500m of the Proposed Turbines.

There were several observations of breeding behaviour. In 2020, there were two observations indicating probable breeding territories (alarm calling, probable nest) (Refs: BZ-1, BZ-41).

In 2022, there was one observation of behaviour which confirmed breeding (observations of nests with juveniles) (Ref: BZ-1).

In 2023, there was one observation of breeding behaviour which confirmed breeding (carrying prey) (Ref: BZ-47).

In 2024, there were five observations of behaviours which confirmed breeding (observations of juveniles) (Refs: BZ-1, BZ-36, BZ-46), as well as four observations of behaviours indicating probable breeding (courtship, agitation) (Refs: BZ-15, BZ-17, BZ-41, BZ-46).

In 2025, there was one observation of behaviour which confirmed breeding (observation of juveniles) (Ref: BZ-1), as well as one observation of behaviour indicating probable breeding (displaying) (Ref: BZ-40).

Breeding Summary

There were several observations of breeding activity across the six breeding season surveys, as detailed below:

- **2020 (13 territories)** – 10 confirmed (Refs: BZ-1, BZ-2, BZ-3, BZ-4, BZ-5, BZ-6, BZ-7, BZ-8 BZ-34, BZ-43) and three probable breeding territories (Refs: BZ-9, BZ-10, BZ-41), all partially within the Core Ornithology Survey Area.
- **2021 (12 territories)** – seven confirmed (Refs: BZ-11, BZ-12, BZ-13, BZ-14, BZ-15, BZ-16, BZ-17) and five probable breeding territories (Refs: BZ-2, BZ-9, BZ-18, BZ-19, BZ-20), seven being within/partially within the Core Ornithology Survey Area.
- **2022 (Nine territories)** – eight confirmed (Refs: BZ-1, BZ-11, BZ-12, BZ-14, BZ-21, BZ-22, BZ-24, BZ-40) and one probable breeding territories (Ref: BZ-23), seven being within the Core Ornithology Survey Area.
- **2023 (Seven territories)** – five confirmed (Refs: BZ-1, BZ-2, BZ-23, BZ-24, BZ-25) and one probable breeding territories (Ref: BZ-26), five being within/partially within the Core Ornithology Survey Area, as well as one confirmed territory outside the Core Ornithology Survey Area (Ref: BZ-47).
- **2024 (18 territories)** – Thirteen confirmed (Refs: BZ-1, BZ-4, BZ-11, BZ-12, BZ-15, BZ-24, BZ-27, BZ-28, BZ-29, BZ-30, BZ-31, BZ-32, BZ-33) and five probable breeding territories (Refs: BZ-34, BZ-2, BZ-17, BZ-35, BZ-41), 11 being within/partially within the Core Ornithology Survey Area, as well as two confirmed territories outside the Core Ornithology Survey Area (Refs: BZ-46, BZ-36).
- **2025 (13 territories)** - five confirmed (Refs: BZ-1, BZ-14, BZ-37, BZ-38, BZ-39) and eight probable breeding territories (Refs: BZ-31, BZ-33, BZ-40, BZ-41, BZ-42, BZ-43, BZ-44, BZ-45), all within the Core Ornithology Survey Area.

Breeding areas are shown in Confidential Survey Data Appendix 7-5, Figure 7-5-57.

7.3.7.27 Hobby

Hobby was observed in the breeding seasons. Raw survey data and maps are provided in Appendix 7-4.

Breeding Walkover Survey

Hobby was observed on one occasion during breeding walkover surveys (on 1 out of 24 survey visits). The observation was of an individual travelling in late July, within the Core Ornithology Survey Area, but did not overlap with the Proposed Project permanent infrastructure footprint. Given the time of year and that there were no subsequent observations, this bird was most likely on passage and not resident within the area.

7.3.7.28 Long-eared Owl

Long-eared owl were observed in the winter and breeding seasons. Raw survey data and maps are provided in Appendix 7-4. Survey data and maps relating to breeding activity are provided in Confidential Survey Data Appendix 7-5.

Vantage Point Surveys

Long-eared owl were observed on 13 occasions during vantage point surveys. Long-eared owl were observed on average once every 535 hours of the vantage point survey. The majority of observations comprised individuals hunting or travelling, with a maximum of two birds recorded. Birds were observed flying at potential collision height on one occasion. Of the total 13 observations of long-eared owl, nine were within the Core Ornithology Survey Area and four were within 500m of the Proposed Turbines. In 2023, there was one observation of a juvenile calling, confirming a breeding territory within the Glashabaun South (Ref: LE-d).

Breeding Raptor Survey

Long-eared owl were observed on three occasions during breeding raptor surveys (on 3 out of 24 survey visits). Observations ranged from one to two birds. Of the three observations, one was within the Core Ornithology Survey Area, within 500m of the Proposed Turbines. In 2020, there was one observation of calling chicks, confirming breeding outside the Core Ornithology Survey Area, beside Derrybrennan (Ref: LE-b). In 2024, there was one observation of chicks begging, confirming breeding adjacent to the Core Ornithology Survey Area, west of Ticknevin (Ref: LE-e).

Incidental Observations

Long-eared owl were observed on 17 occasions as incidental observations. Observations ranged from one to four birds and the majority of observations comprised birds calling, hunting and travelling. There were several observations of confirmed breeding behaviour, indicated by the presence of chicks begging/calling at nests (one territory in 2020 (Ref: LE-a), two in 2021 (Ref: LE-c; LE-b) and one in 2024 (Ref: LE-e)). Of the 17 observations, eight were within/partially within the Core Ornithology Survey Area and seven were within/partially within 500m of the Proposed Turbines.

Breeding Summary

In 2020, two breeding territories were identified adjacent to the Core Ornithology Survey Area (Ref: LE-a and LE-b). In 2021, two breeding territories was identified within the Core Ornithology Survey Area (Ref: LE-c; LE-b). In 2023, one breeding territory was identified within the Core Ornithology

Survey Area (Ref: LE-d). In 2024, one breeding territory was identified adjacent to the Core Ornithology Survey Area (Ref: LE-e).

Breeding areas are shown in Confidential Survey Data Appendix 7-5, Figure 7-5-61.

7.3.7.29 Sparrowhawk

Sparrowhawk were observed in the winter and breeding seasons. Raw survey data and maps are provided in Appendix 7-4. Survey data and maps relating to nest/roosts are provided in Confidential Survey Data Appendix 7-5.

Vantage Point Surveys

Sparrowhawk were observed on 346 occasions during vantage point surveys. Sparrowhawk were observed on average once every 20 hours of the vantage point survey. Observations were of one or two birds, with the majority of observations comprising of individuals perched, hunting or travelling. Birds were observed flying at the potential collision height on 90 occasions. Of the total 346 observations of sparrowhawk, 320 were within the Core Ornithology Survey Area and 237 were within 500m of the Proposed Turbines.

There were several observations of breeding activity. In 2020, there were six observations of behaviours which confirmed breeding territories including observations of birds carrying prey (Refs: SH-a, SH-d, SH-e) and observations of juveniles (these observations were not identified with a territory as observations were of mobile birds and not associated with a probable territory), as well as two observations of behaviours indicating probable territories (mobbing) in the same area (Ref: SH-q).

In 2022, there were six observations of behaviours which confirmed breeding territories including birds carrying prey (Refs; SH-h. SH-j) and observations of juveniles (Ref: SH-h; two observations were not identified with a territory as observations were of mobile birds and not associated with a probable territory), as well as two observations of a behaviours indicating probable territories (mobbing and chasing) (Refs: SH-o).

In 2023, there was one observation of behaviour which confirmed a breeding territory (bird carrying prey) (Ref: SH-l).

In 2024, there was one observation of behaviour which confirmed a breeding territory (bird carrying prey). There was also one observation of a juvenile, however this observation was not identified with a territory as the observation was of a mobile bird and not associated with a probable territory. Additionally, there were three observations of behaviours indicating probable territories (mobbing) (Refs: SH-o and SH-p).

In 2025, there were four observations of behaviour which confirmed breeding territories including observations of birds carrying prey (Refs: SH-o, SH-r) and observations of juveniles (Ref: SH-s; one observation was not identified with a territory as the observation was of a mobile bird and not associated with a probable territory), as well as two observations of behaviours indicating a probable territory (mobbing) (Refs: SH-k, SH-s).

There were four further observations of birds chasing each other and mobbing which occurred in winter seasons (December 2020, December 2022 and January 2026) and therefore are not considered to indicate breeding activity due to the timing of the observations.

Winter Walkover Survey

Sparrowhawk were observed on 18 occasions during winter walkover surveys (on 10 out of 24 survey visits). Observations were of individuals travelling, hunting, soaring or perched. Of the 18 observations,

16 were within the Core Ornithology Survey Area and two overlapped with the Proposed Project permanent infrastructure footprint.

Breeding Walkover Survey

Sparrowhawk were observed on 36 occasions during breeding walkover surveys (on 17 out of 24 survey visits). Observations ranged from one to two birds, the majority of which were of birds hunting, circling, perched or travelling. Of the 36 observations, 29 were within the Core Ornithology Survey Area and eight overlapped with the Proposed Project permanent infrastructure footprint.

There were four observations of breeding activity. In 2020, there was one observation of behaviour which confirmed a breeding territory (adult carrying prey) (Ref: SH-b), as well as one observation of behaviour indicating a probable breeding territory (mobbing) (Ref: SH-e).

In 2023, there was one observation of behaviour indicating a probable breeding territory (mobbing) (Ref: SH-d).

In 2024, there was one observation of behaviour indicating probable breeding territories (display) (Ref: SH-o).

Breeding Raptor Survey

Sparrowhawk were observed on 46 occasions during breeding raptor surveys (on 19 out of 24 survey visits). Observations ranged from one to four birds, the majority of which were of birds travelling, hunting or calling. Of the 46 observations, four were within the Core Ornithology Survey Area and one was within 500m of the Proposed Turbines.

There were several observations of breeding behaviour. In 2020, there was one observation which confirmed a breeding territory (carrying prey) (Ref: SH-c).

In 2021, there were two observations of behaviour which confirmed breeding including adults carrying prey (Refs: SH-g, SH-h).

In 2022, there were two observations of behaviours which confirmed breeding including adults carrying prey and an observation of begging in the same area (Ref: SH-i), as well as two observations of behaviour indicating probable breeding (birds at probable nest and displaying) (Refs: SH-i. SH-k).

In 2023, there was one observation of breeding behaviour which confirmed breeding (juvenile calling at nest a previously used nest) (SH-i), as well as one observation of behaviour indicating probable breeding (alarm call) (Ref: SH-k).

In 2024, there was one observation of breeding behaviour which confirmed breeding (carrying prey) (SH-n), as well as one observation of behaviour indicating probable breeding (displaying) (Ref: SH-f).

In 2025, there were five observations of behaviours which confirmed breeding including adults carrying prey (Ref: SH-c) and observations of juveniles (Ref: SH-i), as well as one observation of behaviour indicating probable breeding (mobbing) at a previously used territory (Ref: SH-i).

Incidental Observations

Sparrowhawk were observed on 123 occasions as incidental observations. Observations ranged from one to three birds and the majority of observations comprised birds circling, hunting and travelling. Of the 123 observations, 60 were within/partially within the Core Ornithology Survey Area and 51 were within/partially within 500m of the Proposed Turbines.

There were several observations of breeding behaviour. In 2020, there was one observation which confirmed breeding (female carrying prey) (Ref: SH-q), as well as one observation indicating probable breeding (chasing) (Ref: SH-e).

In 2023, there were two observations of breeding behaviour indicating probable breeding (mobbing, displaying) (Refs: SH-i and SH-m).

In 2024, there were two observations of behaviours which confirmed breeding (observations of juveniles) (Ref: SH-o), however one observation was not identified with a territory as the observation was of mobile bird offsite and not associated with a probable territory.

Breeding Summary

- There were several observations of breeding activity across the six breeding season surveys, as detailed below:
- **2020 (seven territories)** – six confirmed (Refs: SH-a, SH-b, SH-c, SH-d, SH-e, SH-q) and one probable breeding territory (Refs: SH-f), four being within/partially within the Core Ornithology Survey Area.
- **2021 (two territories)** – two confirmed breeding territories (Refs: SH-g, SH-h), one being within the Core Ornithology Survey Area.
- **2022 (five territories)** – three confirmed (Refs: SH-h, SH-i, SH-j) and two probable breeding territories (Ref: SH-k, SH-o), three being with the Core Ornithology Survey Area.
- **2023 (five territories)** – two confirmed (Refs: SH-i, SH-l) and three probable breeding territories (Refs: SH-d, SH-k, SH-m), one being within the Core Ornithology Survey Area.
- **2024 (four territories)** – two confirmed (Refs: SH-n, SH-o) and two probable breeding territories (Refs: SH-f, SH-p), two being within/partially within the Core Ornithology Survey Area.
- **2025 (five territories)** - five confirmed (Refs: SH-c, SH-i, SH-o, SH-r, SH-s), three being within the Core Ornithology Survey Area.
- Breeding areas are shown in Confidential Survey Data Appendix 7-5, Figure 7-5-66.

7.3.7.30 Passerines

The BoCCI Red Listed species grey wagtail, meadow pipit, redwing, swift, stock dove, whinchat and yellowhammer were recorded within the Core Ornithology Survey Area during surveys undertaken between April 2020 and March 2026. Grey wagtail, meadow pipit and yellowhammer displayed behaviours indicative of breeding within the Core Ornithology Survey Area (food provisioning, displays). Grey wagtail was observed on 21 occasions, with up to three birds being recorded. Meadow pipit was observed on 2,667 occasions, with up to 116 birds being recorded. Redwing was observed on 202 occasions, with up to 165 birds being recorded. Swift was observed on 301 occasions, with up to 60 birds being recorded. Stock dove was observed on four occasions, with individuals being recorded. Whinchat was observed on four occasions, with individuals being recorded within the Core Ornithology Survey Area. Yellowhammer was observed on 575 occasions, with up to 12 birds being recorded.

7.3.8 Likely Future Receiving Environment

This section identifies the likely future receiving environment relating to birds likely to exist at the Proposed Wind Farm site at the commencement of the construction phase. In accordance with the approach set out in Section 1.8.4 of Chapter 1, the likely future receiving environment has been established having regard to the existing ornithology baseline presented in Section 7.3 and uses observed change over the survey period (i.e., 2020 to 2026) to inform the likely future receiving environment.

The likely future receiving environment has been established having regard to:

- The existing ornithological baseline described in Section 7.3;
- The relevant findings of Chapter 6 (Biodiversity);
- Observed environmental change during site specific surveys covering the period April 2020 to March 2026, including natural revegetation;
- Available BnM site records and environmental data, including management and monitoring undertaken under IPC Licence Reg. No. P0503-01 included within the Annual Environment Reports (AERS) for the Allen Bog Group;
- Published guidance and scientific reports pertaining to birds and habitats as detailed in Section 7.1.3 above.

The Project Site is located predominantly on former industrial peat extraction lands within the Allen Bog Group. Industrial peat extraction ceased in June 2020. Since then, environmental conditions across these lands have continued to develop through natural revegetation, alongside ongoing decommissioning works, site management and environmental monitoring undertaken in accordance with IPC Licence P0503-01.

At the commencement of the construction phase the likely future receiving environment will reflect the continued establishment and maturation of natural revegetation in suitable areas, in combination with the continuation of site management, decommissioning works, and environmental monitoring under IPC Licence P0503-01. The anticipated vegetation communities and their spatial distribution are described in Chapter 6 Biodiversity with further detail provided in Chapter 8 Land Soils and Geology and Chapter 9 Water. Natural revegetation is expected to be spatially variable and is not assumed to follow a uniform trajectory across the Proposed Wind Farm site.

At the commencement of the construction phase the continued natural revegetation, and the continuation of existing site management, decommissioning works, and environmental monitoring, may slightly reduce the extent of open habitats (such as peatlands and grasslands) across the Proposed Wind Farm site and alter the baseline established in Section 7.3 on a KOR basis. The reduction in open habitat would increase habitat suitability for KORs with a preference towards scrub and woodland (e.g. woodcock and sparrowhawk) and slightly reduce habitat suitability for KORs with a preference towards open habitats for predator detection and unobscured foraging (e.g. golden plover and lapwing). At the commencement of the construction phase, the likely future receiving environment, natural revegetation is not anticipated to have taken place to a degree that would materially alter the existing ornithological baseline as established in Section 7.3 for KORs.

On this basis, the likely future receiving environment of the Proposed Wind Farm site at the commencement of the construction phase will be a former industrial peat-extraction landscape with a developing but spatially variable cover of natural revegetation, managed and monitored under IPC Licence Reg. No. P0503-01. Due to the project temporal interval between the existing baseline survey data and the commencement of the construction phase, the underlying vegetation structure and thus the avian community of the Proposed Wind Farm site is anticipated to be materially comparable to the existing baseline as established in Section 7.3 and in Chapter 6, Section 6.3.2.

The assessment of likely significant effects presented in Section 7.5.2 below has therefore been undertaken against this likely future receiving environment. As the ornithological conditions predicted at the commencement of construction are materially comparable to those described in the existing baseline environment, the information presented in Section 7.5.2 is representative of the likely future receiving environment for ornithology against which the Proposed Project is assessed.

7.3.8.1 Future Environmental Trends

This section identifies the future environment trends relating to birds likely to exist at the Proposed Wind Farm site following implementation of targeted rehabilitation within the Draft Rehabilitation Plans throughout the operational phase.

Continued natural revegetation, ongoing site management, decommissioning works, and environmental monitoring, and implementation of targeted rehabilitation measures within the Draft Rehabilitation Plans are anticipated to facilitate the progressive rehabilitation of peatland across the Proposed Wind Farm site and result in an overall reduction in the amount of open habitat and an increase in the amount of scrub and woodland within the Proposed Wind Farm site. While the individual environmental factors influencing the ornithological assemblage within the Proposed Wind Farm site may evolve over time, on balance, these changes are not expected to materially alter the overall ornithological baseline for the majority of KOR species within the Core Ornithological Study Area.

Notwithstanding this, the trend towards less open habitat and an increase in closed habitat will increase habitat suitability for scrub and woodland preferring KORs (such as woodcock and sparrowhawk) and a reduction in habitat suitability for KORs that prefer open habitats (such as golden plover and lapwing). As the Proposed Wind Farm site trends towards increasingly closed habitats, collision risk may increase for woodland preferring KORs (such as woodcock and sparrowhawk) and reduce for KORs that prefer open habitats (such as golden plover and lapwing), however ongoing monitoring will detect these changes during the lifetime of the Proposed Wind Farm.

The future environmental trends of individual environmental factors influencing the ornithological assemblage within the Proposed Wind Farm site including scrub coverage, establishment of woodland, future flooding regimes have been considered for each of the KOR assessments presented in Section 7.5.2. While the distribution and abundance of KORs may evolve over time, on balance, these changes are not expected to materially alter the overall ornithological baseline for the majority of KOR species within the Core Ornithology Study Area.

The continuation of the aforementioned activities in the absence of the Proposed Project is considered in the Do-Nothing Scenario in Section 7.5.1 and in the cumulative assessment in Section 7.8.

7.4 Receptor Evaluation

7.4.1 Determination of Population Importance

A determination of population importance for birds within the Core Ornithology Survey Area is provided below, following criteria described in Section 7.2.4. Estimates of national population sizes were obtained from the most recent national surveys or Ireland's Article 12 Reporting 2013-2018 (EU, 2022), depending on what literature was available. Estimates for mean county population sizes were obtained from species-specific surveys, a review of I-WeBS sites within Kildare and Offaly[5], or derived from national estimates, according to what literature was available.

Following NRA (2009), a population of National Importance is a regularly occurring population that exceeds 1% of the national population. Similarly, a population of Regional Importance is a regularly occurring population that exceeds 1% of the regional (or county) population. Locally Important (Higher Value) populations are resident or regularly occurring species of conservation concern of importance at the local level, while Locally Important (Lower Value) populations are resident or regularly occurring species of some local importance.

7.4.1.1 Crane

Crane is a species which was formerly extinct from Ireland but has recently been recorded breeding at a site in the midlands in recent years (Copland *et al.*, 2022). In addition to this breeding pair, further breeding and additional summering/non-breeding birds have also been recorded in recent years (Cullen, 2023). Taking a precautionary approach (given the rarity of the species) a regularly occurring population of one bird is required for classification as of National Importance.

[5] *These figures are estimates based on the best available information but should be interpreted with a degree of caution.*

Observations comprised an individual bird landing within the Core Ornithology Survey Area in August 2024, the same individual was recorded on three occasions on the same day. There were no further observations of this species despite undertaking a comprehensive suite of surveys. Therefore, the Core Ornithology Survey Area is of **No Ecological Importance** to this species given how infrequently the Core Ornithology Survey Area is utilised by this species.

7.4.1.2 Golden Plover

Wintering

The national population of golden plover is estimated to be 82,190 for the Republic of Ireland (Burke *et al.,* 2025). Therefore, a regularly occurring population of 827 birds is required for classification as National Importance.

To estimate the regional population, a review of all I-WeBS sites within 25km of the Core Ornithology Study Area was conducted. The population estimate based on I-WeBS figures below is likely to be an underestimate of the regional population[6]. This is due to the foraging ecology of wintering golden plover that will utilise agricultural grasslands and other habitats not typically surveyed during I-WeBS counts. To account (partly) for the birds that occur in terrestrial habitats that would not have been counted by I-WeBS surveyors, the golden plover that occur at terrestrial locations outside of any I-WeBS sites within the 12km survey radius of the Core Ornithology Survey Area which were surveyed during the wintering golden plover survey were added to the county population estimate.

Below are the mean count values recorded for I-WeBS sites over the most recent 5-season period, i.e., for the period 2018/19 – 2022/23 (note that sites with a mean of zero birds were excluded from this list) and the mean peak count from the 12km survey radius for the five winter seasons (2021/22 – 2025/26):

- River Barrow: Mountmellick (Clonterry) (mean = 900)
- Terrestrial habitats[7] (mean = 5,668)

Based on the above, the mean wintering regional population is 6,598 birds. However, as previously stated this likely remains an underestimate. Taking a precautionary approach, a regularly occurring population of 66 or more birds (>1% of the regional population, as per NRA (2009)) is required to be classified as Regional Importance.

Golden plover were observed on 746 occasions within or adjacent to the Core Ornithology Survey Area throughout the six years of surveying. There were 109 observations of birds landing within, or adjacent to, the Core Ornithology Survey Area, comprising flocks of up to 344 birds roosting in different locations within the Core Ornithology Survey Area. Given the frequency of observations during surveys, and that the population recorded is most likely associated with the nationally important wintering population that occurs at the Curragh Co. Kildare, the population of golden plover within the Core Ornithology Study Area is considered to be a population of **National Importance**.

Breeding

This species does not ordinarily breed in this area and any birds seen were likely lingering from the wintering population; therefore, the Core Ornithology Survey Area is of **No Ecological Importance** for breeding golden plover.

[6] *As per Burke et al., (2025) in relation to the golden plover count, "these estimate must be treated as conservative on the bases that they are widely disturbed in a variety of wetland and non-wetland habitats that are under-sampled during I-WeBS.".*
[7] *From terrestrial areas within the 12km survey radius of the wintering golden plover surveys outside of any I-WeBS sites.*

7.4.1.3 Great Northern Diver

Great northern diver was observed on one occasion during the waterbird distribution and abundance surveys. The observation comprised a non-breeding individual present on water in May 2020, 960m from the Core Ornithology Survey Area and 4.2km from the Proposed Turbines.

Therefore, the Core Ornithology Survey Area is of **No Ecological Importance** to this species given how infrequently the Core Ornithology Survey Area is utilised by this species.

7.4.1.4 Great White Egret

Great white egret were recorded within the Core Ornithology Survey Area on only two occasions over the six years of surveying. There were observations of individuals travelling within, or adjacent to, the Core Ornithology Survey Area in December 2025 and February 2026.

Therefore, the Core Ornithology Survey Area is of **No Ecological Importance** to this species given how infrequently the Core Ornithology Survey Area is utilised by this species.

7.4.1.5 Greenland White-fronted Goose

Wintering

The estimated international population of Greenland white-fronted goose is estimated to be 13,303 birds[8], therefore 1% of the international population is 133 birds. A regularly occurring wintering population of 133 birds is required for classification as internationally important. The estimated national population of Greenland white-fronted goose is 5,086 birds[8], therefore 1% of the national population is 51 birds, a regularly occurring population of 51 birds is required for classification as nationally important.

Greenland white fronted goose were observed on two occasions during the winter season. Observations were of 4 and 104 birds migrating over the Core Ornithology Survey Area. Given that the Core Ornithology Survey Area lies within the migration pathway for this species, and birds migrating over the Core Ornithology Survey Area are likely to be under recorded given the height of migrating flocks (Fox *et al.*, 2003) and that some migration flights occur at night (Weiser *et al.*, 2024), the population of Greenland white-fronted goose which have the potential to migrate over the Core Ornithology Survey Area is considered to be a population of **National Importance**.

Breeding

This species does not ordinarily breed in Ireland; therefore, the Core Ornithology Survey Area is of **No Ecological Importance** for breeding to this species.

7.4.1.6 Hen Harrier

Wintering

The estimated national wintering population of hen harrier in the Republic of Ireland is 311-435 (Ruddock *et al.*, 2016; Article 12 Reporting 2013-2018), therefore 1% of the Republic of Ireland national

8 Greenland White-front data for 2024/25 Available at: https://www.wexfordwildfowlreserve.ie/wildlife-2/greenland-white-front-data-for-2024-25/

wintering population is 3-4 birds. A regularly occurring wintering population of 3-4 hen harrier is required for classification as nationally important.

Hen harrier were observed on 197 occasions during the winter and passage seasons during surveys. The majority of observations were of individuals travelling or hunting within, or adjacent to, the Core Ornithology Survey Area. There were 18 observations of roosting hen harrier at opportunistic roost areas within, or adjacent to, the Core Ornithology Survey Area at various locations. There were no regularly used roost sites within the Core Ornithology Survey Area. Opportunistic roosting was observed within the Core Ornithology Survey Area on 13 occasions, spanning seven different roosting areas and no regularly used roost sites were identified within the Core Ornithology Survey Area. A further five observations of roosting occurred outside the Core Ornithology Survey Area, across four roosting areas. This was also opportunistic with no indication of regular usage of the same locations. Observations throughout the survey period were of male and ringtail birds and no more than two birds were observed during any one observation. This indicates a minimum of two birds present during the survey period.

Although no regularly used communal roost was identified and no more than two individuals were recorded simultaneously, the species was recorded frequently throughout the survey period and utilised the Core Ornithology Survey Area and surrounding lands for foraging, hunting and occasionally for roosting. Therefore, the population of hen harrier within the Core Ornithology Survey Area is considered to be a population of **Regional Importance**.

Breeding

This species does not ordinarily breed in this area and any birds seen were likely lingering from the wintering population; therefore, the Core Ornithology Survey Area is of **No Ecological Importance** for breeding hen harrier.

7.4.1.7 Kingfisher

The national population of kingfisher is estimated to be 368-1031 pairs (NPWS Article 12 Reporting 2013-2018) therefore, 1% of the Republic of Ireland national breeding population is six birds, which is required to be classified as nationally important. There are no published figures for the of kingfisher population in Counties Offaly and Kildare. Using the distribution of kingfisher across Ireland from the breeding bird atlas (2007-2011), 5.26% of the distribution of kingfisher lies within County Offaly and 3.36% within in County Kildare during the breeding season. Extrapolating this, the population of kingfisher in Counties Offaly and Kildare is estimated to be 19-54 pairs and 12-35 pairs respectively. Taking a precautionary approach and using the above as a guide; a regularly occurring population of just one bird is required for classification of regional importance.

Kingfisher were observed within, or partially within, the Core Ornithology Survey Area on 65 occasions over the six years of surveying. There was no breeding activity recorded. The maximum number of birds recorded within the Core Ornithology Study Area was two birds, however given the spread of observations across the Core Ornithology Survey Area, it is likely that the population of kingfisher utilising the Project Site is at least six birds. Therefore, the population of kingfisher within the Core Ornithology Survey Area is considered to be a population of **National Importance**.

7.4.1.8 Little Egret

The estimated national wintering population of little egret is 1,140 birds for the Republic of Ireland (Burke *et al.*, 2025). Therefore, a regularly occurring population of 11 birds is required for classification as nationally important.

There are no published figures for the population of little egret in Counties Offaly and Kildare. Using the distribution of little egret across Ireland from the breeding bird atlas (2007-2011), 15% of the

distribution of little egret lies within County Offaly and 35% within County Kildare during the breeding season. Extrapolating this, the county populations of little egret are estimated to be 11 and 34 birds respectively. Therefore, a regularly occurring population of 1 bird is required for classification of regional importance.

There were 70 observations of little egret within the Core Ornithology Survey Area over the six years of surveying. The maximum number of birds recorded within the Core Ornithology Survey Area was seven birds. No breeding activity was recorded during surveys. Taking a precautionary approach, the population of little egret within the Core Ornithology Survey Area is considered to be a population of **Regional Importance**.

7.4.1.9 Merlin

As per the latest NPWS Article 12 reporting document, the estimated population of merlin is between 200 and 400 pairs. Therefore, a regularly occurring population of two birds is required for classification as national importance.

There are no published figures for the population of merlin in Counties Offaly and Kildare. Using the distribution of merlin across Ireland from the breeding bird atlas (2007-2011), 2.46% of the distribution lies within Counties Offaly and Kildare in the breeding season. Extrapolating this, the county populations of merlin are estimated to be four to eight pairs in both counties. The population distribution for winter is similar to this. Taking a precautionary approach and using the above as a guide; a regularly occurring population of just one bird is required for classification of regional importance.

Merlin were observed within, or partially within the Core Ornithology Survey Area on 83 occasions over the six years of surveying. No breeding activity was recorded during surveys. The maximum number of birds recorded within the Core Ornithology Survey Area was two birds. Therefore, the population of merlin recorded within the Core Ornithology Survey Area is considered to be of **Regional Importance.**

7.4.1.10 Nightjar

Nightjar were recorded within the Core Ornithology Survey Area on only one occasion over the six years of surveying, despite a comprehensive suite of surveys conducted at the Core Ornithology Survey Area. Nightjar were historically breeding within The Long Derries, Edenderry SAC, which is adjacent to the Core Ornithology Survey Area. However, there were no observations of nightjar at, or adjacent to, the SAC during surveys and no evidence of breeding within the SAC was observed. It is therefore concluded that the local breeding population of nightjar at The Long Derries, Edenderry SAC is locally extinct.

The Core Ornithology Survey Area is of **No Ecological Importance** to this species given how infrequently the Core Ornithology Survey Area is utilised by this species.

7.4.1.11 Peregrine

As per NPWS Article 12 Reporting (2013-2018), the estimated population of peregrine is 425 pairs. Therefore, as per NRA (2009) criteria, a regularly occurring population of four pairs of peregrine is required for classification as nationally important.

There are no published figures for the population of peregrine in Counties Offaly and Kildare. Using the distribution of peregrine across Ireland from the breeding bird atlas (2007-2011), 3% of the distribution lies within County Offaly and 2% within County Kildare. Extrapolating this, the county populations of peregrine in Offaly and Kildare is estimated to be 25 and 17 birds respectively. Taking a

precautionary approach and using the above as a guide; a regularly occurring population of just one bird is required for classification of regional importance.

Peregrine were observed within, or partially within, the Core Ornithology Survey Area on 214 occasions over the 6 years of surveying. The maximum number of birds recorded within the Core Ornithology Survey Area was 3 birds. A nest box was observed to be utilised by a breeding pair in 2020, 2022, 2023 and 2025 and probable in 2021 and 2024. An additional probable territory was identified in 2024, 1.7km from the Core Ornithology Survey Area boundary. Therefore, the population of peregrine recorded within the Core Ornithology Survey Area is considered to be of **Regional Importance**.

7.4.1.12 Red Kite

Red kite were recorded within the Core Ornithology Survey Area on only one occasion over the six years of surveying. The Core Ornithology Survey Area is of **No Ecological Importance** to this species given how infrequently the Core Ornithology Survey Area is utilised by this species.

7.4.1.13 Short-eared Owl

Short-eared owl were recorded within the Core Ornithology Survey Area on only seven occasions over the six years of surveying, however five of the seven observations were recorded on two dates (three observations of the same bird in April 2021 and two observations of the same bird in November 2023). The Core Ornithology Survey Area is of **No Ecological Importance** to this species given how infrequently the Core Ornithology Survey Area is utilised by this species.

7.4.1.14 White-tailed Eagle

White-tailed eagle were recorded during daylight hours within the Core Ornithology Survey Area on only five occasions over the six years of surveying and no winter roosts were identified. The Core Ornithology Survey Area is of **No Ecological Importance** to this species given how infrequently the Core Ornithology Survey Area is utilised by this species.

7.4.1.15 Whooper Swan

Wintering

The results of the 2026 International Swan Census were not available at the time of writing this chapter. Therefore, the most recent available national wintering estimates are provided in Burke *et al.* (2021) from the 2020 International Swan Census count. The national wintering population of whooper swan is 14,467. Therefore, a regularly occurring population of 145 birds is required for classification as of National Importance.

The Swan Census 2020 (Burke *et al.*, 2021) was consulted regarding the population data for whooper swan in Counties Offaly and Kildare. Based on the 2020 Swan Census data, in January 2020 the county population of Offaly and Kildare was 714 and 175 individuals respectively. Therefore, a regularly occurring population of two birds is required for classification of Regional Importance.

Whooper swan were observed within, or partially within the 500m survey radius of the Core Ornithology Survey Area on 422 occasions. Roosting was recorded across a total of eight areas within the Core Ornithology Survey Area, across the six winter seasons surveyed. The maximum number of birds recorded roosting within the Core Ornithology Survey Area was 131 birds. There were regularly occurring flocks of regional importance within the Core Ornithology Survey Area. Therefore, the population of whooper swan recorded within the Core Ornithology Survey Area is considered to be of **Regional Importance**.

Breeding

This species does not ordinarily breed in Ireland; therefore, the Core Ornithology Survey Area is of **No Ecological Importance** for breeding to this species.

7.4.1.16 Lesser Black-backed Gull

Wintering

The estimated national winter population of lesser black-backed gull is 11,842 birds (Article 12). Therefore, regularly occurring population of 118 birds is required for classification as National Importance. There are no published figures for the regional population. However, according to the distribution of lesser black-backed gull across Ireland in the bird atlas, 7% of the population is found within the regional area (i.e. within the maximum core foraging range (31km; Thaxter *et al.*, 2025) of winter lesser black-backed gull from the Core Ornithology Survey Area). Extrapolating this[9], the regional wintering population is estimated to be 829 birds based on the average number of lesser black-backed gulls per hectad within the foraging range of the Core Ornithology Survey Area.

Additionally, lesser black-backed gull is an SCI species of Poulaphouca Reservoir SPA during the winter season. Given the foraging range of lesser black-backed gull, it cannot be ruled out that birds observed within the Core Ornithology Survey Area are associated with the SPA. The conservation objectives supporting document for Poulaphouca Reservoir SPA was consulted. The most recent counts available were mean peaks for the five-year period 1995/96 to 1999/2000, when the site supported 651 lesser black-backed gulls[10].

The total regional population is made up of the average number of birds per hectad within the regional area plus the population of the Poulaphouca Reservoir SPA[11], and it is therefore estimated to be approximately 1,444 birds. Therefore, a regularly occurring population of 14 birds is required for classification as Regional Importance

Lesser black-backed gull were observed within the Core Ornithology Survey Area on 56 occasions during the winter season throughout the survey period. The maximum number of birds observed within the Core Ornithology Survey Area was 27 birds, with the majority of observations being below number of regional importance. Taking a precautionary approach, the population of lesser black-backed gull within the Core Ornithology Survey Area is considered to be a population of **Regional Importance**.

Breeding

The breeding population of lesser black-backed gull are not associated with any SPA and given the conservation status of this species, this species are unlikely to be significantly impacted by the Proposed Project. Therefore, it is considered that the Proposed Wind Farm is of **No Ecological Importance** to the breeding population of this species.

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[9]Bird Atlas data from the National Biodiversity Data Centre was used to estimate the regional population. Presence/absence hectad data was used to estimate the proportion of the national population that occurs in the county. The national population was then multiplied by this percentage to give a regional population estimate.

[10] This population is based on older data and is likely not representative of the current population. The conservation objectives for the Poulaphouca Reservoir acknowledge that there is insufficient data available to generate a more recent estimate.

[11] Note the hectad which contains Poulaphouca Reservoir SPA was excluded from total number of hectads in the regional area for the purposes of this calculation to avoid double counting the birds within the SPA.

7.4.1.17 Barn Owl

As per the latest NPWS Article 12 reporting document, the estimated population of barn owl is 562-702 pairs. Therefore, as per NRA (2009) criteria, a regularly occurring population of five pairs of barn owl is required for classification as nationally important.

There are no published figures for the population of barn owl in Counties Offaly and Kildare. Using the distribution of barn owl across Ireland from the breeding bird atlas (2007-2011), 4% of the distribution lies within County Offaly and 4% within County Kildare. Extrapolating this, the county populations of peregrine in Offaly and Kildare is estimated to be 22 birds for both counties. Taking a precautionary approach and using the above as a guide; a regularly occurring population of just one bird is required for classification of regional importance.

Observations were of individuals travelling, perched or foraging within, or adjacent to, the Core Ornithology Survey Area. Barn owl was observed on 21 occasions during the dedicated breeding barn owl surveys, with confirmed breeding in 2022, 2023 and 2025. Therefore, the population that occurs within, and adjacent to, the Core Ornithology Survey Area is considered to be a population of **Regional Importance.**

7.4.1.18 Curlew

Wintering

The estimated national wintering population of curlew in Ireland is 31,710 for the Republic of Ireland (Burke *et al.,* 2025). Therefore, as per NRA 2009, a regularly occurring population of 317 birds is required for classification as nationally important.

To estimate the regional population, a review of all I-WeBS within 25km of the Core Ornithology Survey Area was conducted. The population estimate based on I-WeBS figures below is likely to be an underestimate of the regional population[12]. Wintering curlew will utilise agricultural grasslands and other habitats not typically surveyed during I-WeBS counts. To account (partly) for the birds that occur in terrestrial habitats that would not have been counted by I-WeBS surveyors, the curlew that occur at terrestrial locations outside of any I-WeBS sites within the 5km survey radius of the Core Ornithology Survey Area which was surveyed during the waterbird distribution survey were added to the regional population estimate.

There were no curlew recorded at any I-WeBS site within 25km of the Core Ornithology Survey Area over the most recent 5-season period, i.e. for the period 2018/19 – 2022/23. Below, the mean peak count from the 5km survey radius of the waterbird distribution and abundance surveys for the five winter seasons (2021/22 – 2025/26):

- Terrestrial Habitats (mean = 7 birds)
- Core Ornithology Survey Area (mean = 2 birds)

Based on the above, the mean regional wintering population is nine birds. However, as previously stated this likely remains an underestimate. Therefore, a regularly occurring population of one or more birds (>1% of the regional population, as per NRA (2009)) is required to be classified as regional importance.

Curlew were observed within the Core Ornithology Survey Area on 21 occasions during the winter season throughout the survey period. The maximum number of birds observed within the Core

[12] *A relatively large proportion of curlew are known to spend winter away from coastal wetlands, often in non-wetland habitats such as agricultural land. Therefore, this species is considered poorly monitored by wetland waterbird monitoring methods and assigning accurate estimates of wintering populations is difficult (Delaney et al., 2009).*

Ornithology Survey Area was eight birds, with the majority of observations being of one or two birds. Therefore, the population of curlew within the Core Ornithology Survey Area is considered to be a population of **Regional Importance.**

Breeding

The national breeding population of curlew is estimated to be 105 pairs (Colhoun *et al.*, 2022) and the regional population is estimated to be two pairs. Therefore, a regularly occurring population of 1 bird is required for classification as national importance and regional importance.

Curlew were observed within, or partially within the Core Ornithology Survey Area on 56 occasions during the breeding season. Observations were of up to eight birds within the Core Ornithology Survey Area. Probable breeding activity (i.e. bubbling calls/agitated behaviour) was recorded within, or adjacent to, a previously known nest site in 2020 and 2023, however breeding was not confirmed at this location despite survey efforts. Additionally, there was an observation at a different location within the Core Ornithology Survey Area in 2021, indicating probable breeding. Therefore, given the presence of a pair of breeding curlew in certain years, and the possibility of them returning to the area to breed in future, the population of curlew within the Core Ornithology Survey Area is considered to be a population of **National Importance.**

7.4.1.19 Grey Partridge

Grey Partridge were recorded within the Core Ornithology Survey Area on only two occasions over the six years of surveying. Grey partridge were historically present within The Long Derries, Edenderry SAC, which is adjacent to the Core Ornithology Survey Area. However, there were no observations of grey partridge at, or adjacent to, the SAC during surveys and no evidence of breeding within the SAC was observed. It is therefore concluded that the local population of grey partridge at The Long Derries, Edenderry SAC is locally extinct. Furthermore, it is known that local gun clubs and falconers release game species within this area (e.g. pheasant and red-legged partridge), there is therefore a possibility that the grey partridge were also released by these groups. Although there is potential for occasional dispersal, the majority of birds are resident. In a UK study, only 41 of 393 marked birds were known to have left the study area of 259ha, and only two birds moved more than 8km (Jenkins, 1961). The nearest known wild population of grey partridge is located at Boora Wetlands, approximately 41km from the Core Ornithology Survey Area. Given the separation distance, it is unlikely that the birds observed within the Core Ornithology Survey Area are associated with this population. Therefore, given that grey partridge are a largely sedentary species, and that there were only two observations over a six year period, grey partridge are not resident within the Core Ornithology Survey Area.

The Core Ornithology Survey Area is of **No Ecological Importance** to this species given how infrequently the Core Ornithology Survey Area is utilised by this species.

7.4.1.20 Kestrel

As per NPWS Article 12 Reporting (2013-2018), the national breeding population estimates of kestrel in the Republic of Ireland is 13,500 birds. Therefore, as per NRA (2009) criteria, a regularly occurring population of 135 birds is required for classification as nationally important.

There are no published figures for the population of kestrel in counties Offaly and Kildare. Using the distribution of kestrel across Ireland from the breeding bird atlas (2007-2011), 2.58% of the distribution lies within County Offlay and 1.52% within County Kildare during the breeding season. Extrapolating this, the county population of kestrel in Counties Offaly and Kildare is estimated to be 405 and 205 birds respectively. Therefore, a regularly occurring population of two birds is required for classification of regional important.

There was a maximum of six breeding territories identified in the vicinity of the Core Ornithology Survey Area in any one season. This indicates a population of 12 adult birds during the breeding season (using the Core Ornithology Survey Area on at least one occasion). Therefore, the population of kestrel recorded within the Core Ornithology Survey Area is considered to be of **Regional Importance**.

7.4.1.21 Lapwing

Wintering

The estimated national wintering population of lapwing in the Republic of Ireland is 67,700 (Burke *et al.*, 2025). Therefore, as per NRA (2009) criteria, a regularly occurring population of 677 birds is required for classification as nationally important.

To estimate the regional population, a review of all I-WeBS within 25km of the Core Ornithology Survey Area was conducted. The population estimate based on I-WeBS figures below is likely to be an underestimate of the regional population[13]. Similar to golden plover, wintering lapwing will utilise agricultural grasslands and other habitats not typically surveyed during I-WeBS counts. To account (partly) for the birds that occur in terrestrial habitats that would not have been counted by I-WeBS surveyors, the lapwing that occur at terrestrial locations outside of any I-WeBS sites within the 5km survey radius of the Core Ornithology Survey Area which was surveyed during the waterbird distribution and abundance surveys were added to the regional population estimate.

Below are the mean count values recorded for I-WeBS sites over the most recent 5-season period, i.e. for the period 2018/19 – 2022/23 (note that sites with a mean of zero birds were excluded from this list) and the mean peak count from the waterbird distribution and abundance surveys for the five winter seasons (2021/22 – 2025/26):

- Cloghanhill (mean = 169)
- River Barrow: Mountmellick (Clonterry) (mean = 400)
- Terrestrial habitats[14] (mean = 740)

Based on the above, the mean regional wintering population is 1,309 birds. However, as previously stated this likely remains an underestimate. Therefore, a regularly occurring population of 13 or more birds (>1% of the regional population, as per NRA (2009)) is required to be classified as regional important. This species is wide ranging in the winter months that utilise habitats, such as those present on site (peatlands), that are abundant in the wider landscape.

Lapwing were observed within, or partially within, the Core Ornithology Survey Area during winter season surveys on 201 occasions. The maximum number of birds recorded within the Core Ornithology Survey Area was 280 birds. Therefore, the population of lapwing within the Core Ornithology Survey Area is considered to be of **Regional Importance**, given a regularly occurring population within the Core Ornithology Survey Area which occurs in regionally significant numbers.

Breeding

As per the latest NPWS Article 12 reporting document, the national population of breeding lapwing is estimated to be 476 – 620 pairs for the Republic of Ireland. This is commonly rounded to approximately 600 breeding pairs in more recent NPWS and BirdWatch Ireland communications. Therefore, as per NRA (2009) criteria, a regularly occurring population of six pairs is required for classification as nationally important.

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[13] *A relatively large proportion of lapwing are known to spend winter away from coastal wetlands, often in non-wetland habitats such as agricultural land. Therefore, this species is considered poorly monitored by wetland waterbird monitoring methods and assigning accurate national estimates of wintering populations is difficult (Delaney et al., 2009).*
[14] *From terrestrial areas within the 8km survey radius of the Waterbird Distribution Surveys outside of any I-WeBS sites.*

There are no published figures for the population of breeding lapwing in counties Offaly and Kildare. Using the distribution of lapwing across Ireland from the breeding bird atlas[15] (2007-2011), 7% of the distribution lies within County Offaly and 4% within County Kildare during the breeding season. Extrapolating this, the county populations of breeding lapwing is estimated to be a minimum of 33 pairs in County Offaly and 19 pairs in County Kildare. Therefore, a regularly occurring population of one bird is required for classification of Regional Importance.

There was a maximum of 23 breeding territories identified in the vicinity of the Core Ornithology Survey Area in any one season. As such, the breeding population of lapwing within the Core Ornithology Survey Area is considered to be of **National Importance**.

7.4.1.22 Redshank

Redshank were recorded within the Core Ornithology Survey Area on only one occasion over the six years of surveying.

The Core Ornithology Survey Area is of **No Ecological Importance** to this species given how infrequently the Core Ornithology Survey Area is utilised by this species.

7.4.1.23 Shoveler

Shoveler were recorded within the Core Ornithology Survey Area on only one occasion over the six years of surveying.

The Core Ornithology Survey Area is of **No Ecological Importance** to this species given how infrequently the Core Ornithology Survey Area is utilised by this species.

7.4.1.24 Snipe

As reported (2013-2018) under Article 12 of the Birds Directive (Directive 2009/147/EC), the national breeding population estimate of snipe in the Republic of Ireland is 4,275 breeding pairs. Therefore, as per NRA (2009) criteria, a regularly occurring population of 43 pairs is required for classification as nationally important.

There are no published figures for the population of snipe in counties Offaly and Kildare. Using the distribution of snipe across Ireland from the breeding bird atlas (2007-2011), 2.93% of distribution lies within County Offaly and 2.35% within County Kildare during the breeding season. Extrapolating this, the population of snipe in counties Offaly and Kildare is estimated to be 125 and 100 pairs respectively. Therefore, a regularly occurring population of one pair is required for the classification as regionally important.

Breeding activity (e.g. drumming) was recorded across the Core Ornithology Survey Area within areas of suitable habitat. There were 22 areas of breeding activity identified within the Core Ornithology Survey Area, many of these likely contained more than one breeding territory. Given the cryptic nature of breeding snipe, the number of breeding snipe is unknown, however they are breeding across the Core Ornithology Survey Area where suitable habitat exists. Taking a precautionary approach, the population of snipe within the Core Ornithology Survey Area is considered to be a population of **National Importance**.

[15] *Bird Atlas data from the National Biodiversity Data Centre was used to estimate the county population. Presence/absence hectad data was used to estimate the proportion of the national population that occurs in the county. The national population was then multiplied by this percentage to give a county population estimate.*

7.4.1.25 Woodcock

The national estimates of the breeding population of woodcock in Ireland is 27,434 males (O'Neill, 2024). Therefore, as per NRA (2009) criteria, a regularly occurring population of 274 pairs/548 birds is required for classification as nationally important.

There are no published figures for the population of woodcock in counties Offaly and Kildare. Using the distribution of woodcock across Ireland from the breeding bird atlas (2007-2011), 4.84% of the distribution lies within County Offaly and 3.76% within County Kildare during the breeding season. Extrapolating this, the populations of woodcock in counties Offaly and Kildare is estimated to be 1,327 pairs and 1,031 pairs respectively. Therefore, a regularly occurring population of 10 pairs is required for the classification as regional important.

Breeding activity (e.g. roding) was recorded throughout the Core Ornithology Survey Area within areas of suitable habitat. Given the nature of breeding woodcock, estimating the total number of breeding woodcock within the Core Ornithology Survey Area is difficult, therefore the total number of breeding woodcock is unknown. However, they are breeding throughout the Core Ornithology Survey Area where suitable habitat exists. Therefore, the population of woodcock within the Core Ornithology Survey Area is considered to be a population of **Regional Importance.**

7.4.1.26 Buzzard

As reported (2013-2018) under Article 12 of the Birds Directive (Directive 2009/147/EC), the national breeding population estimate of buzzard in the Republic of Ireland is 1,938 breeding pairs. Buzzard has recently undergone range expansion westwards in Ireland and it is likely that the population has increased considerably since this count was made. However, there are no updated figures available, therefore the value presented in Article 12 Reporting will be used. Therefore, as per NRA (2009) criteria, a regularly occurring population of 19 pairs is required for classification as nationally important.

There are no published figures for the population of buzzard in counties Offaly and Kildare. Using the distribution of buzzard across Ireland from the breeding bird atlas (2007-2011), 3.93% of the distribution occurs within County Offaly and 3.51% within County Kildare during the breeding season. Extrapolating this, the county population of buzzard in counties Offaly and Kildare is estimated to be 76 and 68 birds respectively. Therefore, a regularly occurring population of one bird is required for classification as regional important.

Breeding territories were confirmed in the Core Ornithology Survey Area, in all six breeding seasons throughout the survey period, with a maximum of 13 breeding territories. Therefore, the population of buzzard within the Core Ornithology Study Area is considered to be a population of **Regional Importance**.

7.4.1.27 Hobby

Hobby were recorded within the Core Ornithology Survey Area on only one occasion over the six years of surveying.

The Core Ornithology Survey Area is of **No Ecological Importance** to this species given how infrequently the Core Ornithology Survey Area is utilised by this species.

7.4.1.28 Long-eared Owl

As reported (2013-2018) under Article 12 of the Birds Directive (Directive 2009/147/EC), the national breeding population estimate of long-eared owl in the Republic of Ireland is 1,484-2,703 breeding pairs. Therefore, as per NRA (2009) criteria, a regularly occurring population of 15-27 pairs is required for classification as nationally important.

There are no published figures for the population of long-eared owl in counties Offaly and Kildare. Using the distribution of long-eared owl across Ireland from the breeding bird atlas (2007-2011), 2.44% of the distribution occurs within County Offaly and 3.96% within County Kildare during the breeding season. Extrapolating this, the county population of long-eared owl in counties Offaly and Kildare is estimated to be 36 and 58 birds respectively. Therefore, a regularly occurring population of one bird is required for classification as regional important.

There were breeding territories identified in 2020, 2021, 2023 and 2024 within, or adjacent to, the Core Ornithology Study Area, with a maximum of two breeding territories identified. Therefore, the population of long-eared owl within the Core Ornithology Survey Area is considered to be a population of **Regional Importance**.

7.4.1.29 Sparrowhawk

As reported (2013-2018) under Article 12 of the Birds Directive (Directive 2009/147/EC), the national breeding population estimate of sparrowhawk in the Republic of Ireland is 11,859 individuals. Therefore, as per NRA (2009) criteria, a regularly occurring population of 119 birds is required for classification as nationally important.

There are no published figures for the population of sparrowhawk in counties Offaly and Kildare. Using the distribution of sparrowhawk across Ireland from the breeding bird atlas (2007-2011) 2.5% of the distribution lies within County Offaly and 2.1% within County Kildare during the breeding season. Extrapolating this, the county population of sparrowhawk in Counties Offaly and Kildare is estimated to be 298 and 253 birds respectively. Therefore, a regularly occurring population of three birds is required for classification as Regional Important.

Breeding territories were confirmed in all six breeding seasons throughout the survey period, with up to four territories within, or adjacent to, the Core Ornithology Survey Area. Therefore, the population of sparrowhawk within the Core Ornithology Survey Area is considered to be a population of **Regional Importance**.

7.4.1.30 Passerines (Red Listed)

Grey wagtail, meadow pipit, redwing, stock dove, swift, whinchat and yellowhammer are red listed in Ireland. Populations recorded at the Core Ornithology Survey Area were deemed to be of no greater than **Local Importance (Lower Value)**.

7.4.2 Identification of Key Ornithological Receptors

Table 7-11 outlines the rationale for including or excluding each target species recorded during field surveys as a KOR. The status, population importance evaluation following NRA (2009) and a detailed explanation for inclusion/exclusion as a KOR is provided. The sensitivity of species included as KORs are then evaluated in the following section.

Table 7-11 Receptor evaluation and selection criteria rational

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
Crane	Annex I Birds Directive	**All Seasons** No population of ecological significance recorded	No population of ecological significance was recorded utilising the Core Ornithology Survey Area during the extensive suite of surveys conducted. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Project Site is of significance to this species. **No pathways for significant effects were identified.**	**No**
Golden Plover	Annex I Birds Directive & Red List	**Wintering** National Importance	This species were regularly recorded landing and utilising habitats within the Core Ornithology Survey Area. As such, the potential for habitat loss cannot be excluded. An assessment of direct habitat loss is required. Birds were regularly observed within the Core Ornithology Survey Area and within 500m of the Proposed Turbines. Taking a precautionary approach, the potential for displacement exists. This species was recorded flying within the Core Ornithology Survey Area, within the potential collision risk zone. A collision risk assessment is required. As such, **an assessment of direct habitat loss, disturbance/displacement and collision risk has been completed.**	**Yes**
		Breeding	No population of ecological significance was recorded utilising the Core Ornithology Survey Area during the extensive suite of breeding season	**No**

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
		No population of ecological significance recorded	surveys conducted. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Project Site is of significance to this species during the breeding season. **No pathways for significant effects were identified**	
Great Northern Diver	Annex I Birds Directive	**All Seasons** No population of ecological significance recorded	No population of ecological significance was recorded utilising the Core Ornithology Survey Area during the extensive suite of surveys conducted. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Project Site is of significance to this species. **No pathways for significant effects were identified.**	**No**
Great White Egret	Annex I Birds Directive	**All Seasons** No population of ecological significance recorded	No population of ecological significance was recorded utilising the Core Ornithology Survey Area during the extensive suite of surveys conducted. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Project Site is of significance to this species. **No pathways for significant effects were identified.**	**No**
Greenland White-fronted Goose	Annex I Birds Directive	**Wintering** National Importance	This species was not recorded utilising habitats within the Core Ornithology Survey Area. As such, the potential for habitat loss is not anticipated. Birds were observed migrating over the Core Ornithology Survey Area. Taking a precautionary approach, the potential for displacement exists. This species was recorded flying within the Core Ornithology Survey Area, within the potential collision risk zone. Taking a precautionary approach, a collision risk assessment is required. As such, **an assessment of disturbance/displacement and collision risk has been completed.**	**Yes**

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
		Breeding No population of ecological significance recorded	No population of ecological significance was recorded utilising the Core Ornithology Survey Area during the extensive suite of breeding season surveys conducted. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Project Site is of significance to this species during the breeding season. **No pathways for significant effects were identified.**	**No**
Hen Harrier	Annex I Birds Directive & Raptor	**Wintering** Regional Importance	This species was recorded hunting and roosting within the Core Ornithology Survey Area. As such, the potential for habitat loss cannot be excluded. An assessment of direct habitat loss is required. Birds were observed within the Core Ornithology Survey Area and within 500m of the Proposed Turbines. Therefore, the potential for displacement exists. This species was recorded flying within the Core Ornithology Survey Area, within the potential collision risk zone. A collision risk assessment is required. As such, **an assessment of direct habitat loss, disturbance/displacement and collision risk has been completed.**	**Yes**
		Breeding No population of ecological significance recorded	No population of ecological significance was recorded utilising the Core Ornithology Survey Area during the extensive suite of breeding season surveys conducted. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Project Site is of significance to this species during the breeding season. **No pathways for significant effects were identified.**	**No**
Kingfisher	Annex I Birds Directive	**All Seasons**	While no breeding territories were identified, kingfisher were occasionally recorded hunting within the Core Ornithology Survey Area. As such, the	**Yes**

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
		National Importance	potential for habitat loss cannot be excluded. An assessment of direct habitat loss is required. Birds were observed within the Core Ornithology Survey Area and within 500m of the Proposed Turbines. Therefore, the potential for displacement exists. This species was not recorded flying within the Core Ornithology Survey Area, within the potential collision risk zone. As such, significant collision effects are unlikely. As such, **an assessment of direct habitat loss and disturbance/displacement has been completed.**	
Little Egret	Annex I Birds Directive	**All Seasons** Regional Importance	This species was recorded foraging and utilising habitats within the Core Ornithology Survey Area. As such, the potential for habitat loss cannot be excluded. An assessment of direct habitat loss is required. Birds were observed within the Core Ornithology Survey Area and within 500m of the Proposed Turbines. Therefore, the potential for displacement exists. This species was recorded flying within the Core Ornithology Survey Area, within the potential collision risk zone. A collision risk assessment is required. As such, **an assessment of direct habitat loss, disturbance/displacement and collision risk has been completed.**	**Yes**
Merlin	Annex I Birds Directive	**All Seasons** Regional Importance	This species was recorded hunting and utilising habitats within the Core Ornithology Survey Area. As such, the potential for habitat loss cannot be excluded. An assessment of direct habitat loss is required.	**Yes**

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
			Birds were observed within the Core Ornithology Survey Area and within 500m of the Proposed Turbines. Taking a precautionary approach, the potential for displacement exists. This species was recorded flying within the Core Ornithology Survey Area, within the potential collision risk zone. A collision risk assessment is required. As such, **an assessment of direct habitat loss, disturbance/displacement and collision risk has been completed.**	
Nightjar	Annex I Birds Directive	**All Seasons** No population of ecological significance recorded	No population of ecological significance was recorded utilising the Core Ornithology Survey Area during the extensive suite of surveys conducted. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Project Site is of significance to this species. **No pathways for significant effects were identified.**	**No**
Peregrine	Annex I Birds Directive & Raptor	**All Seasons** Regional Importance	This species was recorded hunting and utilising habitats within the Core Ornithology Survey Area. As such, the potential for habitat loss cannot be excluded. An assessment of direct habitat loss is required. Birds were regularly observed within the Core Ornithology Survey Area and within 500m of the Proposed Turbines. Therefore, the potential for displacement exists. This species was recorded flying within the Core Ornithology Survey Area, within the potential collision risk zone. A collision risk assessment is required. As such, **an assessment of direct habitat loss, disturbance/displacement and collision risk has been completed.**	**Yes**

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
Red Kite	Annex I Birds Directive & Raptor	**Wintering** No population of ecological significance recorded	No population of ecological significance was recorded utilising the Core Ornithology Survey Area during the extensive suite of surveys conducted. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Project Site is of significance to this species. **No pathways for significant effects were identified.**	**No**
Short-eared Owl	Annex I Birds Directive & Raptor	**All Seasons** No population of ecological significance recorded	No population of ecological significance was recorded utilising the Core Ornithology Survey Area during the extensive suite of surveys conducted. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Project Site is of significance to this species. **No pathways for significant effects were identified.**	**No**
White-tailed Eagle	Annex I Birds Directive & Red List & Raptor	**All Seasons** No population of ecological significance recorded	No population of ecological significance was recorded utilising the Core Ornithology Survey Area during the extensive suite of surveys conducted. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Project Site is of significance to this species. **No pathways for significant effects were identified.**	**No**
Whooper Swan	Annex I Birds Directive	**Wintering** Regional Importance	This species were regularly observed landing and utilising habitats within the Core Ornithology Survey Area. As such, the potential for habitat loss cannot be excluded. An assessment of direct habitat loss is required. Birds were regularly observed within the Core Ornithology Survey Area and within 500m of the Proposed Turbines. Therefore, the potential for displacement exists.	**Yes**

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
			This species was recorded flying within the Core Ornithology Survey Area, within the potential collision risk zone. A collision risk assessment is required. As such, **an assessment of direct habitat loss, disturbance/displacement and collision risk has been completed.**	
		Breeding No population of ecological significance recorded	No population of ecological significance was recorded utilising the Core Ornithology Survey Area during the extensive suite of breeding season surveys conducted. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Project Site is of significance to this species during the breeding season. **No pathways for significant effects were identified.**	**No**
Lesser Black-backed Gull	SCI of the Poulaphouca Reservoir SPA	**Wintering** Regional Importance	This species was infrequently observed landing and utilising habitats within the Core Ornithology Survey Area. The potential for habitat loss cannot be excluded. Taking a precautionary approach. an assessment of direct habitat loss is required. Birds were regularly observed within the Core Ornithology Survey Area and within 500m of the Proposed Turbines. Therefore, the potential for displacement exists. This species was recorded flying within the Core Ornithology Survey Area, within the potential collision risk zone. A collision risk assessment is required. As such, **an assessment of direct habitat loss, disturbance/displacement and collision risk has been completed.**	**Yes**
		Breeding	The breeding population for this species is not listed as an SCI for any nearby SPA. Therefore, no population of ecological significance was recorded	**No**

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
		No population of ecological significance recorded	utilising the Core Ornithology Survey Area during the extensive suite of breeding season surveys conducted. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Project Site is of significance to this species during the breeding season. **No pathways for significant effects were identified**	
Barn Owl	Red List & Raptor	**All Seasons** Regional Importance	This species was recorded hunting and utilising habitats within the Core Ornithology Survey Area. As such, the potential for habitat loss cannot be excluded. An assessment of direct habitat loss is required. Birds were recorded within the Core Ornithology Survey Area and within 500m of the Proposed Turbines. Therefore, the potential for displacement exists. This species was not recorded flying within the Core Ornithology Survey Area, within the potential collision risk zone. As such, significant collision effects are unlikely. As such, **an assessment of direct habitat loss and disturbance/displacement has been completed.**	**Yes**
Curlew	Red List	**Wintering** Regional Importance	This species were regularly recorded landing and utilising habitats within the Core Ornithology Survey Area. As such, the potential for habitat loss cannot be excluded. An assessment of direct habitat loss is required. Birds were recorded within the Core Ornithology Survey Area and within 500m of the Proposed Turbines. Taking a precautionary approach, the potential for displacement exists. This species was recorded flying within the Core Ornithology Survey Area, within the potential collision risk zone. A collision risk assessment is required.	**Yes**

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
			As such, **an assessment of direct habitat loss, disturbance/displacement and collision risk has been completed.**	
		Breeding National Importance	This species were regularly recorded landing and occasionally breeding within, or adjacent to, the Core Ornithology Survey Area. As such, the potential for habitat loss cannot be excluded. An assessment of direct habitat loss is required. Birds were recorded within the Core Ornithology Survey Area and within 500m of the Proposed Turbines. Therefore, the potential for displacement exists. This species was recorded flying within the Core Ornithology Survey Area, within the potential collision risk zone. A collision risk assessment is required. As such, **an assessment of direct habitat loss, disturbance/displacement and collision risk has been completed.**	**Yes**
Grey Partridge	Red List	**All Seasons** No population of ecological significance recorded	No population of ecological significance was recorded utilising the Core Ornithology Survey Area during the extensive suite of surveys conducted. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Project Site is of significance to this species. **No pathways for significant effects were identified.**	**No**
Kestrel	Red List & Raptor	**All Seasons** Regional Importance	This species was recorded hunting and breeding within the Core Ornithology Survey Area. As such, the potential for habitat loss cannot be excluded. An assessment of direct habitat loss is required.	**Yes**

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
			Birds were recorded within the Core Ornithology Survey Area and within 500m of the Proposed Turbines. Therefore, the potential for displacement exists. This species was recorded flying within the Core Ornithology Survey Area, within the potential collision risk zone. A collision risk assessment is required. As such, **an assessment of direct habitat loss, disturbance/displacement and collision risk has been completed.**	
Lapwing	Red List	**Wintering** Regional Importance	This species was regularly observed foraging and landing within the Core Ornithology Survey Area. As such, the potential for habitat loss cannot be excluded. An assessment of direct habitat loss is required. Birds were regularly observed within the Core Ornithology Survey Area and within 500m of the Proposed Turbines. Therefore, the potential for displacement exists. This species was recorded flying within the Core Ornithology Survey Area, within the potential collision risk zone. A collision risk assessment is required. As such, **an assessment of direct habitat loss, disturbance/displacement and collision risk has been completed.**	**Yes**
		Breeding National Importance	This species was regularly observed foraging and breeding within the Core Ornithology Survey Area. As such, the potential for habitat loss cannot be excluded. An assessment of direct habitat loss is required.	**Yes**

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
			Birds were regularly observed within the Core Ornithology Survey Area and within 500m of the Proposed Turbines. Therefore, the potential for displacement exists. This species was recorded flying within the Core Ornithology Survey Area, within the potential collision risk zone. A collision risk assessment is required. As such, **an assessment of direct habitat loss, disturbance/displacement and collision risk has been completed.**	
Redshank	Red List	**All Seasons** No population of ecological significance recorded	No population of ecological significance was recorded utilising the Core Ornithology Survey Area during the extensive suite of surveys conducted. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Project Site is of significance to this species. **No pathways for significant effects were identified.**	**No**
Shoveler	Red List	**All Seasons** No population of ecological significance recorded	No population of ecological significance was recorded utilising the Core Ornithology Survey Area during the extensive suite of surveys conducted. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Project Site is of significance to this species. **No pathways for significant effects were identified.**	**No**
Snipe	Red List	**All Seasons** National Importance	This species was regularly observed utilising habitats within the Core Ornithology Survey Area. As such, the potential for habitat loss cannot be excluded. An assessment of direct habitat loss is required.	**Yes**

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
			Birds were regularly observed within the Core Ornithology Survey Area and within 500m of the Proposed Turbines. Therefore, the potential for displacement exists. This species was recorded flying within the Core Ornithology Survey Area, within the potential collision risk zone. A collision risk assessment is required. As such, **an assessment of direct habitat loss, disturbance/displacement and collision risk has been completed.**	
Woodcock	Red List	**All Seasons** Regional Importance	This species was regularly observed utilising habitats within the Core Ornithology Survey Area. As such, the potential for habitat loss cannot be excluded. An assessment of direct habitat loss is required. Birds were regularly observed within the Core Ornithology Survey Area and within 500m of the Proposed Turbines. Taking a precautionary approach, the potential for displacement exists. This species was recorded flying within the Core Ornithology Survey Area, within the potential collision risk zone. A collision risk assessment is required. As such, **an assessment of direct habitat loss, disturbance/displacement and collision risk has been completed.**	**Yes**
Buzzard	Raptor	**All Seasons** Regional Importance	This species was regularly observed hunting and breeding within the Core Ornithology Survey Area. As such, the potential for habitat loss cannot be excluded. An assessment of direct habitat loss is required.	**Yes**

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
			Birds were regularly observed within the Core Ornithology Survey Area and within 500m of the Proposed Turbines. Therefore, the potential for displacement exists. This species was recorded flying within the Core Ornithology Survey Area, within the potential collision risk zone. A collision risk assessment is required. As such, **an assessment of direct habitat loss, disturbance/displacement and collision risk has been completed.**	
Hobby	Raptor	**All Seasons** No population of ecological significance recorded	No population of ecological significance was recorded utilising the Core Ornithology Survey Area during the extensive suite of surveys conducted. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Project Site is of significance to this species. **No pathways for significant effects were identified.**	**No**
Long-eared Owl	Raptor	**All Seasons** Regional Importance	This species was regularly observed hunting and breeding within the Core Ornithology Survey Area. As such, the potential for habitat loss cannot be excluded. An assessment of direct habitat loss is required. Birds were regularly observed within the Core Ornithology Survey Area and within 500m of the Proposed Turbines. Therefore, the potential for displacement exists. This species was recorded flying within the Core Ornithology Survey Area, within the potential collision risk zone. A collision risk assessment is required. As such, **an assessment of direct habitat loss, disturbance/displacement and collision risk has been completed.**	**Yes**

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
Sparrowhawk	Raptor	**All Seasons** Regional Importance	This species was regularly observed hunting and breeding within the Core Ornithology Survey Area. As such, the potential for habitat loss cannot be excluded. An assessment of direct habitat loss is required. Birds were regularly observed within the Core Ornithology Survey Area and within 500m of the Proposed Turbines. Therefore, the potential for displacement exists. This species was recorded flying within the Core Ornithology Survey Area, within the potential collision risk zone. A collision risk assessment is required. As such, **an assessment of direct habitat loss, disturbance/displacement and collision risk has been completed.**	**Yes**
Passerines	BoCCI Red List	**All Seasons** Local Importance (lower value)	Grey wagtail, meadow pipit, redwing, stock dove, swift, whinchat and yellowhammer were observed within the Core Ornithology Survey Area. However, as per NatureScot guidance, it is generally considered that passerine bird species are not significantly impacted by wind farms due to their ecology, reproductive rates and large population sizes. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Proposed Project will have a significant effect on these species. **No pathways for significant effects were identified.**	**No**

7.4.3 Sensitivity Determination

Criteria developed by Percival (2003) for assessing bird sensitivity within the Core Ornithology Survey Area is presented in Table 7-4 (Section 7.2.4). The sensitivity of the KORs, as per Percival (2003), are listed below, including the rationale for their respective sensitivity classification.

Very High Sensitivity KORs are:

- Lesser Black-backed Gull (wintering) (SCI of the Poulaphouca Reservoir SPA)

High Sensitivity KORs are:

- Golden Plover (breeding) (nationally important population)
- Greenland White-fronted Goose (wintering) (nationally important population)
- Hen Harrier (Annex I; Ecologically sensitive species and regionally important population)
- Kingfisher (nationally important population)
- Curlew (breeding) (nationally important population)
- Lapwing (breeding) (nationally important population)
- Snipe (nationally important population)

Medium Sensitivity KORs are:

- Little Egret (Annex I; EU Birds Directive and regionally important population)
- Merlin (Annex I; EU Birds Directive and regionally important population)
- Peregrine (Annex I; EU Birds Directive and regionally important population)
- Whooper Swan (wintering) (Annex I: EU Birds Directive and regionally important population)
- Barn Owl (BoCCI Red Listed and regionally important population)
- Curlew (wintering) (BoCCI Red Listed and regionally important population)
- Kestrel (BoCCI Red Listed and regionally important population)
- Lapwing (wintering) (BoCCI Red Listed and regionally important population)
- Woodcock (BoCCI Red Listed and regionally important population)
- Buzzard (regionally important population)
- Long-eared Owl (regionally important population)
- Sparrowhawk (regionally important population)

7.5 Impact Assessment

All elements of the Proposed Project have been considered in assessing impacts on KORs. This section is structured as follows:

- Assessment of 'Do nothing' scenario;
- Assessment of the likely effects of the Proposed Wind Farm during construction, operation and decommissioning;
- Assessment of the likely effects associated with the Proposed Grid Connection during construction, operation and decommissioning;
- Assessment of the likely effects associated with the Proposed Turbine Delivery Route;
- Assessment of the likely effects on designated sites;
- Assessment of the likely effects associated with the Proposed Enhancement Areas.

7.5.1 'Do-Nothing' Scenario

If the Proposed Project were not to proceed, the Proposed Wind Farm site would continue to be managed under the requirements of the IPC licence (P0503-01) and therefore the ongoing decommissioning works, site management and environmental monitoring would continue.

Therefore, under a 'Do-Nothing' scenario, the Proposed Wind Farm site would continue to be managed as per the requirements of the IPC licence, as detailed in Chapter 4 Section 4.6.7. However, biodiversity enhancement measures proposed as part of the Proposed Project (please see Chapter 6, Appendix 6-5 for more detail), including the enhancement of Lodge Bog for the benefit of breeding waders, and wintering golden plover, whooper swan and hen harrier, as well as woodland enhancement, felling of conifers and replanting with native species, management of marsh fritillary habitat areas, linear connectivity enhancement for pollinators, and enhancement would not be implemented under the do-nothing scenario.

In the absence of the Proposed Project, natural revegetation processes would continue across the Proposed Wind Farm site. Areas of bare peat would progressively revegetate and transition through successional stages, potentially developing into heath communities, scrub or bog woodland over time, depending on local hydrological conditions. Therefore, the existing baseline of the landscape will transition from a predominantly industrial cutover peatland landscape, with open exposed peat surfaces and drainage features, to a more natural mosaic landscape of cutaway peatland, wetland and regenerating bog habitats. Scrub encroachment and woodland succession would also continue in the drier areas of the Project Site located within the Allen Bog Group. This succession from open habitat to closed would result in the Project Site becoming less suitable for open habitat species such as golden plover and lapwing. The availability of more scrub and heath habitat would temporarily create more roosting habitat for hen harrier, however as woodland coverage increases, roosting habitat availability would also decrease.

If the Proposed Project were not to proceed, the opportunity to capture a significant part of County Offaly's and County Kildare's valuable renewable energy resource would be lost, as would the opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions. The opportunity to generate local employment and investment and to diversify the local economy would also be lost. Furthermore, the opportunity to open up the Proposed Wind Farm to the public and provide amenity and recreational facilities will be lost. The health benefits nationally associated with replacing fossil fuels with renewable wind energy from the Proposed Project will be lost.

As this application also includes a Biodiversity Management Plan (Appendix 6-5) to be implemented during the development's operation, the opportunity to enhance the Project Site for biodiversity, separate to the requirements of the IPC License, at a local scale, would also be lost.

7.5.2 Likely Effects of the Proposed Wind Farm

The following sections describe potential effects on KORs that may occur during the construction, operation and decommissioning phase. The magnitude and significance of these effects are then defined according to Percival (2003), EPA (2022) and CIEEM (2024) criteria.

7.5.2.1 Golden Plover (Wintering)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Construction Phase			
Direct Habitat Loss	Golden plover were observed within the Core Ornithology Survey Area on 586 occasions. The majority of these observations related to bird calling, travelling or circling over the Core Ornithology Survey Area. Birds were observed landing and/or roosting within the Core Ornithology Survey Area on 109 occasions over the six years of surveying, with flocks ranging from 1 to 344 birds. The Core Ornithology Survey Area is an important foraging and roosting habitat for golden plover and the potential for Proposed Wind Farm to result in ecologically significant habitat loss for golden plover is likely without mitigation. The results of the waterbird distribution and abundance surveys and the wintering golden plover surveys in the wider area demonstrate that the Core Ornithology Survey Area is not the preferred habitat for golden plover with activity concentrated in large flocks at sites including The Curragh, Derrylea, Cushina, Portarlington, Castlejordan, Ballyboggan, Black River, Rogerstown, Johnstown Bridge and Clonsast. Please see Appendix 7-5, Figure 7-5-7 for locations. The land lost to permanent infrastructure footprint is small (i.e. 154ha/2.9% of the Project Site) relative to the total area within the Project Site. There is an abundance of similar suitable habitats (peatlands and improved agricultural grasslands) in the wider area which are suitable for golden plover which are outside the Project Site and that extensive areas of suitable foraging and roosting habitat will remain post construction. This habitat in the wider area is	The magnitude of the effect is assessed as low. The cross tablature of a high sensitivity species and low impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale**.**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	functionally equivalent to that found within the Core Ornithology Survey Area. Therefore, a significant effect of direct habitat loss is not anticipated.		
Disturbance	As outlined above, there were 109 records of golden plover utilising habitats within the Core Ornithology Survey Area over the six years of surveying. All of these records related to different areas of the Core Ornithology Survey Area, with no regularly repeated usage of any area recorded. Research indicates that this species is susceptible to disturbance impacts during construction works (Pearce-Higgins *et al.*, 2012). Additionally, Goodship and Furness (2022) reported mean disturbance distances of 143m for golden plover during the winter season. However, significant areas of suitable foraging and roosting habitat for the species occur greater than 143m from construction works and in the wider landscape and will be retained. In the event of disturbance, there are extensive areas of similar habitat in the wider area. Similar quality habitat is widely available, with good quality habitat abundantly present in the wider area, as agricultural grassland and arable fields can be found in the Curragh which is the stronghold for the regional population. This would likely render such an effect inconsequential. No significant effects of disturbance are anticipated at the regional, national or international level.	The magnitude of the effect is assessed as low. the cross tablature of a high sensitivity species and low impact corresponds to a **low effect significance**.	Likely short-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated as no further infrastructure is proposed.	**No Effect**	**No Effect**
Displacement and Barrier Effect	Hötker *et al.* (2006) state that golden plover will approach wind turbines to an average distance of 175m in non-breeding season, with turbine height positively correlated with displacement distance. In the present case, displacement is expected to exceed 175m, given that displacement is positively correlated with turbine height, and the Proposed Turbines are considerably	<u>Displacement from Proposed Turbines</u> The magnitude of the effect is assessed as medium. The cross	<u>Displacement from Proposed Turbines</u> Likely long-term negative effect, which is **Significant** at

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	larger than those utilised for the study. As the 175m displacement distance is unlikely to be reflective of the likely displacement of golden plover from the Proposed Turbines, due to their height, an adjustment was required. An increase of approx. a third, to 250m, was considered appropriate. A habitat suitability assessment for golden plover was undertaken within 250m of the Proposed Turbines via a site visit and associated mapping exercise in April 2026. There was 331ha of suitable habitat for golden plover within 250m of the Proposed Turbines, and a further 49ha of marginally suitable habitat which is likely to become unsuitable for golden plover before the commissioning of the Proposed Project due to continued vegetation growth. Of the 586 no. observations of golden plover within the Core Ornithology Survey Area throughout the survey period, 266 were within 250m of the Proposed Turbines. The majority of these related to birds in flight, with 21 relating to birds utilising habitats. Of the total 79 observations of golden plover utilising habitats across the Core Ornithology Survey Area, there were no regularly used areas identified, with roosting and foraging areas moving around various locations within the Core Ornithology Survey Area. Golden plover are therefore not reliant on any specific area of the Core Ornithology Survey Area and utilise habitats on an opportunistic basis. Goodship and Furness (2022) reported mean disturbance distances of 143m for golden plover during the winter season. The temporary disturbance of golden plover is possible throughout the Proposed Wind Farm during the operational phase from disturbance by maintenance vehicles and personnel visits, particularly in the vicinity of the Proposed Turbines, access roads and the Proposed Onsite Substation. However, the volume and frequency of such visits is considered to be very low and is likely to be generally minor in scale and short in duration when it occurs. Therefore, significant effects by maintenance crews along the access roads and other infrastructure (excluding the Proposed Turbines) are not anticipated.	tablature of a high sensitivity species and medium impact corresponds to a **high effect significance**. Displacement from other infrastructure The magnitude of the effect is assessed as low. the cross tablature of a high sensitivity species and low impact corresponds to a **low effect significance**. Barrier Effect The magnitude of the effect is assessed as low. the cross tablature of a high sensitivity species and low impact corresponds to a **low effect significance**.	a local, regional and national scale. Displacement from other infrastructure Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale. Barrier Effect Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	As outlined in Section 7.5.1 and Section 7.3.8.1, over the lifetime of the Proposed Wind Farm, with the gradual succession to scrub mosaic and enclosure of open habitat on shallower peat, the Project Site will likely become increasingly less suitable for open habitat species like golden plover. There is no evidence to suggest that the Project Site lies on a migratory/regular commuting route for this species, therefore barrier effect is not anticipated. Given the extent of habitat in which golden plover will be displaced (331ha), significant displacement effects are anticipated without mitigation. No significant barrier effects are anticipated at the county, national or international level.		
Collision Risk	The species was recorded flying within the potential collision height during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated at 105 collisions per year, over the operational lifetime of the Proposed Wind Farm. Annual mortality of adult golden plover has been calculated at 27% per year (Sandercock, 2003). If 105 collisions were to occur per year, it would mean that the losses at the Proposed Wind Farm would increase the annual mortality of the national population (c. 82,190) by 0.47%, the regional population (c.6,598) by 5.89%, and the local population (c.5,668) by 6.86%. The predicted collision risk is significant with regards to the local and regional population. Consequently, a comprehensive mitigation strategy is proposed as detailed in Section 7.6.	The magnitude of the effect is assessed as medium. The cross tablature of a high sensitivity species and medium impact corresponds to a **high effect significance**.	Likely long-term negative effect, which is **Significant** at a local and regional scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Decommissioning			
Direct Habitat Loss	Direct or indirect effects are not anticipated as no further infrastructure is proposed.	No Effect	No Effect
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.2 Greenland White-fronted Goose (Winter)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Construction Phase			
Direct Habitat Loss	As outlined in Section 7.4.2, there were no records of Greenland white-fronted goose utilising habitats within the Core Ornithology Survey Area over the six years of surveying. All observations within the Core Ornithology Survey Area comprised birds on migration. As such, there is no potential for impacts relating to direct habitat loss within the Proposed Wind Farm.	**No Effect**	**No Effect**
Disturbance	As outlined in Section 7.4.2, there were no records of Greenland white-fronted goose utilising habitats within the Core Ornithology Survey Area over the six years of surveying. All observations comprised of birds migrating high over the Core Ornithology Study Area. As such, there is limited potential for impacts relating to disturbance within the Proposed Wind Farm during the construction phase. In the unlikely event that disturbance were to occur, it would result in a slight deviation to the flight path of the birds migrating over the Proposed Wind Farm. Given that construction activity is likely to be localised within the Proposed Wind Farm at any one time, this deviation is likely to be small,	The magnitude of the effect is assessed as negligible. the cross tablature of a high sensitivity species and negligible impact corresponds to a **very low effect significance**.	Likely short-term imperceptible negative effect, which is **Not Significant** at the regional, national or international level geographical scale**.**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	which is insignificant in the context of a migration pathway from the Irish stronghold in Wexford to Iceland (approximately 1,500km).		
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated as no further infrastructure is proposed.	**No Effect**	**No Effect**
Displacement and Barrier Effect	As previously discussed, Greenland white-fronted geese were only observed during migration, with a maximum flock size of 108 birds observed on two occasions over six years of comprehensive surveys. This is an extremely low rate of occurrence. When on migration, Greenland white-fronted geese have previously been recorded to fly at altitudes of >2,500m when crossing the 2,500m high Greenland Ice Cap (Fox *et al.,* 2003). Other related species also fly at high elevations when migrating: Pacific greater white-fronted goose, tule white-fronted goose, lesser snow goose migrate at flight altitudes of between 2,500m and 3,500m. In summary, owing to the high-altitude flight of Greenland white-fronted geese when migratory, no interactions with turbines are anticipated. On the 30th of May 2024, information was provided by NPWS to BnM, which provided a summary of the results of a GPS satellite tagging study of migratory Greenland white-fronted geese. Based on the information provided from a recently published peer-reviewed paper by the University of Saskatoon, no significant collision risk or barrier effect is likely, given the altitude at which the geese were flying when migrating between the Wexford Slobs and Iceland. In every instance where information on migratory geese was provided (by NPWS) the geese were flying nearly ten times the height of the proposed turbines (i.e. 1,606m, 2,210m or 2,235m). This information was provided in relation to the Ballivor Wind Farm in County Westmeath; however, this information remains relevant for the Proposed Project also, as a majority of	The magnitude of the effect is assessed as negligible. the cross tablature of a high sensitivity species and negligible impact corresponds to a **very low effect significance**.	Likely long-term imperceptible negative effect, which is **Not Significant** at the regional, national or international level geographical scale**.**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	migratory Greenland white-fronted geese fly directly between Iceland and the Wexford Slobs (Fox *et al.,* 2003) at altitude. A minority stop briefly (stage) in Lough Foyle in Northern Ireland. A review of the literature shows that many species of birds including water birds like swans and geese fly at high altitudes when migrating In the unlikely event that birds would be migrating at lower altitudes, it would result in a slight deviation to the flight path of the birds migrating over the Proposed Wind Farm. Given that the Proposed Turbines are spread approximately 7.5km apart in an east-west orientation (i.e. perpendicular to the north-south migration pathway of this species), the maximum distance deviation required to avoid the Proposed Wind Farm is approximately 4km (east or west of the centre point of the Proposed Turbines), which is insignificant in the context of a migration pathway from the Irish stronghold in Wexford to Iceland (approximately 1,500km). Therefore, significant displacement or barrier effect are not anticipated.		
Collision Risk	The species was recorded flying within the potential collision height during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated a 0.032 collisions per year, over the operational lifetime of the Proposed Wind Farm. The predicted collision risk is insignificant over the 35-year life-time of the Proposed Wind Farm.	The magnitude of the effect is assessed as negligible. the cross tablature of a high sensitivity species and negligible impact corresponds to a **very low effect significance**.	Likely long-term imperceptible negative effect, which is **Not Significant** at the regional, national or international level geographical scale**.**
Decommissioning			
Direct Habitat Loss	Direct or indirect effects are not anticipated as no further infrastructure is proposed.	No Effect	No Effect

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.3 Hen Harrier (Winter)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Construction Phase			
Direct Habitat Loss	Hen harrier was recorded within the Core Ornithology Survey Area on 195 occasions over the six years surveyed. Hen harrier were recorded roosting on 13 occasions within the Core Ornithology Survey Area, eight of which overlap with the Proposed Wind Farm. No regularly used roosts were identified over the six winters, with hen harrier roost areas moving to various locations around the bog. The Project Site contains suitable foraging and roosting habitats for hen harrier. Of the 195 observations within the Core Ornithology Survey Area, 55 related to birds foraging, with the majority of observations relating to birds travelling. The land lost to permanent infrastructure footprint is small (i.e. 154ha/2.9% of the Project Site) relative to the total area within the Project Site. Furthermore, there is an abundance of similar suitable habitats (peatlands and improved agricultural grasslands) in the wider area as those found within the Project Site and that extensive areas of suitable foraging and roosting habitat will remain post construction. This habitat in the wider area is functionally equivalent to that found within the Core Ornithology Survey Area and is available to support any displaced species. Hen harrier were primarily utilising the bog habitats within the Core Ornithology Study Area, which is a habitat type that is	The magnitude of the effect is assessed as low. the cross tablature of a high sensitivity species and low impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	widespread in Core Ornithology Study Area, but outside the Proposed Wind Farm development footprint. Furthermore, suitable similar habitat is abundant in the wider surroundings of the Core Ornithology Study Area. Significant effects are not anticipated.		
Disturbance	As outlined above, hen harrier were observed within the Core Ornithology Survey Area on 195 occasions over the six winters surveyed. Hen harrier were recorded roosting on 13 occasions within the Core Ornithology Survey Area, eight of which overlapped with the Proposed Wind Farm. No regularly used roosts were identified over the six winters, with hen harrier roosts moving to various locations around the bog. The literature identifies the potential for disturbance impacts (associated with construction works) to occur between 500m and 1000m (Ruddick and Whitfield (2007) Fernández-Bellon *et al.* (2017) and Wilson *et al.* (2017)). Such disturbance is dependent on factors including topography and lines of sight. There were seven roost areas recorded within 1000m from the Proposed Wind Farm. Of these seven roost areas, three were utilised on more than one occasion (Refs: HH-c, HH-f and HH-i). There were five records of birds roosting in the 62ha area of HH-c, all in the 2024/25 winter season, however the exact roost locations in this area were not located due to poor visibility during dusk surveys. HH-f had two records, once in the 2022/23 winter and again in the 2024/25 winter. HH-i had two records, both in the most recent winter season, 2025/26. While there were some observations of birds going to roost in the same general area on more than one occasion (HH-c, HH-f and HH-i), two areas were not used in more than one year (HH-c and HH-i) or used on only two occasions (HH-f) and are not considered to be regular roosts. These roost areas are in open peatland habitats, separated from the Proposed Wind Farm by obscuring forestry and scrub. Owing to the obscuring vegetation which will remain present during the construction phase, no significant disturbance impacts are predicted on roost sites.	The magnitude of the effect is assessed as low. the cross tablature of a high sensitivity species and low impact corresponds to a **low effect significance**.	Likely short-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	In the event of temporary disturbance, there are extensive area of similar open habitat throughout the ca. 5,157ha Project Site and in the wider area. Similar quality habitat is widely available, within the Core Ornithology Survey Area where no infrastructure is located and in similar open peatland habitats to the east and west. Additionally, the rehabilitation schemes within some of these peatland habitats are likely to increase the quality of these habitats in the wider surroundings for the species and, relatedly their potential carrying capacity. The availability of alternative roosting habitats both within and surrounding the Project Site likely render such an effect inconsequential. No significant effects of disturbance are anticipated at the regional, national or international level.		
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated as no further infrastructure is proposed.	**No Effect**	**No Effect**
Displacement and Barrier Effect	As outlined above, hen harrier were observed within the Core Ornithology Survey Area on 195 occasions over the six winters surveyed. Hen harrier were recorded roosting on 18 occasions (all individual birds), 13 of which were within the Core Ornithology Survey Area. No regularly used roosts were identified over the six winters, with hen harrier roosts moving to various locations around the bog. Ruddock and Whitfield (2007) noted disturbance displacement to a distance of 500-750m for hen harrier breeding and roosting locations. There were seven roost areas recorded within 750m from the nearest Proposed Turbines. Impacts associated with displacement (e.g. turbine avoidance) on these activities were considered for the operational phase.	<u>Key (Roosting) Habitat</u> The magnitude of the effect is assessed as medium. The cross tablature of a high sensitivity species and medium impact corresponds to a **high effect significance**. <u>Foraging Habitat</u> The magnitude of the effect is assessed as low. the cross	<u>Key (Roosting) Habitat</u> Likely long-term negative effect, which is **Significant** at the local and regional scale. <u>Foraging Habitat</u> Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.

	Key (roosting) habitat As mentioned, Ruddock and Whitfield (2007) noted disturbance displacement to a distance of 500-750m for hen harrier breeding and roosting locations. There were seven roosting areas identified within 750m of the Proposed Turbines (Refs: HH-c, HH-d, HH-f, HH-g, HH-h, HH-i and HH-j). However, there are extensive area of similar open habitat that will remain within the Project Site and in the wider area. Similar quality habitat is widely available, in similar open peatland habitats to the east and west. This habitat in the wider area is functionally equivalent to that found within the Core Ornithology Survey Area and is available to support any displaced species. Notwithstanding this, due to the separation distance from the identified roost areas to Proposed Turbines, onsite foot traffic and the number of roosts being impacts, displacement impacts are predicted. Consequently, a comprehensive mitigation strategy is proposed as detailed in Section 7.6. Foraging habitat Survey results show a regular rate of habitat usage within the Core Ornithology Survey Area. Of the 195 observations within the Core Ornithology Survey Area, 55 related to birds foraging, with the majority of observations relating to birds travelling. This demonstrates that the Proposed Wind Farm is utilised by foraging hen harrier however, there are extensive areas of suitable foraging habitat within the Core Ornithology Survey Area which are greater than 500m from the Proposed Turbines and operational activities, as large areas of land within the Core Ornithology Survey Area will be rehabilitated in the future and roosting habitats will continue to be available. This limits the potential for significant loss of foraging habitat through displacement.	tablature of a high sensitivity species and low impact corresponds to a **low effect significance**. Barrier Effect The magnitude of the effect is assessed as low. the cross tablature of a high sensitivity species and low impact corresponds to a **low effect significance**.	Barrier Effect Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	Furthermore, peatland rehabilitation in the wider landscape, is likely to increase the quality of many (formerly cutover) habitat for this species. Particularly so on areas of deeper peat that are more likely to remain open habitat in the longer term. Given the abundance of similar suitable habitat (peatlands in the wider area and those found within the Core Ornithology Survey Area but greater than 500m from the Proposed Turbines) and that extensive areas of suitable foraging habitats that will remain post construction, no significant impacts are predicted on foraging hen harrier. The temporary disturbance of this species is possible throughout the Proposed Wind Farm during the operational phase from disturbance by maintenance vehicles and personnel visits, particularly in the vicinity of the Proposed Turbines, access roads and the Proposed Onsite Substation. However, the volume and frequency of such visits is considered to be very low and is likely to be generally minor in scale and short in duration when it occurs. It is not anticipated that amenity volumes will add to background levels of disturbance currently occurring in the area. Therefore, significant effects by maintenance crews and amenity foot-traffic along the access roads and other infrastructure (excluding the Proposed Turbines) are not anticipated. There is no evidence to suggest that the Proposed Wind Farm lies on a migratory/ regular commuting route for the species therefore barrier effect is not anticipated. As outlined in Section 7.5.1 and Section 7.3.8.1, over the lifetime of the Proposed Wind Farm, a majority of the Proposed Wind Farm will likely develop a scrub mosaic on shallower peat. The Proposed Wind Farm will		

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	likely remain suitable initially until the scrub encloses and/or matures to woodland. In summary, significant displacement is predicted on a precautionary basis for the seven roost areas identified in proximity to the Proposed Turbines. There is no significant impact predicted on foraging hen harrier or barrier effect.		
Collision Risk	The species was recorded flying within the potential collision height during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated a 0.017 collisions per year, or less than one bird over the operational lifetime of the Proposed Wind Farm. Annual mortality of adult hen harrier has been calculated at 19% per year (Picozzi, 1984). If 0.017 collisions were to occur per year, it would mean that the losses at the Proposed Wind Farm would increase the annual mortality of the local population (c.2) by 4.47%. The predicted collision risk is low.	The magnitude of the effect is assessed as low. the cross tablature of a high sensitivity species and low impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale**.**
Decommissioning			
Direct Habitat Loss	Direct or indirect effects are not anticipated as no further infrastructure is proposed.	No Effect	No Effect
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.4 Kingfisher (All Seasons)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Construction Phase			
Direct Habitat Loss	Kingfisher were observed within the Core Ornithology Survey Area on 51 occasions with a maximum of two birds recorded. The majority of observations were of birds travelling and foraging. No breeding activity was observed within the Core Ornithology Survey Area over the six years of surveying and kingfisher observations were widespread throughout the Core Ornithology Survey Area, not concentrated in any specific area. The Core Ornithology Survey Area contains an extensive network of steep-sided bog drains analogous to the habitat in which nests for this species are found. The land lost to the permanent infrastructure footprint is small (i.e. 154ha/2.9% of the Project Site) relative to the total area within the Project Site. Given the extensive network of suitable bog drains that will remain within the Core Ornithology Survey Area post construction and the setback distances of the majority of infrastructure from the major drains and rivers within the Core Ornithology Survey Area, no significant impacts are predicted. No significant effects of direct habitat loss are anticipated at the regional, national or international level.	The magnitude of the effect is assessed as low. the cross tablature of a high sensitivity species and low impact corresponds to a low effect significance.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.
Disturbance	As outlined above, no breeding activity was identified for this species over the six years of surveying. Goodship and Furness (2022) found that kingfisher showed a low to medium sensitivity to human disturbance with birds being disturbed by human activity within 9.5m to 24.6m. Therefore, construction activity is unlikely to deter flight activity within the Proposed Wind Farm,	The magnitude of the effect is assessed as negligible. the cross tablature of a high sensitivity species and negligible impact corresponds to a **very low effect significance**.	Likely short-term imperceptible negative effect, which is **Not Significant** at the regional, national or international level geographical scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	particularly given the setback distances of the majority of construction works from the major drains and rivers within the Core Ornithology Survey Area. Furthermore, there will be substantial areas of undisturbed suitable habitat within the Core Ornithology Survey Area and the wider surroundings during the construction phase. No significant effects of disturbance are anticipated.		
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated as no further infrastructure is proposed.	**No Effect**	**No Effect**
Displacement and Barrier Effect	Kingfisher were observed within the Core Ornithology Survey Area on 51 occasions over six years of surveying. Displacement associated with operational turbines will not result in a measurable reduction in the number of kingfisher within the Core Ornithology Survey Area. Furthermore, there will be substantial areas of suitable habitats within the Core Ornithology Survey Area and the wider surroundings during the operational phase. While no breeding activity for kingfisher was recorded, the Core Ornithology Survey Area contains an extensive network of steep-sided big drains analogous to the habitats in which kingfisher nest sites are found. A study on outdoor recreational activities in the vicinity of kingfisher nest sites found that such activities have minimal effects on kingfisher, with only fishing and boating activities noted as having any effects over the longer term, although small (Schweizer *et al.*, 2024). Birds were also noted to habituate at sites with high levels of human activity. As such, the operation of the Proposed Wind Farm is unlikely to result in displacement effects on kingfisher given the activities associated with managing and maintaining the Proposed Wind Farm are similar to those outlined within this study.	The magnitude of the effect is assessed as negligible. the cross tablature of a high sensitivity species and negligible impact corresponds to a **very low effect significance**.	Likely long-term imperceptible negative effect, which is **Not Significant** at the regional, national or international level geographical scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	The temporary disturbance of this species is possible throughout the Proposed Wind Farm during the operational phase from disturbance by maintenance vehicles and personnel visits, particularly in the vicinity of the Proposed Turbines, access roads and the Proposed Onsite Substation. However, the volume and frequency of such visits is considered to be very low and is likely to be generally minor in scale and short in duration when it occurs. It is not anticipated that amenity volumes will add to background levels of disturbance currently occurring in the area. Therefore, significant effects by maintenance crews and amenity foot-traffic along the access roads and other infrastructure (excluding the Proposed Turbines) are not anticipated Significant barrier effect is not anticipated given that kingfisher, in general, commute along linear water bodies (such as large drainage ditches and rivers), therefore the Proposed Wind Farm will not hinder any commuting corridors for this species. As outlined in Section 7.5.1 and Section 7.3.8.1, over the lifetime of the Proposed Wind Farm, the succession to scrub mosaic on shallower peat, the Project Site will likely become increasingly less suitable for open habitat species. There will likely be no change to the foraging and potential nesting habitats for kingfisher. No significant displacement and barrier effects are anticipated.		
Collision Risk	This species was not recorded flying at the potential collision height during the extensive vantage point survey work undertaken. Collision related mortality is not likely to significantly impact this species, based on available data.	**No Effect**	**No Effect**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Decommissioning			
Direct Habitat Loss	Direct or indirect effects are not anticipated as no further infrastructure is proposed.	No Effect	No Effect
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.5 Little Egret (All Seasons)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Construction Phase			
Direct Habitat Loss	Little egret were observed within the Core Ornithology Survey Area on 25 occasions with a maximum of seven birds recorded. The majority of observations were of birds travelling and foraging. The land lost to the permanent infrastructure footprint is small (i.e. 154ha/2.9% of the Project Site) relative to the total area within the Project Site. Given the extensive network of suitable bog drains that will remain within the Core Ornithology Survey Area post construction and the setback distances of the majority of infrastructure from the major drains and rivers within the Core Ornithology Survey Area, no significant impacts are predicted. No significant effects of direct habitat loss are anticipated at the regional, national or international level.	The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.
Disturbance	Little egret were observed within the Core Ornithology Survey Area on 25 occasions with a maximum of seven birds recorded. The majority of	The magnitude of the effect is assessed as low. the cross	Likely short-term slight negative effect, which is **Not**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	observations were of birds travelling and foraging. No breeding territory was identified. Few studies have been done on the effects of disturbance on little egret. It is assumed that temporary disturbance will occur around the Proposed Wind Farm during construction works. There was a low number of little egret records within the Core Ornithology Survey Area over six years of surveying and no breeding was identified, therefore this species is not considered to be dependent on the Project Site or surrounds for roosting, foraging or breeding. Furthermore, there will be substantial areas of undisturbed suitable habitat within the Core Ornithology Survey Area and the wider surroundings during the construction phase. This habitat in the wider area is functionally equivalent to that found within the Core Ornithology Survey Area and is available to support any displaced species. Based on this, no significant effects of disturbance are anticipated at the regional, national or international scale.	tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	**Significant** at the regional, national or international level geographical scale.
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated as no further infrastructure is proposed.	**No Effect**	**No Effect**
Displacement and Barrier Effect	As outlined above, little egret were observed within the Core Ornithology Survey Area on 25 occasions with a maximum of seven birds recorded. The majority of observations were of birds travelling and foraging. No breeding territory was identified. Few studies have been done on the effects of disturbance on little egret. There was a low number of little egret records within 500m of the Proposed Turbines, and no breeding site was identified over the survey period, therefore	The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	this species is not considered to be dependent on the Project Site or surrounds for roosting, foraging or breeding. The temporary disturbance of this species is possible throughout the Proposed Wind Farm during the operational phase from disturbance by maintenance vehicles and personnel visits, particularly in the vicinity of the Proposed Turbines, access roads and the Proposed Onsite Substation. However, the volume and frequency of such visits is considered to be very low and is likely to be generally minor in scale and short in duration when it occurs. It is not anticipated that amenity volumes will add to background levels of disturbance currently occurring in the area. Therefore, significant effects by maintenance crews and amenity foot-traffic along the access roads and other infrastructure (excluding the Proposed Turbines) are not anticipated Significant barrier effect is not anticipated given that little egret, in general, commute along linear water bodies (such as large drainage ditches and rivers), therefore the Proposed Wind Farm will not hinder any commuting corridors for this species. As outlined in Section 7.5.1 and Section 7.3.8.1, over the lifetime of the Proposed Wind Farm, there will likely be no change to the foraging and potential nesting habitats for little egret. Based on this, no significant displacement or barrier effects are anticipated at the regional, national or international scale.		
Collision Risk	The species was recorded flying within the potential collision height during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated a 0.009 collisions per year, or less than one bird over the operational lifetime of the Proposed Wind Farm.	The magnitude of the effect is assessed as negligible. the cross tablature of a medium sensitivity species and negligible impact	Likely long-term imperceptible negative effect, which is **Not Significant** at the regional,

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	Annual mortality of adult little egret has been calculated at 28.8% per year (Hafner *et al.*, 1998). If 0.009 collisions were to occur per year, it would mean that the losses at the Proposed Wind Farm would increase the annual mortality of the regional population (c.11) by 0.28%. The predicted collision risk is negligible. No significant effects are anticipated.	corresponds to a **very low effect significance**.	national or international level geographical scale.
Decommissioning			
Direct Habitat Loss	Direct or indirect effects are not anticipated as no further infrastructure is proposed.	No Effect	No Effect
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.6 Merlin (All Seasons)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Construction Phase			
Direct Habitat Loss	Merlin were observed within, or partially within, the Core Ornithology Survey Area on 68 occasions over the six years of surveying. There were no breeding territories identified within Core Ornithology Survey Area or wider area. There were no observations of roosting within the Core Ornithology Survey Area.	The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	Of the total 68 observations of merlin within the Core Ornithology Survey Area, the majority were related to birds observed travelling, with 34 observations of birds actively hunting. While it can be assumed that birds observed travelling may have also been hunting within the Core Ornithology Survey Area, this is nonetheless a low rate of occurrence over the six years of surveying in light of the extensive survey effort undertaken. This demonstrates a lack of dependence on the Project Site for foraging. Significant effects are not predicted particularly given the low levels of activity recorded within the Project Site and that the land lost to the permanent infrastructure is small (i.e. 154ha/2.9% of the Project Site) relative to the total area within the Project Site. Furthermore, extensive areas of suitable foraging habitats will remain post construction and that there is an abundance of suitable habitats in the surrounding area. This habitat in the wider area is functionally equivalent to that found within the Core Ornithology Survey Area and is available to support any displaced species. No significant effects of direct habitat loss are anticipated at the regional, national or international level.		
Disturbance	As outlined above, merlin were observed with, or partially within, the Core Ornithology Survey Area on 68 occasions over the six years of surveying. There were no observations of breeding or roosting within the Core Ornithology Survey Area. A disturbance buffer zone of greater than 200m is recommended for merlin during the non-breeding season (Goodship and Furness, 2022). Of the 68 total observations of merlin within the Core Ornithology Survey Area, 51 did not overlap with the Proposed Project permanent infrastructure footprint and were greater than 200m from the Proposed Turbines. On a precautionary basis, it is	The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	Likely short-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale**.**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	assumed that some temporary disturbance will occur around the Proposed Wind Farm during the construction works. As outlined above, survey results show a low rate of habitat usage within the Core Ornithology Survey Area, with 34 observations of foraging behaviour over the six years of surveying. This demonstrates a lack of dependence on the Core Ornithology Survey Area for foraging. In the event of temporary disturbance, there are extensive areas of similar open habitat in the wider area, including within the Core Ornithology Survey Area but greater than 200m from the Proposed Wind Farm. Similar quality habitat is widely available, in similar open peatland habitats to the east and west. This habitat in the wider area is functionally equivalent to that found within the Core Ornithology Survey Area and is available to support any displaced species. Additionally, the rehabilitation schemes within some of these peatland habitats (on deep peat) are likely to increase the quality of these habitats in the wider surroundings for the species and, relatedly, their potential carrying capacity. These factors likely render any effect inconsequential. No significant effects of disturbance are anticipated at the regional, national or international level.		
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated as no further infrastructure is proposed.	**No Effect**	**No Effect**
Displacement and Barrier Effect	Few studies have been done on the effects of disturbance on merlin. Goodship and Furness (2022) suggest disturbance up to 200m from humans can occur during the winter season, and 300-500m during the breeding season (NatureScot, 2022). In the absence of research specific to wind turbine displacement, it is assumed that operating turbines will result in a similar distance for displacement.	The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale**.**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	Merlin were observed within a 500m radius of proposed turbines on 48 occasions and the majority of observations were of birds travelling and/or hunting over the area. Significant effects are not anticipated given that extensive areas of suitable foraging habitat exist and will remain in the wider area. Peatland rehabilitation in the wider landscape is likely to increase the value of these (formerly cutover) habitats for this species. Particularly so on areas of deeper peat that are more likely to remain open habitat in the longer term. Furthermore, onsite habitats are not considered unique to the Project Site. Habitats in the wider area are functionally equivalent to those found within the Core Ornithology Survey Area and are available to support any displaced species. The temporary disturbance of this species is possible throughout the Proposed Wind Farm during the operational phase from disturbance by maintenance vehicles and personnel visits, particularly in the vicinity of the Proposed Turbines, access roads and the Proposed Onsite Substation. However, the volume and frequency of such visits is considered to be very low and is likely to be generally minor in scale and short in duration when it occurs. It is not anticipated that amenity volumes will add to background levels of disturbance currently occurring in the area. Therefore, significant effects by maintenance crews and amenity foot-traffic along the access roads and other infrastructure (excluding the Proposed Turbines) are not anticipated. There is no evidence to suggest that the Proposed Wind Farm lies on a migratory/ regular commuting route for the species therefore barrier effect is not anticipated. As outlined in Section 7.5.1 and Section 7.3.8.1, over the lifetime of the Proposed Wind Farm, with the succession to scrub mosaic on shallower peat,		

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	the Project Site will likely become increasingly less suitable for open habitat species like merlin. No significant displacement and barrier effects are anticipated at the regional, national or international level.		
Collision Risk	The species was recorded flying within the potential collision height during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated a 0.004 collisions per year, or less than one bird over the operational lifetime of the Proposed Wind Farm. Annual mortality of adult merlin has been calculated at 38% per year (Lieske et al., 2000). If 0.004 collisions were to occur per year, it would mean that the losses at the Proposed Wind Farm would increase the annual mortality of the regional population (c.4) by 0.26%. The predicted collision risk is negligible. No significant effects are anticipated.	The magnitude of the effect is assessed as negligible. the cross tablature of a medium sensitivity species and negligible impact corresponds to a **very low effect significance**.	Likely long-term imperceptible negative effect, which is **Not Significant** at the regional, national or international level geographical scale**.**
Decommissioning			
Direct Habitat Loss	Direct or indirect effects are not anticipated as no further infrastructure is proposed.	No Effect	No Effect
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.7 Peregrine (All Seasons)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Construction Phase			
Direct Habitat Loss	Peregrine were observed within, or partially within, the Core Ornithology Survey Area on 101 occasions over the six years of surveying. There were two breeding sites identified, 660m (occupied in 2020, 2021, 2022, 2023, 2024 and 2025) and 1.7km (occupied in 2024) from the Core Ornithology Survey Area. Both nest sites are located outside of the Project Site and there is little to no suitable nesting habitat for peregrine within the Project Site. This limits the potential for ecologically significant effects on nesting sites as a result. Peregrine were observed hunting within the Core Ornithology Survey Area on 23 occasions. However, the land lost to the permanent infrastructure footprint is small (i.e. 154ha/2.9% of the Project Site) relative to the total area within the Project Site. Given the abundance of similar suitable habitats (peatlands and improved agricultural grasslands) supporting similar prey species in the wider area as those found within the Proposed Wind Farm, and that extensive areas of suitable foraging habitat will remain post construction, no significant impacts are predicted. No significant effects of direct habitat loss are anticipated at the regional, national or international level.	The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.
Disturbance	As outlined above, peregrine were observed within, or partially within, the Core Ornithology Survey Area on 101 occasions over the six years of surveying. There was a confirmed breeding site 660m from the Core Ornithology Survey Area as well as a probable territory 1.7km from the Core Ornithology Survey Area. The nearest Proposed Turbine is over 2km from these nest sites and therefore beyond the potential for disturbance effects. The closest infrastructure is an access road, which is approximately 400m from the confirmed nest site.	The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	Likely short-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	NatureScot (2022) found that breeding peregrine falcons can be disturbed up to 750m. However, given that the pair breeding at the confirmed nest site are already accustomed to similar activity as those during the construction phase (i.e. these birds are accustomed to the works ongoing at the Edenderry Power Plant), significant disturbance effects on this nest site are not anticipated. Construction works are unlikely to discourage flight activity or hunting in the vicinity of the Proposed Wind Farm, particularly given peregrine has been documented to become accustomed to various sources of human disturbance (Ruddock *et al.*, 2007). Furthermore, peregrine is a wide ranging, generalist species that will hunt within a wide variety of habitats which are not scarce in the local area, or unique to the Proposed Wind Farm. This habitat in the wider area is functionally equivalent to that found within the Core Ornithology Survey Area and is available to support any displaced species It is therefore reasonable to conclude that following a period of habituation, the population will become accustomed to the construction activity during the construction phase. No significant effects of disturbance are anticipated at the regional, national or international level.		
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated as no further infrastructure is proposed.	**No Effect**	**No Effect**
Displacement and Barrier Effect	As previously discussed, peregrine were observed with, partially within, 500m of Proposed Turbines on 60 occasions over the six years of surveying. There was a confirmed breeding site 660m from the Core Ornithology Survey Area as well as a probable territory 1.7km from the Core Ornithology Survey Area.	The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	NatureScot (2022) found that breeding peregrine falcons can be disturbed up to 750m. In the absence of research specific to wind turbine displacement, it is assumed that operating turbines will result in a similar distance for displacement. The identified nest sites (see above) are situated over 2km from the nearest Proposed Turbines and is therefore located outside the disturbance and displacement distance for peregrine during operation. Therefore, no significant effects of disturbance or displacement are anticipated on any breeding territories during operation. Peregrine is a wide ranging, generalist species that will hunt within a wide variety of habitats which are not scarce in the local area, or unique to the Proposed Wind Farm. The availability of alternative suitable habitats in the surroundings limits the potential for significant displacement effects. Furthermore, peregrine has been documented to become accustomed to various sources of human disturbance (Ruddock *et al.*, 2007). It is, therefore, reasonable to conclude that following a period of habituation, the population will become accustomed to the Proposed Wind Farm within the landscape. The temporary disturbance of this species is possible throughout the Proposed Wind Farm during the operational phase from disturbance by maintenance vehicles and personnel visits, particularly in the vicinity of the Proposed Turbines, access roads and the Proposed Onsite Substation. However, the volume and frequency of such visits is considered to be very low and is likely to be generally minor in scale and short in duration when it occurs. It is not anticipated that amenity volumes will add to background levels of disturbance currently occurring in the area. Therefore, significant effects by maintenance crews and amenity foot-traffic along the access roads and other infrastructure (excluding the Proposed Turbines) are not anticipated.	corresponds to a **low effect significance**.	

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	There is no evidence to suggest that the Proposed Wind Farm lies on a migratory/ regular commuting route for the species therefore barrier effect is not anticipated. As outlined in Section 7.5.1 and Section 7.3.8.1, over the lifetime of the Proposed Wind Farm, with the succession to scrub mosaic on shallower peat, the Project Site will likely become increasingly less suitable for open habitat species like peregrine. No significant displacement and barrier effects are anticipated at the regional, national or international level.		
Collision Risk	The species was recorded flying within the potential collision height during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated a 0.059 collisions per year, or less than one bird over the operational lifetime of the Proposed Wind Farm. Annual mortality of adult peregrine has been calculated at 19% per year (Craig *et al.*, 2004). If 0.059 collisions were to occur per year, it would mean that the losses at the Proposed Wind Farm would increase the annual mortality of the regional population (c.17) by 1.8%. The predicted collision risk is negligible. No significant effects are anticipated.	The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale**.**
Decommissioning			
Direct Habitat Loss	Direct or indirect effects are not anticipated as no further infrastructure is proposed.	No Effect	No Effect
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.8 Whooper Swan (Winter)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Construction Phase			
Direct Habitat Loss	Whooper swan were observed within, or partially within, the 500m radius of Proposed Turbines on 249 occasions. Roosting was recorded across a total of 10 areas within the Core Ornithology Survey Area, with a maximum of seven areas being used in any one season. The Core Ornithology Survey Area was used for overnight roosting, however roosts frequently moved around the Core Ornithology Survey Area as water levels varied. The majority of observations of birds landing/roosting related to three areas (WS-d, WS-h and WS-i), with a total of 52 observations (17, 26 and 9 respectively). The maximum number of birds recorded roosting was 131 birds (WS-h). The other seven areas were used infrequently and sporadically throughout the Core Ornithology Study Area over the six years of surveying, in reflection of the varied levels of flooding throughout the bog. Proposed Turbines are located directly within three roost areas (WS-g, WS-i and WS-l). This will likely result in the effective loss of these areas as roosting habitat for whooper swan however as noted, these are not regularly used roost areas and this species moves to different roost areas as water levels vary. Nonetheless, without intervention the loss of roosting habitat from direct habitat loss is assessed as significant at the regional level. Consequently, a comprehensive mitigation strategy is proposed as detailed in Section 7.6.	The magnitude of the effect is assessed as high. the cross tablature of a medium sensitivity species and high impact corresponds to a **medium effect significance**.	Likely long-term negative effect, which is **Significant** at the local and regional scale.
Disturbance	As outlined above, whooped swan were regularly recorded within the Core Ornithology Survey Area, with roosting recorded across a total of 10 areas.	The magnitude of the effect is assessed as high. the cross tablature of a medium sensitivity species and high impact	Likely short-term negative effect, which is **Significant** at the local and regional scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	A disturbance buffer zone of 200-600m is recommended for whooper swan during the non-breeding season (Goodship & Furness, 2022). Turbines are proposed within 200m of identified roosting areas WS-g, WS-h, WS-i, WS-k, WS-l and WS-n) and within 600m of roosting areas WS-b, WS-c, WS-d, WS-f, WS-g, WS-h, WS-i, WS-j, WS-k, WS-l, WS-m and WS-n. As detailed above, infrastructure is proposed within some of these areas and construction works would be required in seven of these areas. Therefore, there is potential for these construction works to result in disturbance to roosting whooper swan. Furthermore, several roost/foraging areas will continue to exist outside the 600m disturbance buffer and will remain available for future roosting and foraging. Without intervention, the potential disturbance to roosting areas during the construction phase is assess as significant at the regional level. Consequently, a comprehensive mitigation strategy is proposed as detailed in Section 7.6.	corresponds to a **medium effect significance**.	
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated as no further infrastructure is proposed.	**No Effect**	**No Effect**
Displacement and Barrier Effect	As outlined above, whooper swan were regularly recorded within the Core Ornithology Survey Area, with roosting recorded across a total of 10 areas. A study of whooper swan non-breeding activity from eight European wind farms showed displacement effects from within a mean minimum distance of 150m from the base of wind turbines (Hötker *et al.,* 2006). Exclusion from habitat around turbines has also been identified up to 300m in some cases (Percival, 2003).	Displacement from Proposed Turbines The magnitude of the effect is assessed as high. The cross tablature of a medium sensitivity species and high impact corresponds to a **medium effect significance**.	Displacement from Proposed Turbines Likely long-term negative effect, which is **Significant** at the local and regional scale. Displacement from other infrastructure

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	Turbines are proposed within 150m of identified roosting areas WS-g, WS-h, WS-i, WS-l and WS-n and within 300m of roosting areas WS-g, WS-h, WS-i, WS-l, WS-k, WS-m and WS-n. As such, there is potential for the presence of the proposed turbines to displace whooper swan from 7 of the 10 identified roost areas. However, several roost/foraging areas will continue to exist outside the 600m disturbance buffer and will remain available for future roosting and foraging. Without intervention, the potential displacement of whooper swan from roosting areas is assessed as significant at the regional level. Consequently, a comprehensive mitigation strategy is proposed as detailed in Section 7.6. Management and servicing of the wind farm will not add significantly to the background levels of disturbance currently occurring in the area. The temporary disturbance of whooper swan is possible throughout the Proposed Wind Farm during the operational phase from disturbance by maintenance vehicles and personnel visits, particularly in the vicinity of the Proposed Turbines, access roads and the Proposed Onsite Substation. However, the volume and frequency of such visits is considered to be very low and is likely to be generally minor in scale and short in duration when it occurs. It is not anticipated that amenity volumes will add to background levels of disturbance currently occurring in the area. Therefore, significant effects by maintenance crews and amenity foot-traffic along the access roads and other infrastructure (excluding the Proposed Turbines) are not anticipated. Therefore, significant effects by maintenance crews along the access roads and other infrastructure (excluding the Proposed Turbines) are not anticipated. The flight activity for this species over six winters was reviewed and there were no patterns or regular directional flights to suggest that the Proposed Wind Farm lies on a migratory/ regular commuting route for the species and it is	Displacement from other infrastructure The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**. Barrier Effect The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale. Barrier Effect Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	likely that flights were related to the resident wintering population within the Core Ornithology Survey Area, therefore barrier effect is not anticipated. As outlined in Section 7.5.1 and Section 7.3.8.1, over the lifetime of the Proposed Wind Farm, a majority of the Project Site will likely develop a scrub mosaic on shallower peat. the Project Site will likely remain suitable initially until the scrub encloses and/or matures to woodland. This encroachment of woody vegetation is likely to discourage whooper swan use.		
Collision Risk	The species was recorded flying within the potential collision height during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated a 0.367 collisions per year, or one bird every 4 years over the operational lifetime of the Proposed Wind Farm. Annual mortality of adult whooper swan has been calculated at 20% per year (Brazil, 2003). If 0.367 collisions were to occur per year, it would mean that the losses at the Proposed Wind Farm would increase the annual mortality of the regional population (c.414) by 0.44%. The predicted collision risk is negligible.	The magnitude of the effect is assessed as negligible. the cross tablature of a medium sensitivity species and negligible impact corresponds to a **very low effect significance**.	Likely long-term imperceptible negative effect, which is **Not Significant** at the regional, national or international level geographical scale**.**
Decommissioning			
Direct Habitat Loss	Direct or indirect effects are not anticipated as no further infrastructure is proposed.	No Effect	No Effect
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.9 Lesser Black-backed Gull (Winter)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Construction Phase			
Direct Habitat Loss	Lesser black-backed gull were frequently observed commuting over the Core Ornithology Survey Area and infrequently observed foraging or roosting within the Core Ornithology Survey Area. The majority of observations were of birds commuting over the Project Site. The land lost to the permanent infrastructure footprint is small (i.e. 154ha/2.9% of the Project Site) relative to the total area within the Project Site. This species was not dependent on the Project Site for foraging or roosting, given how infrequently the Core Ornithology Survey Area was utilised by birds. Furthermore, substantial areas of undisturbed suitable foraging habitats will remain both within the Project Site and the wider surroundings post-construction. This habitat in the wider area is functionally equivalent to that found within the Core Ornithology Survey Area and is available to support any displaced species. Given the abundance of similar suitable habitats (peatlands and improved agricultural grasslands) supporting this species in the wider area as those found within the Proposed Wind Farm, and that extensive areas of suitable foraging habitat will remain post construction, no significant impacts are predicted. No significant effects of direct habitat loss are anticipated at the regional, national or international level.	The magnitude of the effect is assessed as negligible. the cross tablature of a very high sensitivity species and negligible impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale**.**
Disturbance	The majority of observations were of birds commuting over the Core Ornithology Survey Area, with birds infrequently observed utilising the habitats within the Project Site. Disturbance from construction of the Proposed Wind Farm is unlikely to give rise to significant impacts given the abundance of suitably similar habitats (improved agricultural grassland and peatland	The magnitude of the effect is assessed as negligible. the cross tablature of a very high sensitivity species and negligible	Likely short-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	habitats) in the wider area surrounding the Proposed Wind Farm. Furthermore, lesser black-backed gull are a wide-ranging species in both the breeding and winter season (Thaxter *et al.*, 2025), and therefore if disturbance were to occur within the Project Site, it would not mean the loss of a scarce resource for the local population. No significant effects of direct habitat loss are anticipated at the regional, national or international level.	impact corresponds to a **low effect significance**.	
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated as no further infrastructure is proposed.	**No Effect**	**No Effect**
Displacement and Barrier Effect	The majority of observations were of birds commuting over the Core Ornithology Survey Area, with birds infrequently observed utilising the habitats within the Project Site. Displacement of lesser black-backed gull due to the presence of turbines has not been reported. However, lesser black-backed gull are wide-ranging species in the winter season, and therefore if displacement were to occur within the Project Site, it would not mean the loss of a scarce resource for the population that occur locally. Furthermore, the suitable habitats present (peatlands and improved agricultural grasslands) within the Project Site are not unique to the Project Site and are abundant in the wider surroundings. This habitat in the wider area is functionally equivalent to that found within the Core Ornithology Survey Area and is available to support any displaced species. The temporary disturbance of this species is possible throughout the Proposed Wind Farm during the operational phase from disturbance by maintenance vehicles and personnel visits, particularly in the vicinity of the Proposed Turbines, access roads and the Proposed Onsite Substation. However, the volume and frequency of such visits is considered to be very low and is likely	The magnitude of the effect is assessed as negligible. the cross tablature of a very high sensitivity species and negligible impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	to be generally minor in scale and short in duration when it occurs. It is not anticipated that amenity volumes will add to background levels of disturbance currently occurring in the area. Therefore, significant effects by maintenance crews and amenity foot-traffic along the access roads and other infrastructure (excluding the Proposed Turbines) are not anticipated. There is no evidence to suggest that the Proposed Wind Farm lies on a migratory/ regular commuting route for the species given that flights across the Proposed Wind Farm appear random in nature, therefore barrier effect is not anticipated. Any minor alterations to the flight paths of transiting birds due to the presence of the Proposed Turbines is not likely to result in significant effects. As outlined in Section 7.5.1 and Section 7.3.8.1, over the lifetime of the Proposed Wind Farm, with the succession to scrub mosaic on shallower peat, the Project Site will likely become increasingly less suitable for open habitat species like lesser black-backed gull. Based on this, no significant displacement or barrier effects are anticipated at the county, national or international scale.		
Collision Risk	The species was recorded flying within the potential collision height during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated as 0.397 collisions per year. Regional Population Annual mortality of adult lesser black-backed gull has been calculated at 9% per year (Wanless *et al.*, 1996). If 0.397 collisions were to occur per year it	The magnitude of the effect is assessed as low. the cross tablature of a very high sensitivity species and negligible impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the local, regional, national or international level geographical scale**.**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	would mean that the losses at the Proposed Wind Farm would increase the annual mortality of the regional population (c.1,444) by 0.3%. Poulaphouca Reservoir SPA Population The population identified within the Core Ornithology Study Area are likely to be part of two distinct but overlapping wintering populations, the regional population which occur within the foraging range of the Project Site (31km) and the population that occur within the Poulaphouca Reservoir SPA. To determine the significance of the collision risk at the Proposed Wind Farm, an assessment of the impact on the regional population and the Poulaphouca Reservoir SPA was undertaken. The proportion of the overall regional population for each population (SPA and non-SPA birds) was calculated. For the purpose of the evaluation, 44% of the population were considered to be within the Poulaphouca Reservoir SPA and the remaining 56% are considered to be non-SPA birds. To apportion collision risk (quantitatively) it was assumed the origin of the observed bird was present in the same ratio, i.e. 44:56, for the SPA and wider county population respectively. Following this apportioning, 44% of the collisions which occur at the Proposed Wind Farm could potentially impact the Poulaphouca Reservoir SPA population based on these assumptions. Annual mortality of adult lesser black-backed gull has been calculated at 9% per year (Wanless *et al.*, 1996). If 0.17 collisions were to occur per year it would mean that the losses at the Proposed Wind Farm would increase the annual mortality of the Poulaphouca Reservoir SPA population (c.651) by 0.29%.		

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Decommissioning			
Direct Habitat Loss	Direct or indirect effects are not anticipated as no further infrastructure is proposed.	No Effect	No Effect
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.10 Barn Owl (All Seasons)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Construction Phase			
Direct Habitat Loss	Breeding was confirmed in the 2021 and 2022 breeding seasons 487m from the Core Ornithology Survey Area. Breeding was confirmed at a second location, 1.5km from the Core Ornithology Survey Area in 2025. Both identified nest sites are situated outside the Core Ornithology Study Area and do not overlap with the Proposed Project permanent infrastructure footprint, and there is limited to no suitable breeding habitats for barn owl within the Project Site. As such, there is no potential for habitat loss associated with the Proposed Wind Farm to results in a reduction of suitable barn owl breeding habitat. Direct loss of foraging habitat relative to its availability within the Proposed Wind Farm will be minimal. The land lost to the permanent infrastructure footprint is small (i.e. 154ha/2.9% of the Project Site) relative to the total area within the Project Site. Furthermore, substantial areas of undisturbed suitable foraging habitats will remain both within the Project Site and the wider	The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	surroundings post-construction. This habitat in the wider area is functionally equivalent to that found within the Core Ornithology Survey Area and is available to support any displaced species. Given the abundance of similar suitable habitats (peatlands and improved agricultural grasslands) supporting similar prey species in the wider area as those found within the Proposed Wind Farm, and that extensive areas of suitable foraging habitat will remain post construction, no significant impacts are predicted. No significant effects of direct habitat loss are anticipated at the regional, national or international level.		
Disturbance	As outlined above, breeding was confirmed 487m and 1.5km from the Core Ornithology Survey Area. As per Ruddock & Whitfield (2007), barn owl show disturbance up to 50-100m, with many nest sites not being disturbed until a human was within 10m during the study. However, the Forestry Commission of Scotland (2006) recommends a 250m disturbance buffer around a known nest site where operations should be limited. There is no proposed infrastructure within a 250m radius of either nest site. The potential for construction works to results in disturbance to breeding barn owl are therefore limited. Barn owl were not observed foraging within 250m of the Proposed Project permanent infrastructure footprint. Therefore, significant effects are not anticipated, given that extensive areas of suitable foraging habitat exist and will remain in the wider area. This habitat in the wider area is functionally equivalent to that found within the Core Ornithology Survey Area and is available to support any displaced species. Onsite habitats are not considered unique to the Core Ornithology Survey Area.	The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	Likely short-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	No significant effects of disturbance are anticipated at the regional, national or international level.		
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated as no further infrastructure is proposed.	**No Effect**	**No Effect**
Displacement and Barrier Effect	There is no published research on displacement for barn owl around operational wind infrastructure. The nearest infrastructure is situated over 900m from the nearest nest site (Ref: BO-a), which is currently no longer suitable for breeding barn owl. Therefore, no significant impacts are predicted to breeding locations given the considerable separation distance involved. Furthermore, the Core Ornithology Study Area is dominated by formerly milled cutover bog, this habitat is sub-optimal for foraging barn owl. There is more suitable habitat in the vicinity of the nest sites (i.e. agricultural land) and is situated away from the Proposed Wind Farm. This limits the potential for any displacement effects. The temporary disturbance of this species is possible throughout the Proposed Wind Farm during the operational phase from disturbance by maintenance vehicles and personnel visits, particularly in the vicinity of the Proposed Turbines, access roads and the Proposed Onsite Substation. However, the volume and frequency of such visits is considered to be very low and is likely to be generally minor in scale and short in duration when it occurs. It is not anticipated that amenity volumes will add to background levels of disturbance currently occurring in the area. Therefore, significant effects by maintenance crews and amenity foot-traffic along the access roads and other infrastructure (excluding the Proposed Turbines) are not anticipated.	The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale**.**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	There is no evidence to suggest that the Proposed Wind Farm lies on a migratory/ regular commuting route for the species therefore barrier effect is not anticipated. As outlined in Section 7.5.1, over the lifetime of the Proposed Wind Farm, with the succession to scrub mosaic on shallower peat, the Project Site will likely become increasingly less suitable for open habitat species like barn owl. No significant displacement and barrier effects are anticipated at the regional, national or international level.		
Collision Risk	This species was not recorded flying at the potential collision height during the extensive vantage point survey work undertaken. Collision-related mortality is not likely to significantly impact this species, particularly given barn owls fly at low elevation when foraging (Barn Owl Trust, 2021[16]), which contrasts with the considerable height of the proposed turbine. Collision related mortality is not likely to significantly impact this species, based on available data.	**No Effect**	**No Effect**
Decommissioning			
Direct Habitat Loss	Direct or indirect effects are not anticipated as no further infrastructure is proposed.	No Effect	No Effect
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

[16] https://www.barnowltrust.org.uk/hazards-solutions/barn-owls-wind-turbines/

7.5.2.11 Curlew (Winter)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Construction Phase			
Direct Habitat Loss	There were 15 observations of curlew during the six winter seasons surveyed. The majority of these observations were of one or two birds calling and travelling. Of these observations, there were four records of birds actively foraging. The land lost to the Proposed Wind Farm is small (i.e. 154ha/2.9% of the Project Site) relative to the total area within the Project Site. Given the abundance of similar suitable habitats (peatlands and improved agricultural grasslands) in the wider area as those found within the Project Site, and that extensive areas of foraging and roosting habitat will remain post construction, no significant impacts are predicted at the regional, national or international level.	The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.
Disturbance	There were 15 observations of curlew during the six winter seasons surveyed. The majority of these observations were of one or two birds calling and travelling. Of these observations, there were four records of birds actively foraging. Based on the survey data, there is little potential for significant disturbance effects given that curlew are not dependent on the habitats located in close proximity to Proposed Wind Farm and how infrequently this species utilises the Core Ornithology Study Area. Furthermore, the Proposed Wind Farm does not contain habitats that are unique to the local area. This habitat in the wider area is functionally equivalent to that found within the Core Ornithology Survey Area and is available to support any displaced species. Therefore, were disturbance to occur it would not result in the loss of a scarce resource for curlew.	The magnitude of the effect is assessed as negligible. the cross tablature of a medium sensitivity species and negligible impact corresponds to a **very low effect significance**.	Likely short-term imperceptible negative effect, which is **Not Significant** at the regional, national or international level geographical scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	No significant effects of disturbance are anticipated at the regional, national or international level.		
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated as no further infrastructure is proposed.	**No Effect**	**No Effect**
Displacement and Barrier Effect	As outlined above, curlew were observed within the Core Ornithology Survey Area on 15 occasions, with a maximum of two birds recorded. The majority of observations were of birds travelling and calling. No wintering roosts were identified. Few studies have been done on the effects of displacement from operational wind turbines on non-breeding curlew. There was a low number of curlew records within 500m of the Proposed Turbines, therefore this species is not considered to be dependent on the Proposed Wind Farm or surrounds for roosting or foraging. The temporary disturbance of this species is possible throughout the Proposed Wind Farm during the operational phase from disturbance by maintenance vehicles and personnel visits, particularly in the vicinity of the Proposed Turbines, access roads and the Proposed Onsite Substation. However, the volume and frequency of such visits is considered to be very low and is likely to be generally minor in scale and short in duration when it occurs. It is not anticipated that amenity volumes will add to background levels of disturbance currently occurring in the area. Therefore, significant effects by maintenance crews and amenity foot-traffic along the access roads and other infrastructure (excluding the Proposed Turbines) are not anticipated.	The magnitude of the effect is assessed as negligible. the cross tablature of a medium sensitivity species and negligible impact corresponds to a **very low effect significance**.	Likely long-term imperceptible negative effect, which is **Not Significant** at the regional, national or international level geographical scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	There is no evidence to suggest that the Proposed Wind Farm lies on a migratory/ regular commuting route for the species therefore barrier effect is not anticipated. As outlined in Section 7.5.1, over the lifetime of the Proposed Project, with the succession to scrub mosaic on shallower peat, the Project Site will likely become increasingly less suitable for open habitat species like curlew. Notwithstanding this, enhancement measures are proposed to offset shorter term effects. Based on this, no significant displacement or barrier effects are anticipated at the county, national or international scale.		
Collision Risk	This species was not recorded flying at the potential collision height in winter during the extensive vantage point survey work undertaken. Collision related mortality is not likely to significantly impact this species, based on available data.	**No Effect**	**No Effect**
Decommissioning			
Direct Habitat Loss	Direct or indirect effects are not anticipated as no further infrastructure is proposed.	**No Effect**	**No Effect**
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.12 Curlew (Breeding)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Construction Phase			
Direct Habitat Loss	There were 50 observations of curlew within the Core Ornithology Survey Area during the six breeding seasons surveyed. The majority of these observations were of one or two birds calling and travelling. Most observations were focused in the area to the east of the Project Site where there is a known historic breeding area adjacent to the Core Ornithology Survey Area. There was probable breeding identified at this historical breeding area in 2020 and 2023 (Ref: CU-a) with one observation of calling at another area within the Core Ornithology Survey Area in 2021 (CU-b). Despite a comprehensive suite of surveys, breeding was never confirmed at these sites. No evidence of breeding was observed in 2024 or 2025. No infrastructure is proposed within these identified breeding areas, with the nearest Proposed Turbine located approximately 2.8km and 250m from the areas CU-a and CU-b respectively. Furthermore, the loss of breeding habitat will be minimal as the infrastructure is confined to a narrow corridor (i.e. 154ha/2.9% of the Project Site). Significant areas of suitable supporting breeding habitat and foraging habitat will continue to remain post construction and suitable habitat is abundant outside the Proposed Wind Farm (e.g. in Lodge Bog). As such, there is limited potential for impacts relating to direct habitat loss within the Proposed Wind Farm. No significant effects of direct habitat loss are anticipated at the regional/local, national or international level, including adult survival, recruitment and range.	The magnitude of the effect is assessed as low. the cross tablature of a high sensitivity species and low impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the local/regional, national or international level geographical scale.
Disturbance	Of the 50 observations of curlew during the breeding seasons, eight overlapped with the Proposed Project permanent infrastructure footprint. The	The magnitude of the effect is assessed as low. the cross	Likely short-term slight negative effect, which is **Not**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	majority of these observations comprised of one to two birds calling and travelling. There were two probable breeding territories identified within, or adjacent to, the Core Ornithology Survey Area (CU-a and CU-b), approximately 2.8km and 250m from the nearest Proposed Turbines respectively. However, these territories were not regularly utilised across the six breeding seasons surveyed (CU-a recorded in 2020 and 2023, CU-b recorded in 2021) and breeding was never confirmed despite an extensive suite of surveys. Given the separation distance between the curlew breeding territories and the Proposed Wind Farm, there is limited potential for disturbance to birds at these locations as a result of construction works. Based on the survey data, there is little potential for significant disturbance effects given that curlew are not dependent on the habitats located in close proximity to the Proposed Wind Farm for foraging, and one probable territory (Ref: CU-a) is beyond the zone for potential disturbance effects (800m, (Pearce-Higgins *et al.*, 2009; McGuinness *et al.*, 2015) while the other (Ref: CU-b) is within this zone, it is likely not an active breeding territory based on the infrequent observations. The likely explanation for this is the high level of disturbance from turbary and this area is unlikely to be utilised in the future. No significant effects of disturbance are anticipated at the regional/local, national or international level, including adult survival, recruitment and range	tablature of a high sensitivity species and low impact corresponds to a **low effect significance**.	**Significant** at the local/regional, national or international level geographical scale.
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated as no further infrastructure is proposed, including adult survival, recruitment and range.	**No Effect**	**No Effect**
Displacement and Barrier Effect	There were 11 observations of curlew within 500m of the proposed turbine layout during the six breeding seasons surveyed. As previously discussed, there were two probable breeding territories identified within, or adjacent to,	The magnitude of the effect is assessed as low. the cross tablature of a high sensitivity	Likely long-term slight negative effect, which is **Not Significant** at the

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	the Core Ornithology Survey Area (CU-a and CU-b), approximately 2.8km and 250m from the nearest Proposed Turbines respectively, which were irregularly used throughout the breeding seasons surveyed. A buffer of 800m from wind infrastructure is recommended around curlew breeding sites (McGuinness *et al.*, 2015). The known historic breeding area (CU-a) is located 2.8km from the nearest proposed turbine. The second probable area (CU-b), while located 250m from the nearest proposed turbine, comprised breeding activity of a single bird calling in 2021 and is therefore not a regularly used breeding site. There was no confirmed breeding in this location. The likely explanation for this is the high level of disturbance from turbary and this area is unlikely to be utilised in the future. No significant effects are anticipated given the separation distance of the historical curlew nesting site and the Proposed Turbines. If curlew were to return to this area to breed in future, there is sufficient breeding habitat remaining within and adjacent to the historic nesting site. The temporary disturbance of this species is possible throughout the Proposed Wind Farm during the operational phase from disturbance by maintenance vehicles and personnel visits, particularly in the vicinity of the Proposed Turbines, access roads and the Proposed Onsite Substation. However, the volume and frequency of such visits is considered to be very low and is likely to be generally minor in scale and short in duration when it occurs. It is not anticipated that amenity volumes will add to background levels of disturbance currently occurring in the area. Therefore, significant effects by maintenance crews and amenity foot-traffic along the access roads and other infrastructure (excluding the Proposed Turbines) are not anticipated. Significant barrier effect is not anticipated given that curlew are largely sedentary during the breeding season and do not generally leave the breeding	species and low impact corresponds to a **low effect significance**.	local/regional, national or international level geographical scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	grounds for foraging or roosting. Furthermore, the historic curlew breeding territory is at the eastern edge of the Proposed Wind Farm and therefore curlew do not necessarily need to cross the Proposed Wind Farm to access this area. As outlined in Section 7.5.1, over the lifetime of the Proposed Wind Farm, with the succession to scrub mosaic on shallower peat, the Project Site will likely become increasingly less suitable for open habitat species like curlew. No significant displacement and barrier effects are anticipated, including adult survival, recruitment and range.		
Collision Risk	The species was recorded flying within the potential collision height during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated a 0.015 collisions per year, or less than one bird over the operational lifetime of the Proposed Wind Farm. Annual mortality of adult curlew has been calculated at 26% per year (Evans and Pienkowski, 1984). If 0.015 collisions were to occur per year, it would mean that the losses at the Proposed Wind Farm would increase the annual mortality of the national population (c.105) by 0.05%, and of the regional/local population (c.4) by 1.4%. The predicted collision risk is low with regard to the regional/local population. Notwithstanding the low rate of predicted collisions and in acknowledgement of the importance of the local population of curlew, enhancement measures are proposed for the benefit of curlew. In particular, measures to increase breeding productivity are proposed. Please see Section 7.6.4 for details. No significant collision risk effects are anticipated, including adult survival, recruitment and range.	The magnitude of the effect is assessed as low. the cross tablature of a high sensitivity species and low impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the local/regional, national or international level geographical scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Decommissioning			
Direct Habitat Loss	Direct or indirect effects are not anticipated as no further infrastructure is proposed, including adult survival, recruitment and range.	No Effect	No Effect
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.13 Kestrel (All Seasons)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Construction Phase			
Direct Habitat Loss	There were up to eight breeding kestrel territories (confirmed and probable) identified in the vicinity of the Core Ornithology Survey Area in any one season over the six breeding seasons surveyed. The majority of the breeding locations recorded over the six seasons were situated on the margins of the Core Ornithology Survey Area, with only six of the total 22 breeding territories identified being entirely within the Core Ornithology Survey Area (and of these six, only three were used in more than one season). As such, the majority of the breeding locations recorded are sited away from Proposed Wind Farm. There will be minimal loss of suitable breeding habitat, given the majority of suitable woodland habitat occurs on the margins of the Core Ornithology Survey Area and away from Proposed Wind Farm. Furthermore, direct loss of foraging habitat relative to its availability onsite will be minimal. The land lost is small (i.e. 154ha/2.9% of the Project Site) relative to the total area within the	The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	Project Site. Substantial areas of undisturbed suitable breeding and foraging habitat will remain both within the Core Ornithology Survey Area and the wider surroundings post-construction. This habitat in the wider area is functionally equivalent to that found within the Core Ornithology Survey Area and is available to support any displaced species. Furthermore, kestrel is a wide ranging, generalist species that will hunt within a wide variety of habitats (e.g. agricultural grassland, open peatland, scrub) which are not scarce in the local area, or unique to the Proposed Wind Farm. No significant effects of direct habitat loss are anticipated at the regional, national or international level.		
Disturbance	As previously discussed, there were up to eight kestrel territories identified with, and adjacent to, the Core Ornithology Survey Area in any one breeding season. The majority of the breeding locations recorded over the six seasons were situated on the margins, or outside, of the Core Ornithology Survey Area, with only 6 of the total 22 territories recorded occurring entirely within the Core Ornithology Survey Area (and of these six, only three were used in more than one season). As such, the majority of the breeding locations recorded are sited away from proposed construction works. While the disturbance associated with the construction works may result in a measurable reduction in the breeding density of kestrel onsite and a reduction in the amount of available foraging habitat around the margins of the Proposed Wind Farm, these lands (e.g. treeline, scrub, woodland and open peatland) are not considered to be unique to the Project Site or rare in the wider surroundings. This habitat in the wider area is functionally equivalent to that found within the Core Ornithology Survey Area and is available to support any displaced species. Significant effects are not anticipated, given that extensive areas of suitable foraging and breeding habitat exist and will remain in the wider area. Onsite habitats are not considered unique to the Project Site.	The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	Likely short-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale**.**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	Furthermore, peatland rehabilitation in the wider landscape is likely to increase the value of these (formerly cutover) habitats for this species. And particularly so on areas of deeper peat that are more likely to remain open habitat in the longer term. No significant effects of disturbance are anticipated at the county, national or international level.		
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated as no further infrastructure is proposed.	**No Effect**	**No Effect**
Displacement and Barrier Effect	Raptor studies have generally found only low levels of turbine avoidance (Hötker *et al.*, 2006; Madders and Whitfield, 2006), with some species, such as kestrels, known to continue foraging activity close to turbines (Pearce-Higgins *et al.*, 2009). Moreover, significant effects are not anticipated, given that extensive areas of suitable foraging habitat exist and will remain in the wider area. For example, peatland rehabilitation in the wider landscape is likely to increase the value of these (formerly cutover) habitats for this species. Particularly so, on areas of deeper peat that are more likely to remain open habitat in the longer term. Significant displacement from nest sites is not anticipated based on the following rationale. There were only seven breeding territories which overlap with the Proposed Project permanent infrastructure footprint and 14 breeding territories within 500m of the Proposed Project permanent infrastructure footprint, therefore given the separation distance of the majority of nest sites significant imparts are not anticipated. Furthermore, suitable nesting habitat is not unique to the Core Ornithology Survey Area and is abundant in the wider area.	The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale**.**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	Onsite habitats are not considered unique to the Project Site. Furthermore, kestrel is a wide ranging, generalist species that will hunt within a wide variety of habitats (e.g. agricultural grassland, open peatland, scrub) which are not scarce in the local area, or unique to the Proposed Wind Farm. This habitat in the wider area is functionally equivalent to that found within the Core Ornithology Survey Area and is available to support any displaced species. The temporary disturbance of this species is possible throughout the Proposed Wind Farm during the operational phase from disturbance by maintenance vehicles and personnel visits, particularly in the vicinity of the Proposed Turbines, access roads and the Proposed Onsite Substation. However, the volume and frequency of such visits is considered to be very low and is likely to be generally minor in scale and short in duration when it occurs. It is not anticipated that amenity volumes will add to background levels of disturbance currently occurring in the area. Therefore, significant effects by maintenance crews and amenity foot-traffic along the access roads and other infrastructure (excluding the Proposed Turbines) are not anticipated. There is no evidence to suggest that the Proposed Wind Farm lies on a migratory/ regular commuting route for the species therefore barrier effect is not anticipated. As outlined in Section 7.5.1, over the lifetime of the Proposed Wind Farm, with the succession to scrub mosaic on shallower peat, the Project Site will likely become increasingly less suitable for open habitat species like kestrel. No significant displacement and barrier effects are anticipated at the regional, national or international level.		

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Collision Risk	The species was recorded flying within the potential collision height during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated a 5.669 collisions per year, over the operational lifetime of the Proposed Wind Farm. Annual mortality of adult kestrel has been calculated at 35% per year (Orta *et al.,* 2020). If 5.669 collisions were to occur per year, it would mean that the losses at the Proposed Wind Farm would increase the annual mortality of the regional population (c.205) by 7.9%. The predicted collision risk is not significant.	The magnitude of the effect is assessed as medium. the cross tablature of a medium sensitivity species and medium impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale**.**
Decommissioning			
Direct Habitat Loss	Direct or indirect effects are not anticipated as no further infrastructure is proposed.	No Effect	No Effect
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.14 Lapwing (Wintering)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Construction Phase			
Direct Habitat Loss	Lapwing were observed within, or partially within, the Core Ornithology Survey Area on 201 occasions across the six winter seasons surveyed. The majority of these observations relate to birds in flight. Birds were observed landing/on the ground within the Core Ornithology Survey Area on 47	The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact	Likely long-term slight negative effect, which is **Not Significant** at the regional,

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	occasions across the six winter seasons, with flocks recorded ranging from 1 to 164 birds. Of the 21 identified roost areas for wintering lapwing, only three were located entirely within the Core Ornithology Survey Area (Refs: L-a, L-b and L-c). The land lost is small (i.e. 154ha/2.9% of the Project Site) relative to the total area within the Project Site. Given the abundance of similar suitable habitats (peatlands and improved agricultural grasslands) in the wider area as those found within the Core Ornithology Survey Area, and that extensive areas of foraging and roosting habitat will remain post construction, no significant impacts are predicted at the regional, national or international level.	corresponds to a **low effect significance**.	national or international level geographical scale.
Disturbance	As outlined above, there were 47 records of lapwing utilising habitats within the Core Ornithology Survey Area over the six winter seasons surveyed. Only 3 of the 21 roost sites are within the Core Ornithology Study Area, and only two overlap with the Proposed Project permanent infrastructure footprint. Significant areas of suitable roosting and foraging habitat for the species occur in the wider landscape and will be retained. In the event of disturbance, there are extensive areas of similar or alternative habitat in the wider area. Similar quality habitat is widely available, outside of any potential disturbance distance from construction works and there is similar quality habitat abundantly present to the east and west of the Core Ornithology Survey Area. This habitat in the wider area is functionally equivalent to that found within the Core Ornithology Survey Area and is available to support any displaced species. These factors likely render such an effect inconsequential. No significant effects of disturbance are anticipated at the regional, national or international level.	The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	Likely short-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.
Operational Phase			

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Direct Habitat Loss	Direct habitat loss effects are not anticipated as no further infrastructure is proposed.	**No Effect**	**No Effect**
Displacement and Barrier Effect	As outlined above, there were 166 observations of lapwing within the Core Ornithology Survey Area, 47 of which were birds utilising habitats within the Core Ornithology Survey Area over the six winter seasons surveyed. Hötker *et al.* (2006) undertook a meta-analysis of existing literature on disturbance distances. This review reported from the 32 studies examined the mean disturbance distance for wintering lapwing was 260m. There were 65 observations of lapwing within 260m of the Proposed turbines, eight of which were of birds utilising habitats for roosting or foraging. The species was not observed to regularly utilise any one area of the Proposed Wind Farm during winter months but was primarily recorded travelling over the Core Ornithology Survey Area. There are extensive areas of suitable habitat in the wider area as identified during the wider area surveys (waterbird distribution and abundance and wintering golden plover surveys). Similar quality habitat is widely available, to the east and west. This habitat in the wider area is functionally equivalent to that found within the Core Ornithology Survey Area and is available to support any displaced species. The temporary disturbance of this species is possible throughout the Proposed Wind Farm during the operational phase from disturbance by maintenance vehicles and personnel visits, particularly in the vicinity of the Proposed Turbines, access roads and the Proposed Onsite Substation. However, the volume and frequency of such visits is considered to be very low and is likely to be generally minor in scale and short in duration when it occurs. It is not anticipated that amenity volumes will add to background levels of disturbance currently occurring in the area. Therefore, significant effects by maintenance	The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale**.**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	crews and amenity foot-traffic along the access roads and other infrastructure (excluding the Proposed Turbines) are not anticipated. Survey results indicate that the Core Ornithology Survey Area does not lie on a migratory corridor for lapwing, and no regular or patterned flight was identified over the Proposed Wind Farm. As outlined in Section 7.5.1, over the lifetime of the Proposed Wind Farm, with succession to scrub mosaic on shallower peat, the Project Site will likely become increasingly less suitable for open habitat species like lapwing. No significant displacement or barrier effects are anticipated at the regional, national or international level.		
Collision Risk	The species was recorded flying within the potential collision height during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated a 16.25 collisions per year, over the operational lifetime of the Proposed Wind Farm. Annual mortality of adult lapwing has been calculated at 29.5% per year (Peach *et al.*, 1994). If 16.25 collisions were to occur per year, it would mean that the losses at the Proposed Wind Farm would increase the annual mortality of the regional population (c.1,309) by 4.2%. The predicted collision risk is low. The habitat deterrent measures proposed to offset golden plover collisions (as per Section 7.6.4) will likely also deter this species from the turbine locations and thus reduce the associated collision risk.	The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.
Decommissioning			
Direct Habitat Loss	Direct or indirect effects are not anticipated as no further infrastructure is proposed.	No Effect	No Effect

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.15 Lapwing (Breeding)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Construction Phase			
Direct Habitat Loss	Lapwing breeding activity was identified within the Core Ornithology Survey Area in all six breeding seasons surveyed, with an estimate of between 11 and 21 breeding pairs present within the Core Ornithology Survey Area in the most recent breeding seasons surveys (i.e. 2024 and 2025). Breeding activity was recorded at 16 locations within the Core Ornithology Survey Area across the six breeding seasons, all within the same general areas during each breeding season. Of the 16 locations, seven were concentrated within Lodge Bog, an area to the east of the Project Site where no turbines are proposed. Infrastructure is proposed within eight of the identified breeding areas. This will likely result in the direct loss of breeding habitat within these areas for lapwing (50% of the currently occupied breeding areas). Without intervention, the loss of breeding habitat from direct habitat loss is assessed as significant. Consequently, a comprehensive mitigation strategy is proposed as detailed in Section 7.6.	The magnitude of the effect is assessed as high. the cross tablature of a high sensitivity species and high impact corresponds to a **very high effect significance**.	Likely long-term negative effect, which is **Significant** at the local, regional and national scale.
Disturbance	As outlined above, breeding activity was recorded at 16 locations across six breeding seasons, all within the same general areas of the Core Ornithology Survey Area, with an estimate of between 11 and 21 breeding pairs present in the most recent breeding seasons surveyed respectively (2024 & 2025).	The magnitude of the effect is assessed as high. the cross tablature of a high sensitivity species and high impact	Likely short-term negative effect, which is **Significant** at the local, regional and national scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	Pearce-Higgins *et al.* (2012) did not find any significant negative effect of construction works on breeding lapwing populations, although the number of sites studied was low. Hötker *et al.* (2006) undertook a meta-analysis of existing literature on disturbance distances. This review reported, from the 13 studies examined, the mean disturbance distance for breeding lapwing to be 108m. Of the 16 locations, 12 are within 108m of the Proposed Project permanent infrastructure footprint. As such, there is potential for these construction works to result in disturbance to these breeding lapwing (i.e. 69% of the breeding population within the Core Ornithology Survey Area). Without intervention, the potential disturbance to breeding areas during construction works is assessed to be significant. Consequently, a comprehensive mitigation strategy is proposed as detailed in Section 7.6.	corresponds to a **very high effect significance**.	
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated as no further infrastructure is proposed.	**No Effect**	**No Effect**
Displacement and Barrier Effect	Several studies of wind energy infrastructure and its impact on bird populations have found no discernible impact on populations of breeding lapwing, either through collision, disturbance displacement or avoidance (Winkleman 1992; Ketzenberg *et al.* 2002; Pearce-Higgins *et al.* 2009). Langston *et al.* (2003) found that lapwing nesting occurred slightly closer to turbines, possibly as a result of the creation of preferred area of shorter vegetation. As part of the mitigation hierarchy discussed further in Section 7.5.7, measures will be taken to discourage open habitat species within a 250m buffer around all turbines. Intermittent foot traffic onsite also has the potential to cause disturbance.	The magnitude of the effect is assessed as high. the cross tablature of a high sensitivity species and high impact corresponds to a **very high effect significance**.	Likely long-term negative effect, which is **Significant** at the local, regional and national scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	Hötker *et al.* (2006) undertook a meta-analysis of existing literature on disturbance distances. This review reported, from the 13 studies examined, the mean disturbance distance for breeding lapwing to be 108m. As outlined above, breeding activity was recorded at 16 locations across six breeding seasons, all within the same general areas of the Core Ornithology Survey Area in each breeding season. Of the 16 locations, breeding activity was recorded in more than one season at eight locations (Refs: L-b, L-e, L-f, L-g, L-j, L-k, L-m and L-s). There are no turbines proposed within 108m of four of these locations (Refs: L-b, L-f, L-k and L-m), however infrastructure is proposed within 108m of L-b, L-f and L-k. As such, there is potential for the presence of proposed turbines to displace breeding lapwing from regular breeding areas (Refs: L-e, L-g, L-j, L-s), i.e. 50% of the regularly used breeding grounds. Without intervention, the potential displacement of breeding lapwing is assessed as significant. Consequently, a comprehensive mitigation strategy is proposed as detailed in Section 7.6. The temporary disturbance of this species is possible throughout the Proposed Wind Farm during the operational phase from disturbance by maintenance vehicles and personnel visits, particularly in the vicinity of the Proposed Turbines, access roads and the Proposed Onsite Substation. However, the volume and frequency of such visits is considered to be very low and is likely to be generally minor in scale and short in duration when it occurs. It is not anticipated that amenity volumes will add to background levels of disturbance currently occurring in the area. Therefore, significant effects by maintenance crews and amenity foot-traffic along the access roads and other infrastructure (excluding the Proposed Turbines) are not anticipated. As outlined in Section 7.5.1, over the lifetime of the Proposed Project, with the succession to scrub mosaic on shallower peat, the Core Ornithology Study		

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	Area will likely become increasingly less suitable for open habitat species like lapwing. Notwithstanding this, enhancement measures are proposed to offset shorter term effects.		
Collision Risk	The species was recorded flying within the potential collision height during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated at 0.175 collision per breeding season, over the operational lifetime of the Proposed Wind Farm. Annual mortality of adult lapwing has been calculated at 29.5% per year (Peach *et al.,* 1994). If 0.175 collision were to occur per year, it would mean that the losses at the Proposed Wind Farm would increase the annual mortality of the national population (c.1,200) by 0.049% and the regional population (c.52) by 1.14%. The predicted collision risk is low with regard to the regional population.	The magnitude of the effect is assessed as medium. the cross tablature of a high sensitivity species and low impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the local, regional and national scale.
Decommissioning			
Direct Habitat Loss	Direct or indirect effects are not anticipated as no further infrastructure is proposed.	No Effect	No Effect
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.16 Snipe (All Seasons)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Construction Phase			
Direct Habitat Loss	Snipe were regularly recorded during surveys, with observations of drumming or calling snipe during the breeding seasons frequently recorded. There were a minimum of 40 breeding pairs within the Core Ornithology Survey Area (given the cryptic nature of breeding snipe, the exact number of breeding snipe is unknown, however 20 breeding areas were identified, with a minimum of two pairs per area but the actual number of breeding snipe on site is likely more than this). Of the 20 breeding areas, 15 overlap with Proposed Turbine locations. However, the loss of breeding habitat will be minimal as the Proposed Wind Farm is confined to a narrow corridor (i.e. 154ha/2.9% of the Project Site). Significant areas of suitable nesting and foraging habitat will continue to remain post construction and suitable habitat is abundant in the surrounding habitat. This habitat in the wider area is functionally equivalent to that found within the Core Ornithology Survey Area and is available to support any displaced species. Taking into account the above, no significant effects of direct habitat loss are anticipated.	The magnitude of the effect is assessed as low. the cross tablature of a high sensitivity species and low impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.
Disturbance	As previously discussed, there were a minimum of 40 breeding pairs within the Core Ornithology Survey Area. Pearce-Higgins *et al.* (2012) found significant 53% declines in snipe densities on wind farms during the construction phase, with no apparent recovery post-construction. Snipe were also shown by Pearce-Higgins *et al.* (2009) to exhibit significant avoidance of turbines extending to a distance of 400m, and there is	The magnitude of the effect is assessed as medium. the cross tablature of a high sensitivity species and medium impact corresponds to a **high effect significance**.	Likely short-term negative effect, which is **Significant** at the local, regional and national scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	also evidence of avoidance of access tracks. It is assumed that snipe will show similar avoidance of construction activity. There were 22 breeding territories (85% of breeding territories) of snipe within 400m of the Proposed Project permanent infrastructure footprint. Disturbance associated with construction works will result in a measurable reduction in the breeding density of snipe onsite/around the margins of the Proposed Project permanent infrastructure footprint. However, substantial areas of undisturbed suitable breeding and foraging habitat will remain both within the Project Site and the wider surroundings post-construction. Without intervention, the potential disturbance to breeding areas during construction works is assessed to be significant at the national level. Consequently, a comprehensive mitigation strategy is proposed as detailed in Section 7.6.		
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated as no further infrastructure is proposed.	**No Effect**	**No Effect**
Displacement and Barrier Effect	As described above, snipe are resident within the Core Ornithology Study Area, with a minimum of 40 breeding pairs present. Snipe were shown by Pearce-Higgins *et al.* (2009) to exhibit significant avoidance of turbines extending to a distance of 400m, and there is also evidence of avoidance of access tracks, leading to an expected 47.5% decline in abundance within 500m of the turbines. Similarly, a review of 29 studies by Hötker *et al.* (2006) suggests that snipe will approach wind turbines to an average distance of 403m in non-breeding season.	Displacement from Proposed Turbines The magnitude of the effect is assessed as medium. The cross tablature of a high sensitivity species and medium impact corresponds to a **high effect significance**.	Displacement from Proposed Turbines Likely long-term negative effect, which is **Significant** at the local, regional and national scale. Displacement from other infrastructure

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	Disturbance displacement associated with operational turbines will result in a measurable reduction in the breeding density of snipe onsite/around the margins of the Proposed Wind Farm. Despite there being substantial areas of undisturbed suitable breeding and foraging habitat remaining both within the Project Site and the wider surroundings post-construction, a significant displacement from the Proposed Turbines is likely due to the number of breeding pairs being displaced. Pearce-Higgins *et al.* (2012) found significant 53% declines in snipe densities on wind farms during the construction phase, with no apparent recovery post-construction, suggesting that this effect may continue during the operational phase. Servicing of the wind farm will not add significantly to the background levels of disturbance currently occurring in the area. The temporary disturbance of this species is possible throughout the Proposed Wind Farm during the operational phase from disturbance by maintenance vehicles and personnel visits, particularly in the vicinity of the Proposed Turbines, access roads and the Proposed Onsite Substation. However, the volume and frequency of such visits is considered to be very low and is likely to be generally minor in scale and short in duration when it occurs. It is not anticipated that amenity volumes will add to background levels of disturbance currently occurring in the area. Therefore, significant effects by maintenance crews and amenity foot-traffic along the access roads and other infrastructure (excluding the Proposed Turbines) are not anticipated. There is no evidence to suggest that the Proposed Wind Farm lies on a migratory/ regular commuting route for the species therefore barrier effect is not anticipated. As outlined in Section 7.5.1, over the lifetime of the Proposed Project, with the succession to scrub mosaic on shallower peat, the Project Site will likely	<u>Displacement from other infrastructure</u> The magnitude of the effect is assessed as low. the cross tablature of a high sensitivity species and low impact corresponds to a **low effect significance**. <u>Barrier Effect</u> The magnitude of the effect is assessed as low. the cross tablature of a high sensitivity species and low impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale. <u>Barrier Effect</u> Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	become increasingly less suitable for open habitat species like snipe. Notwithstanding this, enhancement measures are proposed to offset shorter term effects. Without intervention, the potential displacement of breeding snipe from the Proposed Turbines is assessed as significant. Consequently, a comprehensive mitigation strategy is proposed as detailed in Section 7.6.		
Collision Risk	The species was recorded flying within the potential collision height during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated a 2.202 collisions per year, over the operational lifetime of the Proposed Wind Farm. Annual mortality of adult snipe has been calculated at 37.5% per year (Spence, 1988). If 2.202 collisions were to occur per year, it would mean that the losses at the Proposed Wind Farm would increase the annual mortality of the regional population (c.200) by 2.9%. The predicted collision risk is low.	The magnitude of the effect is assessed as low. the cross tablature of a high sensitivity species and low impact corresponds to **a low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale**.**
Decommissioning			
Direct Habitat Loss	Direct or indirect effects are not anticipated as no further infrastructure is proposed.	No Effect	No Effect
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.17 Woodcock (All Seasons)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Construction Phase			
Direct Habitat Loss	Woodcock were regularly recorded during surveys, with observations of roding or calling woodcock during the breeding seasons frequently recorded. There were a minimum of 19 breeding areas within the Core Ornithology Survey Area (given the cryptic nature of breeding woodcock, the exact number of breeding pairs is unknown, however 19 breeding areas were identified, with a minimum of one pair per area). Of the 19 breeding areas identified, 11 overlap with the Proposed Turbines. The construction of the development footprint will result in a measurable reduction in the breeding habitat onsite/around the margins of the Project Site. However, this will not result in the loss of a scarce resource given these habitats are not unique to the Project Site, nor are they rare locally e.g. areas of shallower peat on surrounding rehabilitated peatlands is likely to develop into scrub/woodland habitat favoured by this species. This habitat in the wider area is functionally equivalent to that found within the Core Ornithology Survey Area and is available to support any displaced species. In addition, extensive areas of suitable foraging and nesting habitat will remain post construction. No significant effects of direct habitat loss are anticipated at the regional, national or international level.	The magnitude of the effect is assessed as medium. the cross tablature of a medium sensitivity species and medium impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.
Disturbance	As outlined above, woodcock were regularly recorded during surveys, with observations of roding or calling woodcock during the breeding seasons frequently recorded. There were a minimum of 19 breeding areas within the Core Ornithology Survey Area.	The magnitude of the effect is assessed as medium. the cross tablature of a medium sensitivity species and medium impact corresponds to a **low effect significance**.	Likely short-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	Sections of the Project Site are dominated by scrub, immature birch woodland and commercial forestry which provide suitable breeding habitat for woodcock. Some of these areas with identified breeding territories overlap with the Proposed Wind Farm and therefore, construction works. The construction works could result in a measurable reduction in the suitability of breeding habitat onsite/around the margins of the Project Site. However, this will not result in the loss of a scarce resource given these habitats are not unique to the Project Site and are found abundantly in the local area. This habitat in the wider area is functionally equivalent to that found within the Core Ornithology Survey Area and is available to support any displaced species. No significant effects of disturbance are anticipated at the regional, national or international level.		
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated as no further infrastructure is proposed.	**No Effect**	**No Effect**
Displacement and Barrier Effect	A study by Dorka *et al.* (2014) found that there was a reduction of breeding woodcock densities from 10 males/100ha to 1.2 males/100ha at 15 wind farms in Germany. These declines were attributed to the barrier effect of turbines and the effects of turbine noise on displaying woodcock. LAG VSW (2014) outline a displacement distance of 500m around operational turbines for breeding woodcock. The impact and the potential disturbance of foot traffic onsite is considered. The Proposed Wind Farm will result in a measurable reduction in the number of breeding woodcock in the vicinity of the Proposed Turbines. However,	The magnitude of the effect is assessed as medium. the cross tablature of a medium sensitivity species and medium impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale**.**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	potential impact will not result in the loss of a scarce resource given these habitats are not unique to the Core Ornithology Survey Area nor rare locally. The area within the Core Ornithology Survey Area, which is within 500m of the Proposed Turbines, represents only 62% of the total Core Ornithology Survey Area. Additionally, there is an abundance of suitable breeding habitat for woodcock outside the Core Ornithology Survey Area that is also greater than 500m from the proposed turbine layout. This habitat in the wider area is functionally equivalent to that found within the Core Ornithology Survey Area and is available to support any displaced species. The temporary disturbance of this species is possible throughout the Proposed Wind Farm during the operational phase from disturbance by maintenance vehicles and personnel visits, particularly in the vicinity of the Proposed Turbines, access roads and the Proposed Onsite Substation. However, the volume and frequency of such visits is considered to be very low and is likely to be generally minor in scale and short in duration when it occurs. It is not anticipated that amenity volumes will add to background levels of disturbance currently occurring in the area. Therefore, significant effects by maintenance crews and amenity foot-traffic along the access roads and other infrastructure (excluding the Proposed Turbines) are not anticipated. Survey results indicate that the Core Ornithology Survey Area does not lie on a migratory corridor for woodcock, and no regular or patterned flight was identified over the Proposed Wind Farm. As outlined in Section 7.5.1, over the lifetime of the Proposed Wind Farm, with succession to scrub mosaic on shallower peat. With encroachment of woody vegetation, the Project Site is likely to become increasingly suitable for this species. Extensive areas of suitable foraging and nesting habitat exist and is likely to develop beyond 500m from the Proposed Turbines.		

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	No significant displacement and barrier effects are anticipated at the regional, national or international level.		
Collision Risk	The species was recorded flying within the potential collision height during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated a 0.139 collisions per year, or one bird every 23 years over the operational lifetime of the Proposed Wind Farm. Annual mortality of adult woodcock has been calculated at 42% per year (Hoodless & Coulson. 1994). If 0.139 collisions were to occur per year, it would mean that the losses at the Proposed Wind Farm would increase the annual mortality of the regional population (c.2,062) by 0.016%. The likely future receiving environment may support higher density of this species within the Proposed Wind Farm site, however this is not anticipated to significantly increase the collision risk given the low collisions predicted. The predicted collision risk is negligible.	The magnitude of the effect is assessed as negligible. the cross tablature of a medium sensitivity species and negligible impact corresponds to a **very low effect significance**.	Likely long-term imperceptible negative effect, which is **Not Significant** at the regional, national or international level geographical scale.
Decommissioning			
Direct Habitat Loss	Direct or indirect effects are not anticipated as no further infrastructure is proposed.	No Effect	No Effect
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.18 Buzzard (All Seasons)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Construction Phase			
Direct Habitat Loss	This species was frequently recorded within the Core Ornithology Survey Area during the breeding and winter seasons. There were up to 19 breeding buzzard territories (confirmed and probable) identified in the vicinity of the Core Ornithology Survey Area in any one season over the six breeding seasons surveyed. The majority of the breeding locations recorded over the six seasons were situated on the margins of the Project Site and beyond, with only four of the total 48 breeding territories identified occurring entirely within the Project Site. As such, the majority of the breeding locations recorded are sited away from Proposed Wind Farm. While there is potential for the loss of some nesting habitat within the Project Site, this will be insignificant in the wider context, given the majority of suitable woodland habitat occurs on the margins of the bog and away from the Proposed Wind Farm. Direct loss of foraging habitat relative to its availability onsite, will be minimal. The land lost to the permanent infrastructure footprint is small (i.e. 154ha/2.9% of the Project Site) relative to the total area within the Project Site. Substantial areas of undisturbed suitable breeding and foraging habitat will remain both within the Project Site and the wider surroundings post-construction. This habitat in the wider area is functionally equivalent to that found within the Core Ornithology Survey Area and is available to support any displaced species. No significant effects of direct habitat loss are anticipated at the regional, national or international level.	The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale**.**
Disturbance	This species is resident at the Project Site. The majority of the breeding locations recorded over the six seasons were situated on the margins of the	The magnitude of the effect is assessed as low. the cross	Likely short-term slight negative effect, which is **Not**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	Project Site and beyond, with only 4 of the total 48 breeding territories identified occurring entirely within the Project Site. As such, the majority of the breeding locations recorded are sited away from proposed construction works. While the disturbance associated with construction works may result in a measurable reduction in the breeding density of buzzard onsite and a reduction in the amount of available foraging habitat within the Project Site, these lands (e.g., treeline, scrub, adjacent woodland and farmland) are not considered unique to the Project Site or rare in the wider surroundings. Significant effects are not anticipated, given that extensive areas of suitable foraging habitat exist and will remain in the wider area. Onsite habitats are not considered unique to the Project Site. This habitat in the wider area is functionally equivalent to that found within the Core Ornithology Survey Area and is available to support any displaced species. Furthermore, peatland rehabilitation in the wider landscape, is likely to increase the value of these (formerly cutover) habitats for this species. No significant effects of disturbance are anticipated at the regional, national or international level.	tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	**Significant** at the regional, national or international level geographical scale**.**
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated as no further infrastructure is proposed.	**No Effect**	**No Effect**
Displacement and Barrier Effect	As outlined above, there were up to 19 breeding buzzard territories (confirmed and probable) identified in the vicinity of the Core Ornithology Survey Area in any one season over the six breeding seasons surveyed. Pearce-Higgins *et al.* (2009) describes that buzzard has been found to show significant turbine avoidance extending to at least 500m. There were nine	The magnitude of the effect is assessed as medium. the cross tablature of a medium sensitivity species and medium impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale**.**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	confirmed and four probable breeding territories identified within 500m of the Proposed Turbines. Extensive areas of suitable foraging and breeding habitat exist and will remain in the wider area (i.e., outside 500m from the proposed turbine layout). Additionally, there were 1,327 observations of buzzard within 500m of the Proposed Turbines. There will be a measurable reduction in the frequency of commuting and foraging buzzard within 500m of the Proposed Turbines. However, onsite habitats are not considered unique to the Project Site and there is an abundance of suitable habitat for this species greater than 500m from the Proposed Turbines within the Project Site and its surroundings. This habitat in the wider area is functionally equivalent to that found within the Core Ornithology Survey Area and is available to support any displaced species. Furthermore, peatland rehabilitation in the wider landscape, is likely to increase the value of these (formerly cutover) habitats for this species. The temporary disturbance of this species is possible throughout the Proposed Wind Farm during the operational phase from disturbance by maintenance vehicles and personnel visits, particularly in the vicinity of the Proposed Turbines, access roads and the Proposed Onsite Substation. However, the volume and frequency of such visits is considered to be very low and is likely to be generally minor in scale and short in duration when it occurs. It is not anticipated that amenity volumes will add to background levels of disturbance currently occurring in the area. Therefore, significant effects by maintenance crews and amenity foot-traffic along the access roads and other infrastructure (excluding the Proposed Turbines) are not anticipated. Survey results indicate that the Core Ornithology Survey Area does not lie on a migratory corridor for woodcock, and no regular or patterned flight was identified over the Proposed Wind Farm.		

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	As outlined in Section 7.5.1, over the lifetime of the Proposed Wind Farm, with succession to scrub mosaic on shallower peat. With encroachment of woody vegetation, the Project Site is likely to become increasingly suitable for this species. Extensive areas of suitable foraging and nesting habitat exist and is likely to develop beyond 500m from the proposed turbine layout. No significant displacement and barrier effects are anticipated at the regional, national or international level.		
Collision Risk	The species was recorded flying within PCH during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated a 4.7 collisions per year, over the operational lifetime of the Proposed Wind Farm. The favourable conservation status of this species (Green-listed BoCCI) limits the potential for ecologically significant effects to result. The loss of 4.7 birds per year from the regional population of a Green-listed (BoCCI) species is considered of low significance.	The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale**.**
Decommissioning			
Direct Habitat Loss	Direct or indirect effects are not anticipated as no further infrastructure is proposed.	No Effect	No Effect
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.19 Long-eared Owl (All Seasons)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Construction Phase			
Direct Habitat Loss	Long-eared owl were observed on 18 occasions within the Core Ornithology Survey Area during the breeding and winter seasons. Of the five nest sites identified, two were within the Core Ornithology Survey Area (Refs: Le-c and Le-d), with one being within 500m of the Proposed Turbines (Le-c). Long-eared owl were observed infrequently foraging and commuting within the Core Ornithology Survey Area over the six years of surveying, but given the nocturnal nature of this species, it is likely to be under recorded during surveys, especially given that there were nest sites identified. The land lost to the permanent infrastructure footprint is small (i.e. 154ha/2.9% of the Project Site) relative to the total area within the Project Site. Furthermore, the Core Ornithology Survey Area is dominated by formerly milled cutover bog, this habitat is sub-optimal for foraging long-eared owl. There is an abundance of suitable habitat (scrub and woodland) within the Core Ornithology Survey Area and the wider area. Suitable breeding and foraging habitat is not a rare resource or unique to the Proposed Wind Farm. No significant effects of direct habitat loss are anticipated at the regional, national or international level.	The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.
Disturbance	There were two breeding sites located within the margins of the Proposed Wind Farm. As per Ruddock & Whitfield (2007), long-eared owl have a limit of disturbance of 50-100m during incubation and 150-300m during chick rearing. The nearest proposed infrastructure is approximately 450m from the nearest nest site (Le-c). Therefore, it is unlikely that there will be disturbance to nest	The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	Likely short-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	sites during the construction phase of the Proposed Wind Farm. Furthermore, there is an abundance of suitable nesting habitat (Scrub and woodland) greater than 300m from the Proposed Wind Farm. Suitable breeding and foraging habitat is not a rare resource or unique to the Proposed Wind Farm. No significant effects of disturbance are anticipated at the regional, national or international level.		
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated as no further infrastructure is proposed.	**No Effect**	**No Effect**
Displacement and Barrier Effect	As previously discussed, there were two breeding sites located within the margins of the Proposed Wind Farm. As per Ruddock & Whitfield (2007), long-eared owl have a limit of disturbance at 50-100m during incubation and 150-300m during chick rearing. It is assumed that long-eared owl will show similar displacement from operating turbines. The nearest Proposed Turbine is approximately 220m from the nearest nest site (Le-c). Therefore, it is unlikely that there will be displacement to currently occupied nest sites due to the Proposed Turbines. Furthermore, there is an abundance of suitable nesting and foraging habitat (Scrub and woodland) greater than 300m from the Proposed Turbines. Onsite habitats are not considered unique to the Project Site and there is an abundance of suitable habitat for this species greater than 500m from the Proposed Turbines within the Project Site and its surroundings. Furthermore, peatland rehabilitation in the wider landscape, is likely to increase the value of these (formerly cutover) habitats for this species. The temporary disturbance of this species is possible throughout the Proposed Wind Farm during the operational phase from disturbance by maintenance	The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	vehicles and personnel visits, particularly in the vicinity of the Proposed Turbines, access roads and the Proposed Onsite Substation. However, the volume and frequency of such visits is considered to be very low and is likely to be generally minor in scale and short in duration when it occurs. It is not anticipated that amenity volumes will add to background levels of disturbance currently occurring in the area. Therefore, significant effects by maintenance crews and amenity foot-traffic along the access roads and other infrastructure (excluding the Proposed Turbines) are not anticipated. Survey results indicate that the Core Ornithology Survey Area does not lie on a migratory corridor for woodcock, and no regular or patterned flight was identified over the Proposed Wind Farm. As outlined in Section 7.5.1, over the lifetime of the Proposed Wind Farm, with succession to scrub mosaic on shallower peat. With the encroachment of woody vegetation, the Project Site is likely to become increasingly suitable for this species. Extensive areas of suitable foraging and nesting habitat exist and is likely to develop beyond 500m from the Proposed Turbines. No significant effects of disturbance are anticipated at the regional, national or international level.		
Collision Risk	The species was recorded flying within the potential collision height during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated a 0.002 collisions per year, or less than one bird over the operational lifetime of the Proposed Wind Farm. The favourable conservation status of this species (Green-listed BoCCI) limits the potential for ecologically significant effects to result. The loss of 0.002 birds	The magnitude of the effect is assessed as negligible. the cross tablature of a medium sensitivity species and negligible impact corresponds to a **very low effect significance**.	Likely long-term imperceptible negative effect, which is **Not Significant** at the regional, national or international level geographical scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	per year from the regional population of a Green-listed (BoCCI) species is considered of very low significance.		
Decommissioning			
Direct Habitat Loss	Direct or indirect effects are not anticipated as no further infrastructure is proposed.	**No Effect**	**No Effect**
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.20 Sparrowhawk (All Seasons)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Construction Phase			
Direct Habitat Loss	This species was frequently recorded within the Core Ornithology Survey Area during the breeding and winter seasons. There were up to six breeding sparrowhawk territories (confirmed and probable) identified in the vicinity of the Core Ornithology Survey Area in any one season over the six breeding seasons surveyed. The majority of the breeding locations recorded over the six seasons were situated on the margins of the Project Site and beyond, with only 3 of the total 19 breeding territories identified occurring entirely within the Project Site. As such, the majority of the breeding locations are sited away from the Proposed Wind Farm. While there is potential for the loss of some nesting habitat within the Project Site, this will be insignificant in the wider context, given the majority of suitable woodland habitat occurs on the margins of the bog and away from the proposed infrastructure. Direct loss of foraging habitat relative	The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	to its availability onsite, will be minimal. Furthermore, the land lost to the permanent infrastructure footprint is small (i.e. 154ha/2.9% of the Project Site) relative to the total area within the Project Site. Substantial areas of undisturbed suitable breeding and foraging habitat will remain both within the Project Site and the wider surroundings post-construction. This habitat in the wider area is functionally equivalent to that found within the Core Ornithology Survey Area and is available to support any displaced species. No significant effects of direct habitat loss are anticipated at the county, national or international level.		
Disturbance	As previously discussed, breeding sparrowhawk were recorded in each of the six breeding seasons surveyed. The majority of the breeding locations recorded over the six seasons were situated on the margins of the Project Site, with only three of the total 19 breeding territories recorded occurring entirely within the Proposed Wind Farm. As such, the majority of the breeding locations recorded are sited away from the proposed construction works. While the disturbance associated with construction works may result in a measurable reduction in the breeding density of sparrowhawk and a reduction in the amount of available foraging habitat within the Project Site, these lands (e.g., farmland, adjacent woodland and treelines) are not considered unique to the Project Site or rare in the wider surroundings. Significant effects are not anticipated, given that extensive areas of suitable foraging habitat exist and will remain in the wider area. Onsite habitats are not considered unique to the Project Site. No significant effects of disturbance are anticipated at the regional, national or international level.	The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	Likely short-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated as no further infrastructure is proposed.	**No Effect**	**No Effect**
Displacement and Barrier Effect	As previously discussed, the Proposed Wind Farm hosts breeding and foraging sparrowhawk. Displacement from operational wind turbines is not reported for sparrowhawk, however, it is assumed for the purposes of this assessment that sparrowhawk show avoidance to a distance of 500m from turbines as with other raptors (Pearce-Higgins *et al.,* 2009). There was one confirmed territory in 2020, one confirmed in 2021, two confirmed in 2022, one confirmed in 2024 and two confirmed in 2025 within 500m of the Proposed Turbines. The disturbance associated with operational turbines will result in a measurable reduction in the breeding density of sparrowhawk and a reduction in the amount of available foraging habitat within the Project Site. Notwithstanding this, extensive areas of suitable foraging habitat exist and will remain in the wider area (i.e., outside 500m from the Proposed Turbines). Moreover, onsite habitats are not considered unique to the Project Site with significant areas of similar habitats available outside the Project Site. This habitat in the wider area is functionally equivalent to that found within the Core Ornithology Survey Area and is available to support any displaced species. The temporary disturbance of this species is possible throughout the Proposed Wind Farm during the operational phase from disturbance by maintenance vehicles and personnel visits, particularly in the vicinity of the Proposed Turbines, access roads and the Proposed Onsite Substation. However, the volume and frequency of such visits is considered to be very low and is likely to be generally minor in scale and short in duration when it occurs. It is not anticipated that amenity volumes will add to background levels of disturbance	The magnitude of the effect is assessed as medium. the cross tablature of a medium sensitivity species and medium impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant** at the regional, national or international level geographical scale**.**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
	currently occurring in the area. Therefore, significant effects by maintenance crews and amenity foot-traffic along the access roads and other infrastructure (excluding the Proposed Turbines) are not anticipated. Survey results indicate that the Core Ornithology Survey Area does not lie on a migratory corridor for woodcock, and no regular or patterned flight was identified over the Proposed Wind Farm. As outlined in Section 7.5.1, over the lifetime of the Proposed Wind Farm, a majority of the Project Site will likely develop a scrub mosaic on shallower peat. With the encroachment of woody vegetation, the Project Site is likely to become increasingly suitable for this species. Extensive areas of suitable foraging and nesting habitat exist and is likely to develop beyond 500m from the Proposed Turbines. No significant displacement and barrier effects are anticipated at the regional, national or international level.		
Collision Risk	The species was recorded flying within the potential collision height during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated a 0.199 collisions per year, or one bird every 5 years over the operational lifetime of the Proposed Wind Farm. The favourable conservation status of this species (Green-listed BoCCI) limits the potential for ecologically significant effects to result. The loss of 0.199 birds per year from the regional population of a Green-listed (BoCCI) species is considered of very low significance. The likely future receiving environment may support higher density of this species within the Proposed Wind Farm site, however this is not anticipated to significantly increase the collision risk given the low collisions predicted.	The magnitude of the effect is assessed as negligible. the cross tablature of a medium sensitivity species and negligible impact corresponds to a **very low effect significance**.	Likely long-term imperceptible negative effect, which is **Not Significant** at the regional, national or international level geographical scale**.**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022 & CIEEM, 2024)
Decommissioning			
Direct Habitat Loss	Direct or indirect effects are not anticipated as no further infrastructure is proposed.	No Effect	No Effect
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.3 Likely Effects Associated with the Proposed Grid Connection

The Proposed Grid Connection is comprised of the Proposed Onsite Substation, Proposed Offsite Substation, the 13.1km underground cabling connection from the Proposed Onsite Substation to the Proposed Offsite Substation, and overhead line (OHL) connecting to the existing Maynooth-Dunstown 220kV OHL, and all ancillary works and apparatus. It is proposed to construct a 220 kV electricity substation within the Proposed Wind Farm (full details Chapter 4 of this EIAR). The Proposed Onsite Substation is located in the eastern section of the Proposed Wind Farm, northeast of Lodge Bog, Co. Kildare, in the townland of Lullymore East. It is also proposed to construct the Proposed Offsite Substation within the Project Site (full details in Chapter 4 of this EIAR). The Proposed Offsite Substation is located within an agricultural field east of the Proposed Wind Farm, in the townland of Killybegs, Co. Kildare. It is proposed to connect the Proposed Onsite Substation to the Proposed Offsite Substation in the townland of Killybegs, Co. Kildare via 220kV underground electrical cabling. The Proposed Grid Connection will consist of approximately 0.12km of OHL (comprising 0.06km of OHL from the proposed 2 no. steel masts for the loop-in from the Proposed Offsite Substation to the existing OHL), consisting of 2 no. new steel masts, and 2 no. new gantry structures.

As detailed in Section 7.2.3, the Proposed Grid Connection was thoroughly covered during multidisciplinary ecology surveys, comprising six breeding seasons and six winter seasons. Across all surveys over these six years of surveying, there were no regular flight paths recorded in the vicinity of the proposed new 0.12km sections of OHL. Furthermore, there were very infrequent flights of overwintering waterbird species identified as KORs recorded crossing the location of the Proposed Grid Connection OHL cabling (i.e. golden plover, whooper swan, lapwing) over the six years of surveying (six golden plover flights, one lapwing flight and one whooper swan flight) and all flights were above 25m.

Following best practice, the 0.12km of OHL will include line markers to increase their visibility to bird in flight, which will negate any potential collision risk with the OHL during the operational phase. Required construction works along the Proposed Grid Connection are minor and are all located within the existing road corridor (full details in Chapter 4 of this EIAR). On a precautionary basis, it is assumed that some temporary disturbance may occur during works. However, given the scale of the works and the extent of similar habitat in the wider surroundings, significant effects are not predicted. The effect significance for all KORs is assessed as no greater than low (Percival, 2003) or a likely long-term slight negative effect (EPA, 2022), which are **Not Significant** at any geographic scale.

7.5.4 Likely Effects Associated with the Turbine Delivery Route

The Proposed Turbine Delivery Route will exit south off the M6 Motorway at Junction 5 Kilbeggan / Tullamore and travel via national, regional and local roads, as well as the internal access roads of the existing Cloncreen Wind Farm, to access the Proposed Wind Farm. Please see Chapter 4, Section 4.5.2 for further detail. Road and junction widening are sometimes required along the Proposed Turbine Delivery Route to accommodate the large vehicles used to transport turbine components to the Proposed Wind Farm. The Proposed Turbine Delivery Route for the Proposed Project has been the subject of a route assessment to determine if any works are required along its length. Full details are available in Chapter 4 of this EIAR.

The existing habitats (i.e. existing roads) along the route do not have the potential to support other species of conservation interest in the area. Temporary junction accommodation for abnormal loads will be required; however, these works are minor in scale and are located within the existing road corridor (full details in Chapter 4 of this EIAR). Upon completion of the turbine delivery phase, the

areas will revert back to its existing condition. On a precautionary basis, it is assumed that some temporary disturbance may occur along sections during works.

The majority of habitats at the locations of the Proposed Turbine Delivery Route accommodation works are of low ecological value (i.e. cutover bog and agricultural land) and do not have the potential to support species of conservation interest in the area. On a precautionary basis, it is assumed that some temporary disturbance may occur during works. However, given the small footprint and the extent of suitable habitat in the wider area, significant disturbance effects are not predicted. The effect significance for all KORs is assessed as no greater than low (Percival, 2003) or a likely short-term slight negative effect (EPA, 2022), which are **Not Significant** at any geographic scale.

7.5.5 Likely Effects Associated with the Proposed Enhancement Areas

The measures within the Proposed Enhancement Areas will be implemented during the construction phase. This will ensure that there is no delay in these habitats being available at the beginning of the operational phase. Measures which require time to establish will be implemented at the beginning of the three-year construction phase to ensure that these habitats have time to develop over this three-year period.

7.5.5.1 Golden Plover

As outlined in Section 7.5.1, over the lifetime of the Proposed Wind Farm, with the succession to scrub mosaic on shallower peat, the Core Ornithology Survey Area will likely become increasingly less suitable for open habitat species like golden plover.

As outlined in Section 7.6 below and detailed in Appendix 6-5, the Biodiversity Management Plan is targeted to benefit wintering golden plover through habitat restoration and enhancement measures at Lodge Bog and habitat creation at Killina Bog. These measures will result in a long-term positive effect by increasing the availability of foraging and roosting habitat for golden plover within the Proposed Enhancement Areas. The effect significance is assessed as no greater than low (Percival, 2003) or a likely short-term slight positive effect (EPA, 2022), which are **Not Significant** at any geographic scale.

7.5.5.2 Greenland White-fronted Goose

This species was observed infrequently travelling over the Proposed Wind Farm and is unlikely to be affected by Biodiversity Management Plan. Given that this species was only observed migrating over the Project Site during migration periods, no effects from the Proposed Enhancement Areas are anticipated.

7.5.5.3 Hen Harrier

As outlined in Section 7.6 below and detailed in Appendix 6-5, the Biodiversity Management Plan is targeted to benefit wintering hen harrier through habitat restoration and enhancement measures at Lodge Bog. Reedbeds are proposed in this area to replace the possible effective loss of roosting habitat within the Proposed Wind Farm. These measures will result in a long-term positive effect by increasing the availability of foraging and roosting habitat for wintering hen harrier within the Proposed Enhancement Areas. The effect significance is assessed as no greater than low (Percival, 2003) or a likely long-term slight positive effect (EPA, 2022), which are **Not Significant** at any geographic scale.

7.5.5.4 Kingfisher

As outlined in Section 7.6 below and detailed in Appendix 6-5, the Biodiversity Management Plan will restore, enhance and create open habitats which will benefit waterbirds such as golden plover, lapwing,

whooper swan and snipe by increasing good quality open habitats for foraging and roosting. Due to the foraging nature of kingfisher, these measures will likely result in a long-term slight positive effect on kingfisher within the Proposed Enhancement Areas, due to the measures including the removal of scrub and forestry within Lodge and Killina bogs which will make the major drainage ditches within these areas more suitable for kingfisher. The effect significance is assessed as no greater than low (Percival, 2003) or a likely long-term slight positive effect (EPA, 2022), which are **Not Significant** at any geographic scale.

7.5.5.5 Little Egret

As outlined in Section 7.6 below and detailed in Appendix 6-5, the Biodiversity Management Plan is targeted to benefit waterbirds through habitat restoration and enhancement measures at Lodge Bog and habitat creation at Killina Bog. The removal of scrub at Lodge Bog and forestry at Killina bog will result in access to more suitable habitat for foraging (large drainage ditches that are currently inaccessible will become available for foraging). The creation of breeding wader scrapes will also be of benefit to little egret for foraging. These measures will result in a long-term positive effect by increasing the availability of foraging habitat for little egret within the Proposed Enhancement Areas. The effect significance is assessed as no greater than low (Percival, 2003) or a likely long-term slight positive effect (EPA, 2022), which are **Not Significant** at any geographic scale.

7.5.5.6 Whooper Swan

As outlined in Section 7.6 below and detailed in Appendix 6-5, the Biodiversity Management Plan is targeted to benefit wintering whooper swan through habitat restoration and enhancement measures at Lodge Bog. Permanent waterbodies are proposed in this area to replace the loss of roosting habitat within the Proposed Wind Farm. These measures will result in a long-term positive effect by increasing the availability of foraging and roosting habitat for wintering whooper swan within the Proposed Enhancement Areas. The effect significance is assessed as no greater than low (Percival, 2003) or a likely long-term slight positive effect (EPA, 2022), which are **Not Significant** at any geographic scale.

7.5.5.7 Lesser Black-backed Gull

As outlined in Section 7.6 below and detailed in Appendix 6-5, the Biodiversity Management Plan is targeted to benefit waterbirds through habitat restoration and enhancement measures at Lodge Bog and habitat creation at Killina Bog. The removal of scrub at Lodge Bog and forestry at Killina bog will result in access to more suitable habitat for foraging (large drainage ditches that are currently inaccessible will become available for foraging). The creation of breeding wader scrapes will also be of benefit to lesser black-backed gull for foraging and those transiting. These measures will result in a long-term positive effect by increasing the availability of foraging habitat for lesser black-backed gull within the Proposed Enhancement Areas. The effect significance is assessed as no greater than low (Percival, 2003) or a likely long-term slight positive effect (EPA, 2022), which are **Not Significant** at any geographic scale.

7.5.5.8 Curlew

As outlined in Section 7.6 below and detailed in Appendix 6-5, the Biodiversity Management Plan is targeted to benefit breeding waders through habitat restoration and enhancement measures at Lodge Bog and habitat creation at Killina Bog. Predator proof fencing and wader scrapes will be created which will be of benefit to breeding waders. These measures will result in a long-term positive effect for breeding curlew by increasing the availability of breeding habitat within the Proposed Enhancement Areas. The effect significance is assessed as no greater than low (Percival, 2003) or a likely long-term slight positive effect (EPA, 2022), which are **Not Significant** at any geographic scale.

7.5.5.9 Lapwing

As outlined in Section 7.6 below and detailed in Appendix 6-5, the Biodiversity Management Plan is targeted to benefit breeding waders through habitat restoration and enhancement measures at Lodge Bog and habitat creation at Killina Bog. Predator proof fencing and wader scrapes will be created which will be of benefit to breeding waders. Furthermore, the creation of open habitats in Lodge and Killina bogs will benefit wintering lapwing by providing both foraging and roosting habitats. These measures will result in a long-term positive effect for breeding and wintering lapwing increasing the availability of suitable habitat within the Proposed Enhancement Areas. The effect significance is assessed as no greater than low (Percival, 2003) or a likely long-term slight positive effect (EPA, 2022), which are **Not Significant** at any geographic scale.

7.5.5.10 Snipe

As outlined in Section 7.6 below and detailed in Appendix 6-5, the Biodiversity Management Plan is targeted to benefit breeding waders through habitat restoration and enhancement measures at Lodge Bog and habitat creation at Killina Bog. Predator proof fencing and wader scrapes will be created which will be of benefit to breeding waders. Furthermore, the creation of open habitats in Lodge and Killina bogs will benefit wintering snipe by providing both foraging and roosting habitats. These measures will result in a long-term positive effect by increasing the availability of nesting, foraging and roosting habitat for breeding and wintering snipe within the Proposed Enhancement Areas. The effect significance is assessed as no greater than low (Percival, 2003) or a likely long-term slight positive effect (EPA, 2022), which are **Not Significant** at any geographic scale.

7.5.5.11 Woodcock

Significant impacts on woodcock are not anticipated at the Proposed Enhancement Lands based on the following rationale. The habitat loss is anticipated for this species, from the removal of scrub, woodland and forestry habitat at Lodge and Killina bogs. However, these habitat types are not rare in the local area, and not unique to the Proposed Enhancement Areas. Furthermore, the proposed woodland enhancement will create and enhance suitable habitat for this species. Significant impacts at a local or regional level are not anticipated. The effect significance is assessed as no greater than low (Percival, 2003) or a likely long-term slight negative effect (EPA, 2022), which are **Not Significant** at any geographic scale.

7.5.5.12 Raptors

Merlin, peregrine, barn owl, kestrel, buzzard, long-eared owl and sparrowhawk were recorded foraging and/or breeding within the Core Ornithology Survey Area. These species will likely benefit from the Biodiversity Management Plan based on the following rationale. The measures proposed are likely to increase the quality of open habitats which is used by many prey species for these species and therefore will likely result in a long-term positive effect by increasing the availability of prey in the Proposed Enhancement Areas. The loss of breeding habitat through the removal of scrub and forestry is not anticipated to be significant as these habitat types are not rare in the local area, and not unique to the Proposed Enhancement Areas. The effect significance is assessed as no greater than low (Percival, 2003) or a likely long-term slight positive effect (EPA, 2022), which are **Not Significant** at any geographic scale.

7.5.6 Likely Effects of the Proposed Project

The likely effect of the whole Proposed Project have been considered in combination with each other (i.e., the Proposed Wind Farm, the Proposed Grid Connection, the Turbine Delivery Route and the Proposed Enhancement Areas). The effect significance for all species are determined to be no greater when considered in combination with each other as the effects outlined in the sections above.

7.5.7 Likely Effects on Designated Sites

Where the potential for any adverse effect on any European Site has been identified, the pathway by which any such effect may occur has been robustly blocked through the use of avoidance, appropriate design and mitigation measures as set out within this report and its appendices. The measures ensure that the construction, operation and decommissioning of the Proposed Project will not have an adverse effect on the integrity of any European sites in light of their conservation objectives.

Following an examination, evaluation and analysis, in light of best scientific knowledge and the conservation objectives of the site, and, on the basis of objective information, it can be concluded that the Proposed Project will not have an adverse impact on any European Sites, either alone or in combination with other plans or projects.

7.6 Mitigation and Best Practice Measures

This section describes the measures that are in place to mitigate negative effects associated with the Proposed Project on ornithological receptors. Effects on ornithological receptors have been addressed through the design of the Proposed Project, a Construction and Environmental Management Plan, and targeted mitigation and enhancement measures outlined within the Biodiversity Management Plan. These are discussed below.

7.6.1 Mitigation Hierarchy

Significant effects were identified for several key ornithological receptor that required the consideration of mitigation. The key areas of impact included habitat loss and collision risk. Following the mitigation hierarchy, 'Avoidance' was first considered at early design stage, but given the distribution of key species on-site, no individual turbine(s) alone was specifically implicated. Significant effects related to the scale of the Project Site rather than location of individual turbines. As a result, avoidance was determined to be an ineffective approach. Instead, a three-step approach was adopted , following subsequent tiers of the mitigation hierarchy, namely, 'Mitigation', 'Offsetting' and 'Monitoring/Curtailment'. This approach is discussed in further detail in Section 7.6 below and Appendix 6-5. Step 1 of this process refers to the second tier of the mitigation hierarchy, i.e. to reduce effects (i.e. collision risk) by making areas around the Proposed Turbines less attractive for open habitat species through revegetation of scrub mosaic habitats. Step 2 further reduced collision risk effects by attracting open habitat species to low-risk areas away from the Proposed Turbines. This was achieved through the creation of the Proposed Enhancement Areas. The Proposed Enhancement Areas identify areas available to offset habitat loss effects, as well as enhancement opportunities within the Project Site. Step 3 of the process is ongoing monitoring for the lifetime of Proposed Wind Farm and employing curtailment of the Proposed Turbines responsible for exceeding collision risk. Please see Section 7.6.4 for an outline of the key proposed measures.

7.6.2 Design of the Proposed Project

The project design has followed the basic principles outlined below to avoid the potential for significant effects on ornithological receptors:

- Hard standing areas have been designed to the minimum size necessary to accommodate the turbine model that is selected.
- The Proposed Grid Connection routes have been selected to utilise built infrastructure for the majority of its length (i.e. cables to be laid within public roads). Cables will be laid underground to avoid effects on roadside hedgerows and disturbance to nesting birds.

- Following best practice, the 0.12km of OHL will include line markers to increase their visibility to bird in flight.
- An initial assessment of the possibility of removing turbines from the Proposed Wind Farm was considered to avoid significant collision risk impacts on golden plover. However, given that flight activity of golden plover is throughout the Core Ornithology Survey Area, no specific turbine/turbines are the cause of the significant effect. The significant effect is largely related to the scale of the Proposed Wind Farm and the presence of suitable roosting habitat for golden plover throughout the Core Ornithology Study Area. Therefore, avoiding the cause of the significant collision risk through project design and turbine layout was not a feasible option (see details in Appendix 7-6). Mitigation and offsetting measures are therefore proposed within the Biodiversity Management Plan.
- The Proposed Onsite Substation was sited outside the disturbance distance of 800m (830m separation distance) from the historic curlew nest adjacent to the Core Ornithology Study Area.

7.6.3 Construction and Environmental Management Plan

A Construction and Environmental Management Plan has been prepared and will be in place prior to the start of the construction phase. Full details are available in Chapter 4 and Appendix 4-4 of this EIAR. Note that the majority of these measures are proposed as industry best practice rather than to mitigate any identified significant effect and will be updated as required to address any conditions of a permission or findings of any pre-construction survey results. Measures specific to birds are detailed below:

- Works will commence outside the bird nesting season (1st of March to 31st of August inclusive). Any requirement for construction works to run into the breeding seasons following commencement will be informed by pre-construction bird surveys.
- The removal of woody vegetation will be undertaken in full compliance with Section 40 of the Wildlife Act 1976 – 2022. Where sections of woody vegetation are removed for the purposes of the junction and road upgrades, these will be replaced with suitable hedge/tree species which are common in the local context.
- During the construction phase, noise limits, noise control measures, hours of operation (i.e. dusk and dawn is high faunal activity time) and selection of plant items will be considered in relation to disturbance of birds. Please see Section 12.7 of Chapter 12 for more detail associated with noise during the construction phase.
- Water protection measures will be implemented during the construction phase as outlined in Section 9.5.2 of Chapter 9, to protect downstream watercourses.
- A pre-construction bird survey at the Proposed Wind Farm will be organised to ensure that any sensitive roost or nest sites in the works area are identified and disturbance to these are avoided. Further details are provided in Appendix 7-7.
- An Environmental Clerk of Works and Project Ecologist will be appointed. Duties will include:
    - Organise the undertaking of pre-construction and construction phase confirmatory bird surveys to avoid impacts on birds.
    - Inform and educate on-site personnel of the ornithological and ecological sensitivities within the Project Site.
    - Oversee management of ornithological issues during the construction period and advise on ornithological issues as they arise.
    - Provide guidance to contractors to ensure legal compliance with respect to protected species onsite.
    - Liaise with officers of consenting authorities and other relevant bodies with regular updates in relation to construction progress as necessary.
    - If winter roosting or breeding activity of birds of high conservation concern are identified, the roost or nest site will be located and no works shall be

undertaken within a species-specific disturbance buffer in line with industry best practice (e.g. Goodship and Furness, 2022). No works shall be permitted within the buffer until it can be demonstrated that the roost/nest is no longer occupied.

7.6.4 Mitigation/Offsetting Measures

A comprehensive mitigation and offsetting plan is presented in Appendix 6-5. This section summaries the measures outlined in detail within this appendix.

7.6.4.1 Golden Plover

As outlined in Section 7.5.2, significant collision risk and habitat loss effects are predicted for golden plover. To mitigate and/or offset these significant effects, the following is proposed:

- Collision risk: to mitigate significant collision risk effects it is proposed to make the habitat near the Proposed Turbines unsuitable, attract golden plover to low risk areas away from the Proposed Turbines and monitor collision risk. If collision rates exceed a set threshold of ten birds which will result in a negligible increase in the background mortality, curtailment would apply. Please see Appendix 6-5 for further details of how this mitigation will be implemented during the construction phase.
- Curtailment: Carcass monitoring and vantage point monitoring surveys will inform curtailment requirements. In the event that golden plover mortality caused by the Proposed Turbines exceeds ten birds per winter season, the turbines determined most likely to have caused these fatalities will curtailed for the remainder of the winter season. Monitoring will be repeated every winter with the results of each winter informing curtailment for that season. The threshold of ten birds was determined to be sufficient to reduce the collision risk on the local population to Not Significant.
- Habitat loss: to offset the significant habitat loss effect, habitat restoration and creation is proposed. This enhancement is proposed at Lodge Bog, and the creation of habitat is proposed at Killina Bog. Please see Appendix 6-5 for full details of how this will be implemented.

7.6.4.2 Hen Harrier

As outlined in Section 7.5.2, significant displacement effects are predicted for roosting hen harrier. To mitigate and/or offset these significant effects, the following is proposed:

- Displacement: to offset significant displacement effects from the Proposed Turbines, habitat creation is proposed at Lodge Bog. Please see Appendix 6-5 for full details of how this will be implemented.

7.6.4.3 Whooper Swan

As outlined in Section 7.5.2, significant habitat loss, disturbance and displacement effects are predicted for whooper swan. To mitigate and/or offset these significant effects, the following is proposed:

- Habitat loss: to offset the significant habitat loss effect habitat restoration and creation is proposed. This enhancement is proposed at Lodge Bog. Please see Appendix 6-5 for full details of how this will be implemented.
- Disturbance and displacement: to offset significant disturbance effects during the construction phase and displacement during the operational phase, habitat restoration and creation is proposed to attract whooper swan away from the source of

disturbance or displacement. This enhancement is proposed at Lodge Bog. Please see Appendix 6-5 for full details of how this will be implemented.

7.6.4.4 Lapwing (Breeding)

As outlined in Section 7.5.2, significant habitat loss, disturbance, displacement and collision risk effects are predicted for breeding lapwing. To mitigate and/or offset these significant effects, the following is proposed:

- Habitat loss: to offset the significant habitat loss effect habitat restoration and creation is proposed. This enhancement is proposed at Lodge Bog, and the creation of habitat is proposed at Killina Bog. Please see Appendix 6-5 for full details of how this will be implemented.
- Disturbance and displacement: to offset significant disturbance effects during the construction phase and displacement during the operational phase, habitat restoration and creation is proposed. This enhancement is proposed at Lodge Bog, and the creation of habitat is proposed at Killina Bog. Please see Appendix 6-5 for full details of how this will be implemented.

7.6.4.5 Snipe

As outlined in Section 7.5.2, significant disturbance and displacement effects are predicted for snipe. To mitigate and/or offset these significant effects, the following is proposed:

- Disturbance and displacement: to offset significant disturbance effects during the construction phase and displacement during the operational phase, breeding habitat restoration and creation is proposed. This enhancement is proposed at Lodge Bog, and the creation of habitat is proposed at Killina Bog. Please see Appendix 6-5 for full details of how this will be implemented.

7.6.4.6 Curlew (Breeding)

As outlined in Section 7.5.2, there are no significant effects anticipated for the breeding population of curlew. Notwithstanding the low rate of predicted collisions and in acknowledgement of the importance of the local population of curlew, enhancement measures are proposed for the benefit of curlew. In particular, measures to increase breeding productivity are proposed through habitat restoration and creation. This enhancement is proposed at Lodge Bog, and the creation of habitat is proposed at Killina Bog. Please see Appendix 6-5 for full details of how this will be implemented.

7.6.4.7 Proposed Actions

- 0-50m surrounding all turbines: to be planted with rush mosaic and rush mosaic promoted through side casting excavated soils to discourage waders (golden plover, lapwing, snipe) from flying among and around turbines with the intention of utilising open areas for foraging/roosting. The planting of rush in this buffer will reduce open areas to below 10ha[17] while not encouraging bats to the area around the base of turbines.
- 50-250m surrounding all turbines: to be planted with scrub mosaic habitat to discourage waders (golden plover, lapwing, snipe) from flying among and around turbines with the intention of utilising open areas for foraging/roosting. The planting

[17] *A review of habitats used by golden plover indicate that this species will not utilise open habitats smaller than 10ha (Leitão& Peris, 2015)*

of scrub in smaller patches (0.1-5ha) within larger open areas to fragment these open areas to below 10ha.

- Lodge Bog Enhancement: to offset the habitats lost to the mitigation measures within 250m of all turbines, open areas will be enhanced/created through scrub removal and management, permanent waterbody creation for whooper swan, creation of breeding wader areas and installation of predator proof fencing.
- Killina Offsetting Area: to offset the habitats lost to the mitigation measures within 250m of all turbines, forestry will be removed and vegetation sward will be kept at the optimal height for waders, including golden plover. Golden plover decoys will be placed in the newly created open area to draw circling flocks which look for other birds on the ground.
- Monitoring of offsetting areas for alignment with objectives will be put in place and measures will be adapted as required to ensure the efficacy of mitigation for the lifetime of the project.
- Further detail on these actions are outlined in Appendix 6-5.

7.7 Residual Effects

Following the measures described in Section 7.6, no effect significance greater than low effect significance, as per Percival (2003) criteria, was identified for any KOR. No effect significance greater than likely long-term slight negative effect, as per EPA (2022) criteria, was identified for any KOR. **No significant residual effects** were predicted for any KOR (see Table 7-12 below). Taking into consideration the effect significance levels identified and the proposed best practice and mitigation, significant residual effects on the KORs with regard to direct habitat loss, disturbance/displacement or collision mortality are not anticipated.

Table 7-12 Residual effects for KORs where significant effects were predicted before mitigation or offsetting

KOR	Project Phase	Potential Effects	Significance of Effect without Mitigation	Proposed Mitigation	Residual Effect
Golden Plover	Construction	-	No significant effects during the construction phase are anticipated.	n/a	No significant effects during the construction phase are anticipated.
	Operational	Displacement Collision Risk	High effect significance (Percival, 2003) or likely long-term negative effect (EPA, 2022), which is **Significant**	See Section 7.6.4.1	Low effect significance (Percival, 2003) or likely long-term slight negative effect (EPA, 2022), which is **Not Significant**
	Decommissioning	-	No significant effects during the decommissioning phase are anticipated.	n/a	No significant effects during the decommissioning phase are anticipated.
Hen Harrier (Wintering)	Construction	-	No significant effects during the construction phase are anticipated.	n/a	No significant effects during the construction phase are anticipated.
	Operational	Displacement	High effect significance (Percival, 2003) or likely long-term negative effect (EPA, 2022), which is **Significant**	See Section 7.6.4.2	Low effect significance (Percival, 2003) or likely long-term slight negative effect (EPA, 2022), which is **Not Significant**
	Decommissioning	-	No significant effects during the decommissioning phase are anticipated.	n/a	No significant effects during the decommissioning phase are anticipated.
Whooper Swan	Construction	Habitat Loss Disturbance	Medium effect significance (Percival, 2003) or likely long/short-term negative effect (EPA, 2022), which is **Significant**	See Section 7.6.4.3	Low effect significance (Percival, 2003) or likely long/short-term slight negative effect (EPA, 2022), which is **Not Significant**
	Operational	Disturbance	Medium effect significance (Percival, 2003) or likely long-term negative effect (EPA, 2022), which is **Significant**	See Section 7.6.4.3	Low effect significance (Percival, 2003) or likely long-term slight negative effect (EPA, 2022), which is **Not Significant**
	Decommissioning	Disturbance	Medium effect significance (Percival, 2003) or likely short-term negative effect (EPA, 2022), which is **Significant**	See Section 7.6.4.3	Low effect significance (Percival, 2003) or likely short-term slight negative effect (EPA, 2022), which is **Not Significant**
Lapwing (Breeding)	Construction	Habitat Loss Disturbance	Very high effect significance (Percival, 2003) or likely long/short-term negative effect (EPA, 2022), which is **Significant**	See Section 7.6.4.4	Low effect significance (Percival, 2003) or likely long/short-term slight negative effect (EPA, 2022), which is **Not Significant**
	Operational	Displacement	Very high effect significance (Percival, 2003) or likely long-term negative effect (EPA, 2022), which is **Significant**	See Section 7.6.4.4	Low effect significance (Percival, 2003) or likely long-term slight negative effect (EPA, 2022), which is **Not Significant**

KOR	Project Phase	Potential Effects	Significance of Effect without Mitigation	Proposed Mitigation	Residual Effect
	Decommissioning	Disturbance	Very high effect significance (Percival, 2003) or likely long/short-term negative effect (EPA, 2022), which is **Significant**	No Effect	Low effect significance (Percival, 2003) or likely short-term slight negative effect (EPA, 2022), which is **Not Significant**
Snipe	Construction	Disturbance	High effect significance (Percival, 2003) or likely short-term negative effect (EPA, 2022), which is **Significant**	See Section 7.6.4.5	Low effect significance (Percival, 2003) or likely short-term slight negative effect (EPA, 2022), which is **Not Significant**
	Operational	Displacement	High effect significance (Percival, 2003) or likely long-term negative effect (EPA, 2022), which is **Significant**	See Section 7.6.4.5	Low effect significance (Percival, 2003) or likely long-term slight negative effect (EPA, 2022), which is **Not Significant**
	Decommissioning	Disturbance	High effect significance (Percival, 2003) or likely short-term negative effect (EPA, 2022), which is **Significant**	See Section 7.6.4.5	Low effect significance (Percival, 2003) or likely short-term slight negative effect (EPA, 2022), which is **Not Significant**

7.8 Cumulative Impacts

The Proposed Project was considered in combination with other plans and projects in the surrounding area that could result in cumulative impacts on KORs. The plans and projects considered are listed in Chapter 2 Section 2.9 of this EIAR. The full list of plans and projects has been considered and relevant ones from this list are considered in the cumulative assessment. The key threats and pressures for each KOR has informed the list of plans and projects discussed within the cumulative assessment, these key threats and pressures are outlined in Section 7.9.3 below. The plans and project which informed this cumulative assessment are outlined below.

7.8.1 Plans Considered in the Cumulative Impact Assessment

The following plans were considered in the cumulative impact assessment:

- Offaly County Development Plan 2021-2027
- Kildare County Development Plan 2023-2029
- National Biodiversity Action Plan 2017-2021
- Offaly Biodiversity Action Plan 2025-2030
- Kildare Biodiversity Action Plan 2026-2031
- The Draft Rehabilitation Plans will be implemented in accordance with the IPC licence requirements. Please see Chapter 2 and 4 for details.
- Bord na Móna Peatlands Climate Action Scheme

These policies and objectives of these plans have been summarised below and taken into account in this cumulative assessment.

Offaly County Development Plan 2021-2027

The Offaly County Development Plan 2021–2027 (effective from 22nd October 2021) (OCDP) incorporates the protection of birds through a framework of biodiversity conservation, landscape protection, green infrastructure planning and compliance with European and national environmental legislation. Chapter 4 (Biodiversity and Landscape) recognises the importance of maintaining ecological networks, protecting designated sites and conserving habitats that support biodiversity, including bird species.

The OCDP includes objectives to:

- Protect SPAs, SACs, Natural Heritage Areas (NHAs), proposed NHAs and other designated biodiversity sites from inappropriate development.
- Protect and enhance biodiversity and ecological networks throughout the county.
- Avoid habitat loss, fragmentation and disturbance to protected species and habitats.
- Maintain and enhance green infrastructure and ecological corridors that facilitate species movement.
- Protect wetlands, peatlands, rivers, lakes, hedgerows, woodland habitats and other areas of ecological value that support bird populations.

The OCDP recognises that the county contains extensive raised bogs, cutaway peatlands and wetland systems associated with the Shannon Basin, many of which are recognised as important habitats for breeding and wintering birds. The OCDP acknowledges the importance of peatland restoration and habitat connectivity, which provide indirect benefits to bird populations through the maintenance and enhancement of suitable habitat. The County Wind Energy Strategy, which forms part of the OCDP, also recognises the need to consider potential impacts on birds and other ecological receptors during the assessment of wind energy developments.

The Environmental Reports accompanying the Plan, including the Strategic Environmental Assessment (SEA) and Natura Impact Report (NIR), establish environmental protection objectives that seek to avoid adverse effects on biodiversity, maintain ecological integrity and protect designated sites and protected species. These

objectives ensure that biodiversity considerations, including impacts on bird populations and their habitats, are integrated throughout the planning process.

Birds are therefore integrated into the OCDP through the protection of SPAs and other designated sites, the application of Appropriate Assessment requirements, the conservation and restoration of peatland, wetland and riverine habitats, the protection of ecological corridors and green infrastructure networks, and the broader objective of maintaining biodiversity and ecosystem function throughout the county.

Kildare County Development Plan 2023-2029

The Kildare County Development Plan 2023–2029 (effective from 28 January 2023) (KCDP) incorporates the protection of birds through a comprehensive framework of biodiversity conservation, green infrastructure planning and compliance with European and national environmental legislation. The KCDP recognises the importance of maintaining ecological networks and protecting habitats that support protected species, including birds. It contains policies and objectives aimed at safeguarding designated sites, enhancing habitat connectivity and preventing the fragmentation of ecological corridors.

The KCDP includes objectives to:

- Protect SPAs, SACs, NHAs, proposed NHAs, Nature Reserves and Ramsar Sites from inappropriate development.
- Avoid, reduce and mitigate impacts on protected habitats and species.
- Maintain and enhance ecological connectivity through green and blue infrastructure networks.
- Protect rivers, wetlands, peatlands, woodlands, hedgerows and other habitats that provide feeding, breeding, roosting and commuting opportunities for bird species.
- Prevent habitat fragmentation and promote biodiversity enhancement measures within new developments.

The KCDP recognises that the county contains a diverse network of wetlands, river systems and peatland habitats, including Ballynafagh Lake, Pollardstown Fen and areas of the Bog of Allen. The KCDP recognises the importance of protecting and enhancing these habitats and maintaining ecological connectivity through green infrastructure networks, which provide indirect benefits to bird populations through the protection and enhancement of suitable habitat.

Volume 5 Environmental Reports include a Strategic Environmental Assessment (SEA) and Appropriate Assessment (AA), which establish environmental protection objectives including the avoidance of adverse effects on biodiversity, the protection of ecological networks and the conservation of designated sites and protected species. These objectives help ensure that future development within County Kildare does not adversely affect bird populations or the habitats upon which they depend.

Birds are therefore integrated into the KCDP primarily through the protection of SPAs and other designated sites, the application of Appropriate Assessment requirements, the safeguarding of biodiversity and green infrastructure networks, and the conservation of habitats that support breeding, wintering and migratory bird populations throughout the county.

4th National Biodiversity Action Plan 2023-2030

Ireland's 4th National Biodiversity Action Plan (NBAP) sets out a national strategy to halt and reverse biodiversity loss by 2030 through a coordinated, whole of government and whole of society approach. It recognises that biodiversity in Ireland is in significant decline, where most protected habitats are in poor condition and many species are threatened despite its critical role in supporting ecosystems, the economy, and human wellbeing. The NBAP outlines 194 actions built around five core objectives: adopt a whole-of-government, whole-of-society approach to biodiversity; meet urgent conservation and restoration needs; secure nature's contribution to people; enhance the evidence base for action on biodiversity; strengthen Ireland's contribution to international biodiversity initiatives. Delivery relies on collaboration between government,

agencies, communities, landowners, and businesses, supported by increased funding, policy alignment (EU and global frameworks), and stronger governance. Overall, the NBAP aims to drive transformative change in how Ireland values, manages, and restores nature.

The NBAP recognises ongoing declines in bird populations as a key indicator of wider ecosystem degradation and focuses on reversing these trends through habitat restoration, expansion and improved management of protected areas (including SPAs and marine areas), and stronger integration of biodiversity into sectors like agriculture, planning, and climate policy. For birds, the NBAP prioritises restoring wetlands, peatlands, and species-rich grasslands, addressing pressures such as agricultural intensification, habitat loss, climate change, and disturbance, while also improving monitoring and data to track population trends.

Offaly Biodiversity Action Plan 2025-2030

The Offaly Biodiversity Action Plan 2025-2030 provides a county-wide framework for the protection, conservation and enhancement of biodiversity, including the protection of birds and their habitats. The plan recognises the importance of the EU Birds Directive and the requirement to protect naturally occurring wild bird species and their most important habitats. It also acknowledges the importance of restoring degraded ecosystems and improving the condition and connectivity of habitats that support biodiversity.

The plan addresses a range of habitats that are important for bird populations, including wetlands, rivers, grasslands, peatlands, woodlands and other semi-natural habitats. These habitats provide important feeding, breeding, nesting and roosting areas for bird species and their protection and restoration are identified as important components of wider biodiversity conservation. The plan also recognises the importance of ecological connectivity and the need to address pressures such as habitat loss, degradation, invasive species and climate change.

Strategic actions within the plan include:

- Protect and restore important habitats and ecosystems, including wetlands, peatlands, grasslands and woodlands.
- Improve habitat connectivity and ecological resilience and support biodiversity both within and outside designated areas.
- Strengthen biodiversity knowledge through surveying, monitoring, mapping and improved biodiversity data.

Beyond designated sites, the plan supports bird populations through practical habitat conservation and restoration measures, including wetland and grassland surveys, improvements to semi-natural grasslands, native woodland initiatives and community biodiversity projects. Current biodiversity initiatives in Offaly include wetland and grassland surveys and habitat enhancement projects, demonstrating the plan's emphasis on improving the wider landscape for biodiversity.

Birds are integrated into the Offaly Biodiversity Action Plan through the protection and restoration of bird habitats, implementation of the EU Birds Directive, improved ecological monitoring and data collection, and wider actions aimed at maintaining habitat quality, connectivity and resilience across the county.

Kildare Biodiversity Action Plan 2026-2031

The Kildare Biodiversity Action Plan 2026-2031 provides a county-wide framework for the protection, conservation and restoration of biodiversity, including bird species and the habitats on which they depend. The plan recognises biodiversity at species and ecosystem level and identifies the importance of maintaining the ecological systems that support a wide range of species. It also promotes the protection of existing biodiversity-rich habitats alongside the restoration of degraded ecosystems and the strengthening of ecological networks across County Kildare.

The plan addresses a range of habitats that are important for bird populations, including wetlands, peatlands, grasslands, woodlands, rivers and other natural and semi-natural habitats. These habitats provide essential feeding, breeding, nesting and roosting opportunities for birds, while connected ecological networks allow species to move between suitable habitats. The plan also recognises pressures on biodiversity arising from habitat loss and degradation, invasive species, changes in land management and wider environmental pressures.

Strategic priorities identified within the plan include:

- Protect existing biodiversity-rich habitats and support the recovery of degraded ecosystems, including wetlands, peatlands, grasslands and river corridors.
- Support the recovery of threatened and declining native species and strengthen ecological networks to facilitate wildlife movement.
- Improve biodiversity data, monitoring and research to inform conservation and land management decisions.

Beyond designated sites, the plan supports bird populations through habitat restoration, nature-friendly land management and the expansion of ecological networks throughout the county. Particular emphasis is placed on wetlands, peatlands, grasslands and river corridors, while biodiversity action is intended to extend beyond designated conservation sites and become integrated into the wider management of land, water and public spaces.

Birds are therefore integrated into the Kildare Biodiversity Action Plan through the protection and restoration of habitats supporting bird populations, conservation of threatened and declining species, strengthening of ecological connectivity, improved biodiversity monitoring and wider actions aimed at embedding biodiversity conservation across County Kildare.

Bord na Móna Peatland Climate Action Scheme (PCAS)

The Peatland Climate Action Scheme (PCAS) scheme is supported by Government through the Climate Action Fund and Ireland's National Recovery and Resilience Plan administered by the Department of Environment, Climate and Communications (DECC). Please see https://www.bnmpcas.ie/ for details. The National Parks and Wildlife Service (NPWS) acts as the Scheme regulator and there is ongoing engagement with the EPA. This scheme is in addition to the IPC licence requirements. Peatlands within and in the wider vicinity of the Project Site are included in the scheme. For example, at Lodge Bog where these works have been completed. These measures aim to optimise climate action benefits of rewetting the former industrial peat production areas by creating soggy peatland conditions that will allow compatible peatland habitats to redevelop.

The measures undertaken will set sites on an accelerated trajectory towards the development of a variety of compatible habitats including developing natural peatland, wetland and woodland. This will provide habitat for a range of species that depend on these habitats, including some species that are rare and protected. In relation to birds, it is anticipated that the rehabilitated peatlands will be of particular benefit to waders and raptors (e.g. snipe, woodcock, lapwing and kestrel). The newly restored habitat is likely to provide breeding and resting locations for these species.

This scheme and nearby bogs undergoing or are planned to be rehabilitated as part of PCAS have been considered in this cumulative assessment.

The Curragh Plains Conservation Management Plan (2024)

The Curragh Plains Conservation Management Plan (CMP) establishes a framework for the sustainable management and conservation of the Curragh Plains, County Kildare. The plan identifies the ecological significance of the Curragh, which comprises approximately 1,970 ha of predominantly open, semi-natural grassland and heath habitats. The Plains support important bird populations, including wintering golden plover and lapwing, and provide habitat for ground-nesting bird species. The plan seeks to protect and enhance the Curragh's biodiversity while accommodating its established military, agricultural, equestrian and recreational

uses. The CMP identifies the following key considerations relevant to birds and the conservation of their habitats:

- Wintering Golden Plover: The Curragh regularly supports important populations of wintering golden plover. The National Parks and Wildlife Service (NPWS) site synopsis cited in the plan reports that flocks of approximately 3,000 birds have been recorded regularly since the winter of 1994/95. The plan also cites more recent reports of high counts of 3,500–4,000 birds. Golden plover may occur almost anywhere across the Plains, and the plan identifies the prevention of significant disturbance to overwintering golden plover as a key biodiversity management objective.
- Variation in wintering bird numbers: The plan presents historical counts of golden plover and lapwing, noting that wintering wader numbers vary considerably between years and that these species have not been counted as consistently at the Curragh as at coastal and inland wetland sites. Golden plover counts listed in the plan include 7,000 in 1995/96, 3,000 in 1996/97, 103 in 1997/98, 5,000 in 2005/06, 3,000 in 2007/08, 3,500 in 2015/16, 3,000 in 2016/17 and 400 in 2021/22. Lapwing counts include 780 in 1995/96, 800 in 1996/97, 486 in 1997/98 and 45 in 2021/22. The plan notes that lapwing has occurred in flocks of hundreds in broadly similar locations to golden plover, although the species has not returned reliably in recent years. These figures demonstrate the variation in the historical records presented in the plan; they are not a continuous annual population dataset.
- Ground-nesting birds: The CMP identifies meadow pipit and skylark as ground-nesting species occurring widely in grassland habitats around the Curragh, particularly within the ungrazed grasslands enclosed by the Turf Club. The plan notes that much of the Curragh is either too disturbed or too uniformly grazed and short to provide suitable conditions for ground-nesting birds. It also identifies the vulnerability of these birds to disturbance, predation of chicks, and the inadvertent destruction of nests and eggs during the breeding season. The biodiversity target conditions include maintaining the presence of ground-nesting birds with regular brood success and supporting their expansion into new areas.
- Disturbance of wintering birds: The plan states that overwintering plover can accommodate sheep grazing and, to some extent, exercising horses and pedestrians when these are at a distance. However, dogs off leads are identified as causing a high level of disturbance to wintering birds. The plan also identifies the potential for increased scrub cover and tree planting to increase predation risk, as wintering and ground-nesting birds favour locations with long views in all directions. Scrub can interrupt these views and provide cover for potential predators, including foxes.
- Protection of open grassland and heath habitats: The CMP identifies unimproved semi-natural acid grassland, heath vegetation and associated nutrient-poor pools as habitats of high biodiversity importance. These habitats underpin the ecological value of the Curragh, including its use by large numbers of wintering golden plover. The plan identifies habitat loss, long-term deterioration in grassland and heathland biodiversity, and significant disturbance of overwintering golden plover as key threats. Agricultural improvement, including ploughing, fertilisation and reseeding, is identified as a particularly serious threat because it could result in the loss of semi-natural grassland and heath habitats. The plan also identifies scrub encroachment, new infrastructure and physical disturbance of soils as potential sources of damage.
- Biodiversity management and conservation measures: The CMP proposes coordinated biodiversity management to prevent further loss of high-value grassland and heath habitats. Its recommendations include preventing agricultural improvement of sensitive habitats, developing a Curragh-wide sheep-grazing management plan, continuing the reduction of dense gorse scrub, disallowing further tree planting and considering the removal of certain existing plantations. The plan also proposes that clearance of gorse scrub or other structural vegetation should take place outside the bird-breeding season. Where individual trees require felling or lopping during this period, the plan recommends checking for nests or nesting behaviour through 30 minutes of observation. The target conditions include protecting overwintering birds from disturbance and maintaining ground-nesting bird populations with evidence of regular breeding success.

- Bird conservation and designated-site considerations: The Curragh Plains are identified as a proposed Natural Heritage Area (pNHA). The plan explains that the proposed designation does not have a legal basis at the time of publication and recommends campaigning for its ratification. It also discusses the potential for Special Protection Area (SPA) designation in the context of the approach historically used to identify important sites for wintering bird populations.

The CMP identifies the conservation of open, semi-natural grassland and heathland, the prevention of significant disturbance to wintering golden plover, and the maintenance of suitable conditions for ground-nesting birds as important considerations in the long-term management of the Curragh Plains. Its proposed management framework seeks to retain the ecological and landscape characteristics of the Plains through habitat protection, appropriate grazing management, the control of scrub and tree planting, and improved monitoring and management of human activities.

7.8.2 Projects Considered in the Cumulative Impact Assessment

7.8.2.1 Developments/Land-uses

A review of the relevant planning registers was undertaken to document relevant general development planning applications in the vicinity of the Core Ornithology Study Area, as described in Section 2.10 of Chapter 2 of this EIAR. The majority of these relate to the provision an/or alteration of one-off rural housing and the provision and/or alteration of agricultural buildings. These planning applications are outlined in full in Appendix 2-3. Owing to the scale and nature of these developments, significant cumulative impacts are not anticipated.

7.8.2.2 Forestry and Agricultural Practices

The wider surroundings of the Project Site primarily consist of land managed for agriculture in the form of livestock grazing and commercial conifer plantations, both of low ecological value. The forestry works (felling/planting) associated with the forestry in the wider surroundings of the Project Site will be subject to relevant licencing and guidance from the Forestry Service. These land-uses have been taken into account in this cumulative assessment. Each of these habitat types (agricultural land and forestry) are discussed relative to each KOR in Section 7.8.3 below.

The remaining land use in the surrounding area is predominantly agriculture in the form of livestock grazing. These applications and land uses have also been taken into account in this cumulative assessment.

7.8.2.3 Peat Extraction

There are a number of IPC licenced facilities within 25km of the Proposed Turbines, the closest of which is 12.4km from the nearest Proposed Turbine, as outlined in Appendix 2-3. However, peat extraction has ceased on all of these licenced facilities. This land-use has been taken into account in this cumulative assessment.

Additionally, there is active turbary within and adjacent to Project Site which is ongoing. However, the area of active turbary is small relative to the total area within the Project Site and the majority of the peat within these areas has already been extracted. As these turf cutting areas are abandoned, they will either be turned into pastural farmland or scrub over. There ecological value is likely to remain neutral or slightly improve based on the land use. Owing to the scale and nature of these areas, significant cumulative impacts are not anticipated.

7.8.2.3.1 *Substitute Consent Application for Extraction on Ballydermot and surrounding bogs*

As outlined in Chapter 2 Section 2.10.2.1, a substitute consent application for peat extraction and ancillary works has been submitted (PL Ref: SU09.324604), part of which includes lands within the Project Site. Whilst the

Draft Rehabilitation Plans detailed below in Chapter 2 Section 2.10.2.3 are the most up to date plans, due consideration of this planning application, and in particular the findings of rEIAR and rNIS have been taken into account in describing the baseline and future environment within this cumulative assessment.

7.8.2.4 Other Large-Scale Developments

The majority of other large-scale development projects within 25km of the Proposed Project relate to quarries, waste management facilities and warehousing, as outlined in Appendix 2-3. There are two flood relief projects, along the River Morell and the River Owenass. There are two solar farm projects, within 8.6km and 9.9km from the nearest Proposed Turbine. There are a number of overhead powerline projects and substation projects, with associated underground cable or overhead power lines. There are a number of projects relating to gas transmission pipelines and gas power generators. These proposed and existing projects have been taken into account in this cumulative assessment (see Section 7.8.3).

7.8.2.5 Other Wind Farm Developments

Other permitted, proposed and existing wind farms within a 25-kilometre radius of the Proposed Turbines are provided in Table 7-13 below and are presented in terms of their proximity to the Proposed Turbines and whether the project is permitted/operational or pending/under appeal. A total of 15 wind farms, composing of 137 existing/permitted turbines and 42 proposed/pending turbines, fall within a 25-kilometre radius of the Proposed Turbines.

Table 7-13 Wind Farms within 25km of the Proposed Turbines

Wind Farm	Status	No. of Turbines	Separation Distance of Nearest Turbines
Cushaling	Existing	9	700m
Cloncreen	Existing	21	2.9km
Ballinla	Permitted	7	7.3km
Drehid	Proposed	11	7.4km
Derrynadarragh	Proposed	9	7.7km
Mountlucas	Existing	28	10.4km
Yellow River	Existing	29	12.1km
Clonarrow	Permitted	4	12.9km
Moanvane	Existing	12	13.9km
Garryhinch	Proposed	12	20km
Ballivor	Permitted	26	21.3km
Dernacart	Permitted	8	22.3km
Cushina	Proposed	11	9.3km
Kilberry	Proposed	Not available at the time of writing	Not available at the time of writing

The results of a review of the planning files for the wind farms mentioned in Table 7-13 are provided in the following sections (Section 7.8.2.5.1 to 7.8.2.5.13). This information has informed the cumulative impact assessment that is included in Section 7.8.3.

7.8.2.5.1 *Cushaling Wind Farm*

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside Cushaling Wind Farm, which is c.700m from the nearest Proposed Turbine, was considered. The planning files[18] were reviewed on the An Coimisiún Pleanála website and the EIAR was reviewed. This section summarises the information outlined within the EIAR for the Cushaling Wind Farm.

[18] https://www.pleanala.ie/en-ie/case/306924

Ornithology surveys were conducted at the Cuashaling Wind Farm between April 2018 and March 2020. The following key ornithological receptors were identified and assessed for impacts: golden plover, whooper swan, peregrine, lapwing, woodcock, long-eared owl, buzzard, kestrel, sparrowhawk and snipe. Habitat loss and displacement were assessed for the construction phase of the development, displacement, barrier effect and collision mortality were assessed for the operational phase and disturbance was assessed for the decommissioning phase. No significant effects of the Cushaling Wind Farm were identified for any of the identified key ornithological receptors.

Habitat loss was assessed to be a low effect significance for golden plover, whooper swan and peregrine, and a very low effect significance for lapwing, woodcock, long-eared owl, buzzard, kestrel, sparrowhawk and snipe. Disturbance/displacement was assessed to be a low effect significance for golden plover, whooper swan, peregrine and woodcock, and a very low effect significance for lapwing, long-eared owl, buzzard, kestrel, sparrowhawk and snipe. Collision risk was assessed to be a low effect significance for golden plover (118 collisions per year) and peregrine (0.068 collisions per year), a very low effect significance for whooper swan (0.082 collisions per year), lapwing (0.607 collisions per year), buzzard (1.32 collisions per year), kestrel (0.718 collisions per year), sparrowhawk (0.001 collisions per year) and snipe (0.02 collisions per year), and no effect for woodcock and long-eared owl. Furthermore, curtailment of turbines was proposed if the collision mortality for golden plover exceeded 1% of the background mortality rate (i.e. more than 20 golden plover collisions per year).

A cumulative assessment was undertaken as part of the Cushaling Wind Farm EIAR, with other plans and projects (including other wind farms) within 15km of the Cushaling Wind Farm. No cumulative effects were identified for any of the key ornithological receptors identified for the Cushaling Wind Farm.

The Cushaling Wind Farm EIAR concluded that:

'Following the successful implementation of mitigation measures, no significant effects are predicted on birds due to direct habitat loss, displacement or collision risk during the construction or operational phases of the proposed development. The impact assessment does not indicate that the development will have significant effects on any KOR recorded either in isolation or cumulatively with other wind farms.'

7.8.2.5.2 Cloncreen Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside Cloncreen Wind Farm, which is c.2.9km from the nearest Proposed Turbine, was considered. The planning files[19] were reviewed on the An Coimisiún Pleanála website and the EIS was reviewed. This section summarises the information outlined within the EIS for the Cloncreen Wind Farm.

Ornithology surveys were conducted at the Cloncreen Wind Farm between October 2012 and August 2016. The following key ornithological receptors were identified and assessed for impacts: whooper swan, golden plover, lapwing, ringed plover, snipe, woodcock, peregrine, hen harrier, mut swan, grey heron, mallard, kestrel, sparrowhawk buzzard and sand martin. Habitat loss and displacement were assessed for the construction phase of the development and displacement, barrier effect and collision mortality were assessed for the operational phase and disturbance was assessed for the decommissioning phase. No significant effects of the Cloncreen Wind Farm were identified for any of the identified key ornithological receptors.

Habitat loss was assessed to be a low effect significance for whooper swan, golden plover, lapwing, woodcock, peregrine and hen harrier, and a very low effect significance for ringed plover, snipe, mute swan, grey heron, mallard, kestrel, sparrowhawk, buzzard and sand martin. Disturbance/displacement was assessed to be a low effect significance for whooper swan, golden plover, lapwing, woodcock, peregrine, hen harrier and sand martin, and a very low effect significance for ringed plover, snipe, mute swan, grey heron, mallard, kestrel, sparrowhawk and buzzard. Collision risk was assessed to be a low effect significance for golden plover (0.71 collisions per year), lapwing (0.09 collisions per year) and woodcock (no flights at collision height), and a very

[19] http://pleanala.ie/en-ie/case/PA0047

low effect significance for whooper swan (0.002 collisions per year), ringed plover (no flights at collision height), snipe (0.007 collisions per year), peregrine (0.009 collisions per year), hen harrier (no flights at collision height), mute swan (0.006 collisions per year), grey heron (0.0004 collisions per year), mallard (0.004 collisions per year), kestrel (0.14 collisions per year), sparrowhawk (0.005 collisions per year), buzzard (0.12 collisions per year) and sand martin (no flights at collision height).

A cumulative assessment was undertaken as part of the Cloncreen Wind Farm EIAR, with other plans and projects (including other wind farms) within 15km of the Cloncreen Wind Farm. No cumulative effects with respect to collision mortality, direct or indirect habitat loss, or barrier effect were identified for any of the key ornithological receptors identified for the Cloncreen Wind Farm.

The Cloncreen Wind Farm EIS concluded that:

'Given the findings as described within this assessment, it is considered that the potential effects of the proposed development upon birds will not be considered significant. Effects associated with habitat loss and fragmentation, disturbance, displacement, collision risk and cumulative effects have been assessed as a Long-term slight negative effect (EPA, 2002).'

7.8.2.5.3 Ballinla Wind Farm

The potential for the Proposed Project to result in significant cumulative or effects when assessed alongside Ballinla Wind Farm, which is c.7.3km from the nearest Proposed Turbine, was considered. The planning files[20] were reviewed on the An Coimisiún Pleanála website and the EIAR was reviewed. This section summarises the information outlined within the EIAR for the Ballinla Wind Farm.

Ornithology surveys were conducted at the Ballinla Wind Farm between April 2021 and March 2025. The following key ornithological receptors were identified and assessed for impacts: black-headed gull, buzzard, common gull, cormorant, goldcrest, golden plover, great black-backed gull, greenfinch, grey heron, greylag goose, hen harrier, house martin, house sparrow, kestrel, kingfisher, lapwing, lesser black-backed gull, linnet, little egret, little grebe, mallard, meadow pipit, merlin, mute swan, peregrine, redshank, redwing, sand martin, short-eared owl, skylark, snipe, sparrowhawk, spotted flycatcher, starling, stock dove, swallow, swift, whooper swan, willow warbler, woodcock and yellowhammer. Habitat loss and disturbance/displacement were assessed for the construction phase of the development, collision risk, disturbance/displacement and barrier effect were assessed for the operational phase and disturbance was assessed for the decommissioning phase. A significant effect was predicted for hen harrier, kestrel, kingfisher, snipe, whooper swan and woodcock prior to mitigation at the Ballinla Wind Farm. No significant effects for were identified for any of the other identified key ornithological receptors.

Habitat loss was assessed to be a very high effect significance for hen harrier, merlin and woodcock, a medium effect significance for golden plover and whooper swan, a low effect significance for house sparrow, meadow pipit, skylark, redwing, stock dove, willow warbler, yellowhammer, black-headed gull, buzzard, common gull, cormorant, greylag goose, kestrel, kingfisher, lapwing, lesser black-backed gull, little egret, mute swan, peregrine and long eared owl, and a very low effect significance for great black-backed gull, grey heron, little grebe, mallard, redshank, sparrowhawk and snipe. Disturbance/displacement during the construction phase was assessed to be a very high effect significance for hen harrier, kestrel, kingfisher, snipe and woodcock, a medium effect significance for golden plover, merlin and whooper swan, a low effect significance for cormorant, lapwing, lesser black-backed gull, little egret, mallard and long-eared owl, and a very low effect significance for black-headed gull, buzzard, common gull, great black-backed gull, greylag goose, grey heron, little grebe, mute swan, redshank, peregrine and sparrowhawk.

Collision risk was assessed to be a high effect significance for golden plover (2.88 collisions per year), a medium effect significance for golden plover (3.96 collisions per year), a low effect significance for hen harrier (0.00 collisions per year), kestrel (0.35 collisions per year), little egret (0.00 collisions per year), peregrine (0.01

[20] https://www.pleanala.ie/en-ie/case/323579

collisions per year) and whooper swan (0.01 collisions per year), a very low effect significance for black-headed gull (0.00 collisions per year), buzzard (0.5 collisions per year), great black-backed gull (0.00 collisions per year), greylag goose (0.00 collisions per year), grey heron (0.00 collisions per year), lesser black-backed gull (0.26 collisions per year), mallard (0.32 collisions per year), mute swan (0.00 collisions per year), snipe (0.01 collisions per year) and sparrowhawk (0.01 collisions per year). The remaining species have collision rates that are assumed to be zero.

Operational phase disturbance/displacement was assessed to be a high effect significance for kestrel and snipe, a low effect significance for black-headed gull, common gull, cormorant, golden plover, hen harrier, house martin, lapwing, kingfisher, little egret, little grebe, mallard, merlin, mute swan, peregrine, sand martin, short-eared owl, stock dove, swallow, swift, whooper swan and woodcock, and a very low effect significance for buzzard, great black-backed gull, greylag goose, grey heron, lesser black-backed gull and sparrowhawk. Barrier effect was assessed to be a high effect significance for kestrel and snipe, a medium effect significance for golden plover, lapwing and whooper swan, a low effect significance for, hen harrier, house martin, kingfisher, little egret, little grebe, mallard, merlin, peregrine, sand martin, short eared owl, swallow and swift, and a very low effect significance for black-headed gull, buzzard, common gull, cormorant, golden plover, greylag goose, grey heron, lesser black-backed gull, mute swan, sparrowhawk, stock dove and woodcock.

The effects associated with the decommissioning phase were similar to those outlined for the construction phase.

A cumulative assessment was undertaken as part of the Ballinla Wind Farm EIAR, with other plans and projects (including other wind farms) within 25km of the Ballinla Wind Farm. Construction phase cumulative effects were (habitat loss and disturbance/displacement) were assessed to be short-term not-significant to slight effects at a county and national scale. Operational phase effects were assessed to be long-term moderate effects at a county scale for collision risk and a long-term not significant to slight effect at a local level for disturbance/displacement and barrier effects.

Mitigation measures proposed to mitigate significant effects included buffer zones around active nests during the construction phase, exclusion zones around grazing areas for whooper swan, and during the operational phase, mitigation measures include turbine lighting, activity and collision monitoring, and nocturnal migration monitoring and curtailment measures for nocturnal migrants, particularly whooper swan.

The Ballinla Wind Farm EIAR concluded that:

'No Significant residual effects have been identified for the operational phase of the Proposed Development.'

7.8.2.5.4 Drehid Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside Drehid Wind Farm, which is c.7.4km from the nearest Proposed Turbine, was considered. The planning files[21] were reviewed on the An Coimisiún Pleanála website and the EIAR was reviewed. This section summarises the information outlined within the EIAR for the Drehid Wind Farm.

Ornithology surveys were conducted at the Drehid Wind Farm between April 2021 and September 2023. The following key ornithological receptors were identified and assessed for impacts: buzzard, curlew, goldcrest, golden plover, goshawk, great black-backed gull, greenfinch, grey heron, hen harrier, herring gull, house martin, house sparrow, kestrel, kingfisher, lapwing, lesser black-backed gull, linnet, little egret, long-eared owl, meadow pipit, merlin, peregrine, red kite, redwing, sand martin, skylark, snipe, sparrowhawk, starling, stock dove, swallow, swift, wheatear, whooper swan, willow warbler, woodcock and yellowhammer. Potential turbine collision, potential overhead line collision, possible loss or deterioration of habitats and disturbance or displacement of birds were assessed.

[21] https://www.pleanala.ie/en-ie/case/322845

Habitat loss was assessed to be a high effect significance for woodcock, a medium effect significance for merlin and whooper swan, a low effect significance for golden plover, goshawk, hen harrier, herring gull, kestrel, little egret, peregrine and stock dove, and a very low effect significance for buzzard, curlew, great black-backed gull, grey heron, kingfisher, lapwing, lesser black-backed gull, long-eared owl, snipe, sparrowhawk and swift. Construction phase disturbance was assessed to be a very high effect significance for breeding kestrel, snipe and woodcock, a high effect significance on breeding curlew, a medium effect significance on golden plover, merlin and whooper swan, a low effect significance for goldcrest, hen harrier, herring gull, kestrel (non-breeding), kingfisher, lesser black-backed gull, linnet, little egret, long-eared owl, meadow pipit, peregrine, redwing, skylark, starling, willow warbler and yellowhammer, and a very low effect significance for buzzard, curlew (non-breeding), goshawk, great black-backed gull, greenfinch, grey heron, house sparrow, lapwing, sparrowhawk, stock dove and swift.

Collision risk was assessed to be a low effect significance for golden plover (0.56 collisions per year), herring gull (8.02 collisions per year), kestrel (0.7 collisions per year), lesser black-backed gull (0.49 collisions per year) and whooper swan (0.05 collisions per year), and a very low effect significance for buzzard (1.68 collisions per year), great black-backed gull (2.4 collisions per year), sparrowhawk (0.2 collisions per year) and swift (0.1 collisions per year). The remaining species have collision rates of less than one collision over the lifetime of the wind farm and the magnitude of effects were assessed to be negligible. Operational phase disturbance/displacement was assessed to be a high effect significance for kestrel and snipe, a medium effect significance for whooper swan, a low effect significance for golden plover, hen harrier, house martin, lapwing, little egret, long-eared owl, merlin, peregrine, sand martin, stock dove, swallow, swift and woodcock, and a very low effect significance for buzzard, goshawk, great black-backed gull, grey heron, herring gull, lesser black-backed gull, red kite and sparrowhawk. Barrier effect was assessed to be a high effect significance for kestrel and lapwing, a medium effect significance for golden plover, a low effect significance for hen harrier, house martin, little egret, merlin, peregrine, sand martin, swallow, swift and whooper swan, and a very low effect significance for buzzard, goshawk, great black-backed gull, grey heron, herring gull, lesser black-backed gull, long-eared owl, red kite, snipe, sparrowhawk, stock dove and woodcock.

A cumulative assessment was undertaken as part of the Drehid Wind Farm EIAR, with other plans and projects (including other wind farms) within 25km of the Drehid Wind Farm. The potential cumulative collision risk effects were assessed, and it was concluded that the cumulative effects were unlikely to exceed the long-term slight effects identified for the Drehid Wind Farm. The cumulative effects of disturbance/displacement were assessed to be unlikely to result in significant effects at a regional or national level. The potential cumulative effects of barrier effect were assessed to be long-term not significant effects.

The Drehid Wind Farm EIAR concluded that:

'It is considered that with the implementation of mitigation, the proposed wind farm will have an Imperceptible to Slight Reversible Residual Effect in the local context on avifauna'

7.8.2.5.5 Derrynadarragh Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside Derrynadarragh Wind Farm, which is c.7.7km from the nearest Proposed Turbine, was considered. The planning files[22] were reviewed on the An Coimisiún Pleanála website and the EIAR was reviewed. This section summarises the information outlined within the EIAR for the Derrynadarragh Wind Farm.

Ornithology surveys were conducted at the Derrynadarragh Wind Farm between April 2017 and March 2019, and between October 2021 and September 2023. The following valued ornithological receptors were identified and assessed for impacts: buzzard, curlew, golden plover, hen harrier, kestrel, lapwing, snipe, sparrowhawk, whooper swan and woodcock. Habitat loss and disturbance were assessed for the construction phase of the development, collision risk, and disturbance/displacement were assessed for the operational phase. Effects from the decommissioning phase were determined to be similar to those of the operational phase. No significant

[22] https://www.pleanala.ie/en-ie/case/324055

effects of the Derrynadarragh Wind Farm were identified for any of the identified valued ornithological receptors.

Habitat loss was assessed to be a low effect significance for hen harrier, kestrel, lapwing and woodcock, a very low effect significance for buzzard, snipe and sparrowhawk, and no effect for curlew, golden plover and whooper swan. Disturbance during the construction phase was assessed to be a low effect significance for curlew, hen harrier, lapwing and woodcock, a very low effect significance for buzzard, kestrel, snipe, sparrowhawk and whooper swan and no effect for golden plover.

Collision risk was assessed to be a high effect significance for, a medium effect significance for, a low effect significance for golden plover (47.8 collisions per year), kestrel (0.2 collisions per year) and lapwing (0.2 collisions per year), and a very low effect significance for buzzard (0.3 collisions per year), curlew (0.021 collisions per year), hen harrier (0.001 collisions per year), snipe (0.0003 collisions per year), sparrowhawk (0.3 collisions per year), whooper swan (0.005 collisions per year) and woodcock (0.0003 collisions per year). Operational phase displacement/barrier effect was assessed to be a low effect significance for hen harrier, lapwing, snipe, sparrowhawk and woodcock, a very low effect significance for buzzard, and no effect for curlew, golden plover, kestrel and whooper swan.

The effects associated with the decommissioning phase were similar to those outlined for the construction phase.

Mitigation measures proposed include monitoring for collision risk and curtailment of turbines if required to mitigate collision risk.

A cumulative assessment was undertaken as part of the Derrynadarragh Wind Farm EIAR, with other plans and projects (including other wind farms) within 20km of the Derrynadarragh Wind Farm. No cumulative effects were identified for any of the valued ornithological receptors identified for the Derrynadarragh Wind Farm.

The Derrynadarragh Wind Farm EIAR concluded that:

'The consideration of residual effects (post-mitigation) leads to the conclusion that the Proposed Wind Farm Development will not result in any significant negative effects on the Ornithological Receptors. Therefore, provided the Proposed Development is constructed, operated, and decommissioned in accordance with the submitted design, proposed mitigation measures, and relevant best practice, no significant individual or cumulative effects on ornithology are anticipated.'

7.8.2.5.6 Mountlucas Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside Mountlucas Wind Farm, which is c.10.4km from the nearest Proposed Turbine, was considered. The planning files[23] were reviewed on the Offaly County Council website and the EIS was reviewed. This section summarises the information outlined within the EIS for the Mountlucas Wind Farm.

Ornithology surveys were conducted at the Mountlucas Wind Farm on three dates between 2006 and 2008. There were 33 bird species recorded during surveys. Habitat loss, disturbance and collision impacts on birds were assessed to be not significant.

The Mountlucas Wind Farm EIS concluded that:

'The successful application of mitigating measures will ensure that the residual impacts post construction will be negligible.'

[23] https://www.eplanning.ie/OffalyCC/AppFileRefDetails/09453/0

7.8.2.5.7 Yellow River Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside Yellow River Wind Farm, which is c.12.1km from the nearest Proposed Turbine, was considered. The planning files[24] were reviewed on the An Coimisiún Pleanála website and the EIS was reviewed. This section summarises the information outlined within the EIS for the Yellow River Wind Farm.

Ornithology surveys were conducted at the Yellow River Wind Farm between April and June 2010, July 2012, and between January and May 2013. There were 42 species recorded during the breeding season and 34 species recorded during the winter season. There were 21 species of conservation importance recorded at the Project Site . An impact assessment was conducted for whooper swan, golden plover, hen harrier, lapwing, black-headed gull and yellowhammer.

Habitat loss, displacement, barrier effect and collision with turbines were assessed for whooper swan, all of which were assessed to be not significant following mitigation (use of warning lights on turbines to minimise collision risk, seasonal restrictions on construction activities and the maintenance of grassland for feeding swans). Habitat loss, displacement and collision risk were assessed to be not significant for golden plover. Displacement and collision risk were assessed to be not significant for hen harrier. Mitigation during the construction period was recommended to ensure there are no significant effects on breeding lapwing. Disturbance and collision risk for breeding black-headed gull were assessed to not be significant. Habitat loss for yellowhammer was assessed to not be significant.

Cumulative impacts of the Yellow River Wind Farm and the Mountlucas Wind Farm were assessed within the EIS. It was concluded that there would be no significant cumulative effects of the two wind farms.

The Yellow River Wind Farm EIS concluded that:

'It is concluded that the proposed project will not result in any residual significant impacts on the terrestrial ecology of the area.'

7.8.2.5.8 Clonarrow Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside Clonarrow Wind Farm, which is c.12.9km from the nearest Proposed Turbine, was considered. The planning files[25] were reviewed on the Offaly County Council website and the EIAR was reviewed. This section summarises the information outlined within the EIAR for the Clonarrow Wind Farm.

Ornithology surveys were conducted at the Clonarrow Wind Farm between April 2023 and September 2024. The following species were identified and assessed for impacts: golden plover, lapwing, woodcock, snipe, ringed plover, mallard, whooper swan, grey heron, kingfisher, kestrel, peregrine, long-eared owl, sparrowhawk, black-headed gull, lesser black-backed gull, yellowhammer and meadow pipit. Impacts assessed include habitat loss, disturbance, displacement and mortality from pollution related to the construction of the wind farm during the construction phase, and disturbance, displacement, collision risk, barrier effect and operational maintenance during the operational phase.

Likely significant disturbance and displacement effects during the construction phase were predicted for golden plover, lapwing, woodcock, snipe, mallard, kestrel, peregrine, long-eared owl, sparrowhawk, buzzard, black-headed gull, lesser black-backed gull and a likely significant mortality from pollution for whooper swan, mute swan, grey heron and kingfisher.

Collision risk during the operational phase were assessed to be significant for buzzard (0.47 collisions per year), and not significant for golden plover (3.53 collisions per year), kestrel (0.17 collisions per year), snipe (0.01

[24] https://archive.pleanala.ie/en-ie/case/PA0032
[25] https://www.eplanning.ie/OffalyCC/AppFileRefDetails/2560189/0

collisions per year), mallard (0.016 collisions per year), peregrine (0.17 collisions per year), lesser black-backed gull (0.17 collisions per year) and lapwing (7.19 collisions per year). Displacement and barrier effect were assessed to be significant for golden plover and lapwing, and not significant for the remaining species assessed. Operational maintenance was assessed to be significant for yellowhammer and meadow pipit, and not significant for the remaining species assessed.

A cumulative assessment was undertaken as part of the Clonarrow Wind Farm EIAR, with other plans and projects (including other wind farms) within 20km of the Clonarrow Wind Farm. Woodcock was the only species which was considered within the cumulative assessment, and it was concluded that there would be no significant cumulative effects on this species.

Mitigation measures were proposed to avoid direct and indirect bird disturbance by limiting the construction activity to within the Project Site. mitigation measures to avoid impacts on breeding birds include limiting the removal of nesting habitat to outside the breeding season and ensuring appropriate buffer zones around nests during construction in the breeding season.

The residual effects on birds includes reversible likely medium term significant effect on the local scale for yellowhammer, a short-term significant disturbance and displacement effect on local bird populations during the construction phase, a long term significant collision risk effect for buzzard and a significant displacement effect on breeding woodcock.

7.8.2.5.9 Moanvane Wind Farm

The potential for the Proposed Project to result in significant cumulative or in combination effects when assessed alongside Moanvane Wind Farm, which is c.13.9km from the nearest Proposed Turbine, was considered. The planning files[26] were reviewed on the An Coimisiún Pleanála website and the EIAR was reviewed. This section summarises the information outlined within the EIAR for the Moanvane Wind Farm.

Ornithology surveys were conducted at the Moanvane Wind Farm between December 2012 and February 2016, and between February 2016 and August 2017. The following key ornithological receptors were identified and assessed for impacts whooper swan, hen harrier, merlin, peregrine, lapwing, golden plover, Greenland white-fronted goose, curlew, woodcock, barn owl, kestrel, snipe, skylark, meadow pipit, stonechat, yellowhammer, sparrowhawk, starling, swallow, mistle thrush, mute swan, robin, sand martin, goldcrest, greenfinch, house martin, house sparrow, kingfisher, linnet and buzzard. The potential construction phase impacts assessed were loss or deterioration of habitat, and disturbance/displacement. The potential operational phase impacts assessed were collision risk, disturbance/displacement and barrier effect. Decommissioning phase impacts were assessed to be similar to those outlined for the construction phase.

Habitat loss was assessed to be an imperceptible impact on passerine species, a low effect significance for whooper swan, merlin, peregrine, lapwing, golden plover, woodcock, barn owl, kestrel, snipe, sparrowhawk and mute swan, and a very low effect significance for Greenland white-fronted goose, hen harrier, curlew and kingfisher. Construction phase disturbance, without mitigation, was assessed to be a short-term significant impact on kingfisher, short-term moderate impact on woodcock, a short-term slight impact on snipe, a short-term imperceptible impact on birds of prey, whooper swan, mute swan, curlew, lapwing, Greenland white-fronted goose and barn owl.

Collision risk was assessed to be a high effect significance for golden plover (13.9 collisions per year (combined breeding and winter seasons)), and a very low effect significance for whooper swan (0.01 collisions per year), hen harrier (0.001 collisions per year), merlin (0 collisions per year), peregrine (0.01 collisions per year), Greenland white-fronted goose (0 collisions per year), sparrowhawk (0.1 collisions per year), mute swan (0 collisions per year) and buzzard (0 collisions per year). Operational phase disturbance/displacement was assessed to be a low effect significance for whooper swan, merlin, peregrine, lapwing, golden plover, woodcock, barn owl, kestrel, buzzard, sparrowhawk and mute swan, and a very low effect significance for hen harrier,

[26] https://www.pleanala.ie/en-ie/case/301619

Greenland white-fronted goose, curlew and kingfisher. Barrier effect was assessed to be a low effect significance for whooper swan, merlin, peregrine, lapwing, golden plover, woodcock, barn owl, kestrel, buzzard, sparrowhawk and mute swan, and a very low effect significance for hen harrier, Greenland white-fronted goose, curlew and kingfisher.

A cumulative assessment was undertaken as part of the Moanvane Wind Farm EIAR, with other plans and projects (including other wind farms) within 40km of the Moanvane Wind Farm. The potential cumulative impacts during the construction phase were assessed to be short-term imperceptible impacts. The in-combination collision risk all wind farms assessed were considered to be a long-term imperceptible impact. The in-combination barrier effect and disturbance/displacement effects during the operational phase were considered to be long-term imperceptible impacts.

Mitigation measures to avoid significant impacts include buffer zones around known snipe and woodcock nesting habitat during the construction phase, and fatality monitoring and bird surveys during the operational phase.

The Moanvane Wind Farm EIAR concluded that:

'It is considered that with the implementation of mitigation, the proposed wind farm development will have a slight-imperceptible impact on birds.'

7.8.2.5.10 Garryhinch Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside Garryhinch Wind Farm, which is c.20km from the nearest Proposed Turbine, was considered. The planning files[27] were reviewed on the An Coimisiún Pleanála website, however this project is at the preplanning stage and therefore no planning application has been lodged, and no impact assessment has been completed. Garryhinch Wind Farm is located within cutover bog and scrub. As such, applying the precautionary principle, there is the potential for KOR species of the Proposed Project to occur at the Garryhinch Wind Farm.

7.8.2.5.11 Ballivor Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside Ballivor Wind Farm, which is c.21.3km from the nearest Proposed Turbine, was considered. The planning files[28] were reviewed on the An Coimisiún Pleanála website and the EIAR was reviewed. This section summarises the information outlined within the EIAR for the Ballivor Wind Farm.

Ornithology surveys were conducted at the Ballivor Wind Farm between April 2020 and September 2022. The following key ornithological receptors were identified and assessed for impacts: golden plover, hen harrier, kingfisher, merlin, peregrine, whooper swan, barn owl, kestrel, lapwing, snipe, woodcock, buzzard, long-eared owl and sparrowhawk. Habitat loss and displacement were assessed for the construction phase of the development, displacement, barrier effect and collision mortality were assessed for the operational phase, and disturbance was assessed for the decommissioning phase. No significant effects of the Ballivor Wind Farm were identified for any of the identified key ornithological receptors.

Habitat loss was assessed to be a low effect significance for hen harrier, kingfisher, merlin, peregrine, whooper swan, barn owl, kestrel, lapwing, snipe and woodcock, and a very low effect significance for golden plover, buzzard, long-eared owl and sparrowhawk. Disturbance during the construction phase was assessed to be a low effect significance for golden plover, hen harrier, kingfisher, merlin, peregrine, whooper swan, barn owl, kestrel, lapwing, snipe and woodcock, and a very low effect significance for buzzard, long-eared owl and sparrowhawk.

[27] https://www.pleanala.ie/en-ie/case/315157
[28] https://www.pleanala.ie/en-ie/case/316212

Collision risk was assessed to be a low effect significance for golden plover (15.5 collisions per year), peregrine (0.224 collisions per year), whooper swan (1.34 collisions per year), kestrel (2.21 collisions per year) and lapwing (2.79 collisions per year, combined winter and breeding), a very low effect significance for hen harrier (0.003 collisions per year), merlin (0.014 collisions per year), snipe (0.237 collisions per year), buzzard (2.48 collisions per year) and sparrowhawk (0.097 collisions per year), and no effect for kingfisher, barn owl, woodcock and long-eared owl. Displacement and barrier effect during the operational phase was assessed to be a low effect significance for golden plover, hen harrier, kingfisher, merlin, peregrine, whooper swan, barn owl, kestrel, lapwing, snipe and woodcock, and a very low effect significance for buzzard, long-eared owl and sparrowhawk.

Decommissioning phase impacts were assessed to be similar to those outlined for the construction phase disturbance.

A cumulative assessment was undertaken as part of the Ballivor Wind Farm EIAR, with other plans and projects (including other wind farms) within 25km of the Ballivor Wind Farm. No cumulative effects were identified for any of the key ornithological receptors identified for the Ballivor Wind Farm.

The Ballivor Wind Farm EIAR concluded that:

'Following consideration of the residual effects (post-mitigation), it is concluded that the Application Site will not result in any significant negative effects on any of the identified KORs.'

7.8.2.5.12 Dernacart Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside Dernacart Wind Farm, which is c.22.3km from the nearest Proposed Turbine, was considered. The planning files[29] were reviewed on the An Coimisiún Pleanála website and the EIAR was reviewed. This section summarises the information outlined within the EIAR for the Dernacart Wind Farm.

Ornithology surveys were conducted at the Dernacart Wind Farm in summer 2018, winter 2018/19 and summer 2019. The following key ornithological receptors were identified and assessed for impacts: golden plover, black-headed gull, curlew, herring gull, kingfisher, lapwing, meadow pipit, merlin, peregrine, woodcock, barn swallow, greenfinch, house martin, house sparrow, jack snipe, kestrel, lesser black-backed gull, linnet, mistle thrush, robin, snipe, sparrowhawk, starling, stonechat, buzzard and grey heron. Habitat loss and disturbance/displacement were assessed for the construction phase of the development, displacement, barrier effect and collision mortality were assessed for the operational phase, and direct and indirect effects was assessed for the decommissioning phase. No significant effects of the Dernacart Wind Farm were identified for any of the identified key ornithological receptors.

Habitat loss was assessed to be an imperceptible impact for passerines, a medium effect significance for merlin, a low effect significance for golden plover, black-headed gull, herring gull, kingfisher, peregrine, woodcock, kestrel, lesser black-backed gull and sparrowhawk, and a very low effect significance for curlew, lapwing, jack snipe, snipe, buzzard and grey heron. Construction phase disturbance/displacement was assessed to be a medium effect significance for golden plover, merlin, kestrel and snipe, a low effect significance for black-headed gull, curlew, herring gull, kingfisher, lapwing, meadow pipit, peregrine, woodcock, barn swallow, greenfinch, house martin, house sparrow, jack snipe, lesser black-backed gull, linnet, mistle thrush, robin, sparrowhawk, starling, stonechat and buzzard, and a very low effect significance for grey heron.

Collision risk was assessed to be an imperceptible impact for passerines, a low effect significance for golden plover (0.23 collisions per year), and a very low effect significance for black-headed gull (0.003 collisions per year), curlew (0.017 collisions per year), herring gull (0.002 collisions per year), kingfisher (0 collisions per year), lapwing (0.285 collisions per year), merlin (0.005 collisions per year), peregrine (0.001 collisions per year), woodcock (0.005 collisions per year), jack snipe (0.0003 collisions per year), kestrel (0.4 collisions per year), lesser black-backed gull (0.015 collisions per year), snipe (0.009 collisions per year), sparrowhawk (0.025

[29] https://www.pleanala.ie/en-ie/case/310312

collisions per year), buzzard (0 collisions per year) and grey heron (0.022 collisions per year). Operational phase disturbance/displacement was assessed to be a medium effect significance for merlin, a low effect significance for golden plover, black-headed gull, herring gull, kingfisher, peregrine, woodcock, jack snipe, kestrel, lesser black-backed gull, snipe and sparrowhawk, and a very low effect significance for curlew, lapwing, buzzard and grey heron. Barrier effect was assessed to be a medium effect significance for merlin, a low effect significance for golden plover, black-headed gull, herring gull, peregrine, woodcock, jack snipe, kestrel, lesser black-backed gull, snipe and sparrowhawk, and a very low effect significance for curlew, kingfisher, lapwing, buzzard and grey heron.

Direct effects relating to the decommissioning phase were assessed to be temporary imperceptible impacts on passerines, birds of prey, waders, waterfowl, swans and geese, and kingfisher. Indirect effects relating to the decommissioning phase were assessed to be a medium effect significance for golden plover and merlin, a low effect significance for black-headed gull, herring gull, kingfisher, lapwing, peregrine, woodcock, jack snipe, kestrel, lesser black-backed gull, snipe and sparrowhawk, and a very low effect significance for curlew, buzzard and grey heron.

A cumulative assessment was undertaken as part of the Dernacart Wind Farm EIAR, with other plans and projects (including other wind farms) within 20km of the Dernacart Wind Farm. The potential cumulative construction phase direct impacts and disturbance were assessed to be short-term imperceptible impacts. In combination collision risk effects, barrier effects and disturbance/displacement effects were all assess to be long term imperceptible impacts.

Mitigation measures to avoid significant impacts include buffer zones around known snipe and woodcock nesting habitat, implementing mitigation to avoid impacts on water quality for kingfisher and the erection of nest baskets for breeding merlin greater than 500m from the proposed turbines during the construction phase, and fatality monitoring and bird surveys during the operational phase.

The Dernacart Wind Farm EIAR concluded that:

'It is considered that with the implementation of mitigation, the proposed wind farm will have a slight-imperceptible residual effect on birds.'

7.8.2.5.13 Cushina Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside Cushina Wind Farm, which is c.9.3km from the nearest Proposed Turbine, was considered. The planning files[30] were reviewed on the An Coimisiún Pleanála website, however this project is at the preplanning stage and therefore no planning application has been lodged, and no impact assessment has been completed. The Cushina Wind Farm is located within open farmland and commercial forestry. As such, applying the precautionary principle, there is the potential for KOR species of the Proposed Project to occur at the Cushina Wind Farm.

7.8.2.5.14 Kilberry Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside Kilberry Wind Farm was considered. The planning files were reviewed on the An Coimisiún Pleanála website, however this project is at the preplanning stage and therefore no planning application has been lodged, and no impact assessment has been completed. The Kilberry Wind Farm is located within open farmland and commercial forestry. As such, applying the precautionary principle, there is the potential for KOR species of the Proposed Project to occur at the Kilberry Wind Farm.

[30] https://www.pleanala.ie/en-ie/case/323296

7.8.3 Cumulative Impact Assessment

During the assessment of cumulative effects on KORs, cumulative habitat loss, disturbance, displacement and collision risk associated with operational turbines were assessed. No significant cumulative effects are predicted to result from disturbance during the construction phase, given that these are short-term impacts that are unlikely to overlap temporally with other similar activities. For this reason, construction phase effects are not likely to result in significant impacts and are not considered further in the cumulative assessment. Cumulative impacts of habitat loss, displacement and collision risk during the operational phase for each species are discussed in further detail in the relevant sections below.

7.8.3.1 Landscape Level Cumulative Assessment

A GIS mapping exercise was undertaken that aimed to quantify the amount of land within the wider landscape (i.e., the continuous habitat in which the Project Site lies) that is likely to be significantly impacted by the presence of turbines. Impacts were predicted to be restricted to the area near a Proposed Turbine. Near a turbine was defined as within 500m. This distance was chosen as Pearce-Higgins *et al.* (2009) identified, for a range of species, significant avoidance of turbines between 250m and 500m. It therefore follows that significant effects are unlikely at distances greater than 500m. To define the area of interest, the regional scale was used (i.e. 25km of the Proposed Turbines), this allowed for the key suitable habitats for all KORs at a regional scale to be included. This area will be referred to as the Ornithology Cumulative Study Area. The GIS exercise provided the following results. The CORINE land cover data[31] was used to determine the land uses within 25km of the Proposed Turbines. These data were simplified into six main land cover types: open peatland, agricultural, forestry, industrial (mineral extraction and waste disposal sites), transitional woodland (the majority of which is within revegetating bog habitats) and urban.

The total Ornithology Cumulative Study Area is 262,584ha, 10,495ha of which is urban or industrial and therefore of limited value to KORs and has been omitted from the Ornithology Cumulative Study Area for this assessment. Therefore, the Ornithology Cumulative Study Area for this assessment is 252,089ha (hereafter referred to the Ornithology Cumulative Study Area), of which 8,593ha (3.6% of the Ornithology Cumulative Study Area) is within 500m of a turbine[32] (excluding the Proposed Turbines). The 500m radius of the Proposed Turbines comprises 3,186ha (1.3% of the Ornithology Cumulative Study Area), There is some overlap of the 500m radius of the Proposed Turbines and the 500m radius of the Cushaling Wind Farm turbines, this is accounted for in the calculations below. The three main land uses in the Ornithology Cumulative Study Area are agriculture, forestry (including commercial and transitional 'natural' woodland)[33] and open peatland. Of these three land uses, agriculture and open peatland have potential uses for breeding waders, wintering whooper swan and wintering hen harrier for foraging and/or roosting. Forestry is considered to be closed habitat for the purposes of these calculations and therefore of little use to these ornithological receptors. There is the following breakdown of these main land uses.

- The total area of open peatland is 27,725ha (11% of the Ornithology Cumulative Study Area);
  - Open peatland greater than 500m from turbines (excl. the proposed turbine layout) is 23,574ha (or 85.0% of the open peatland).
  - Open peatland greater than 500m from turbines (incl. the proposed turbine layout) is 21,205ha (or 76.5% of the open peatland).
- The total area of agricultural land is 204,531ha (81% of the Ornithology Cumulative Study Area);
  - Agricultural land greater than 500m from turbines (excl. the proposed turbine layout) is 201,976ha (or 98.7% of the agricultural land).

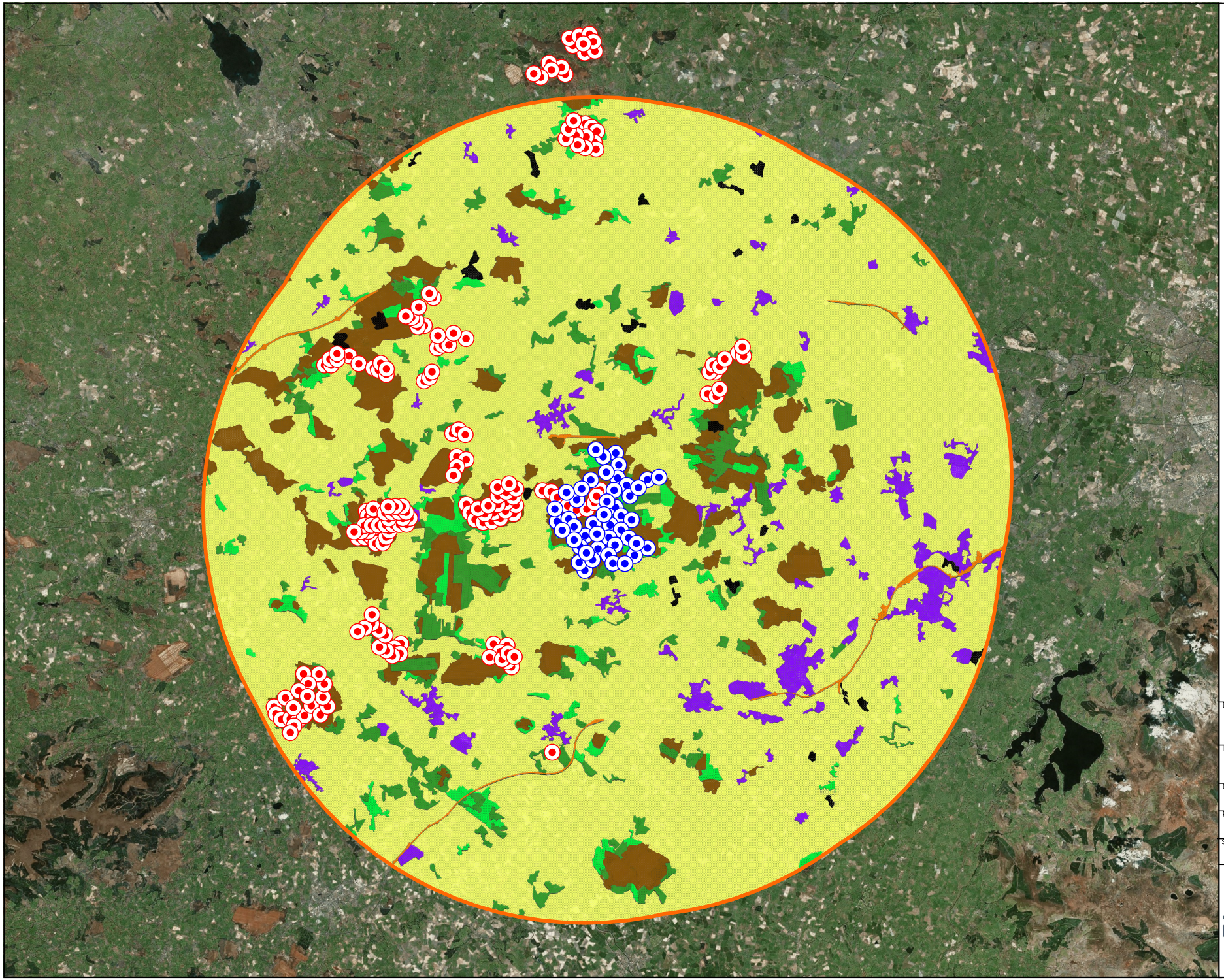
[31] https://land.copernicus.eu/en/products/corine-land-cover
[32] *Cushina Wind Farm, Fassa Wind Farm and Kilberry Wind Farm were excluded from this analysis and turbine locations were not publicly available when this EIAR was being prepared.*
[33] *The majority of the KORs discussed in the species-specific cumulative assessment favour open habitats. Wooded habitats (forestry) are typically avoided to a greater or lesser extent. While commercial conifer plantations are generally of low ecological value, whereas natural type woodlands are comparatively of high biodiversity value, this distinction is not relevant for species that favour open habitats.*

    - Agricultural land greater than 500m from turbines (incl. the proposed turbine layout) is 201,941ha (or 98.7% of the agricultural land).
- The total area of forestry is 19,833ha (8% of the Ornithology Cumulative Study Area);
    - Forestry greater than 500m from turbines (excl. the proposed turbine layout) is 18,025ha (or 90.9% of the forestry).
    - Forestry a greater than 500m from turbines (incl. the proposed turbine layout) is 17,264ha (or 87% of the forestry).
- The total area, excluding urban or industrial land, within 500m of turbines (incl. the proposed turbine layout) is 11,641ha (4.6% of the Ornithology Cumulative Study Area);
    - 6,497ha is within open peatland (56% of the Ornithology Cumulative Study Area within 500m of turbines);
    - 2,576ha is within agricultural land (22% of the Ornithology Cumulative Study Area within 500m of turbines); and
    - 2,568ha is within forestry (22% of the Ornithology Cumulative Study Area within 500m of turbines).

Having undertaken the above analysis of the available area within the Ornithology Cumulative Study Area the following is of note:

- The vast majority of the Ornithology Cumulative Study Area is comprised of agricultural farmland, i.e. 81%.
- A large proportion of the turbines are located within open peatland (48%), with a further 12% located within transitional woodland and scrub, the majority of which lies within peatland habitats.
- Although there is a high density of turbines within peatland habitats, relative to other habitats, the area occupied by the turbines (plus a 500m radius) is small to moderate in size when compared to the remaining peatland habitats.
- Displacement effects associated with the Proposed Turbines account for 1.3% of the Ornithology Cumulative Study Area.

As agricultural land, peatland and forestry make up the vast majority of the total 252,089ha within the Ornithology Cumulative Study Area, it is reasonable to conclude that the relative quality/suitability of these habitats is likely to have the greatest (positive or negative) influence on the local avian community. While several of the species encountered within the Core Ornithology Study Area are in decline at a national level, it is not possible to conclusively attribute the decline to any one industry; likely, the national hierarchy of threats/pressures as per Article 12 reporting holds true locally also. That is; forestry practice (including forest planting on open ground and forestry management) and factors associated with agricultural intensification are of high importance for a lot of species. Impacts associated with wind farms (renewable abiotic energy use) are likely of medium importance locally. As outlined in a recent NPWS report (Burke *et al.,* 2025) '*existing onshore windfarms have been considered a low-level pressure to Irish waterbirds [including whooper swan and golden plover] ... future expansion may increase the threat to particular species and waterbird communities at particular sites*.' Please see the following species-specific impact assessment for a detailed discussion of cumulative effects.


Map Legend
Ballydermot Wind Farm Turbines
Wind farms within 25km
25km Radius of Ballydermot Turbines
CORINE Landcover Data
Peatland
Agricultural
Forestry
Industrial
Transition Woodland
Transport
Urban
Microsoft product screen shots reprinted with permission from Microsoft Corporation
N
Drawing Title
Landscape Level Cumulative Assessment
Project Title
Ballydermot Wind Farm
Co. Offaly and Co. Kildare
Drawn By
SD
Checked By
PM
Project No.
250708
Drawing No.
Figure 7-3
Scale
1:350,000
Date
15/07/2026
MKO
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Ireland, H91 VW84
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email:info@mkoireland.ie
Website: ww.mkoireland.ie

7.8.3.2 Cumulative Collision Risk Assessment

The table below outlines the cumulative collision risk for each of the KORs. Where a zero is presented, a collision risk assessment was completed, and the result was zero collisions. Where '-' is presented, this species was not assessed for collision risk within the assessment, however, given that the species was not recorded at the Project Site, or not regularly enough to warrant a collision risk assessment, it is estimated that the collision risk for these species is essentially zero. There are two wind farms which did not include collision risk models within their EIS, for these wind farms a best estimate was calculated and presented in the table below. This best estimate was calculated by using the collision risk analysis from the nearest wind farm within similar habitat and in the same ecological landscape as a proxy, because bird flight activity is likely to be very similar between these areas. Cloncreen Wind Farm was used as a proxy for Mountlucas Wind Farm (4.3km separation distance) and Ballinla Wind Farm was used as a proxy for Yellow River Wind Farm (4.2km separation distance). A proportion collision risk was estimated based on the number of turbines. For example, as Cloncreen Wind Farm estimated 0.71 collisions per year for golden plover across 21 turbines, the collision risk was therefore estimated to be 0.95 collisions per year for the 28 turbines within Mountlucas Wind Farm. Wind farms which have not had a planning application submitted at the time of preparing this EIAR have been omitted from the cumulative collision risk assessment as there is no available data on these projects (i.e., Fassa Wind Farm, Garryhinch Wind Farm, Cushina Wind Farm and Kilberry Wind Farm). It should also be noted that Drehid Wind Farm, Ballinla Wind Farm and Derrynadarragh Wind Farm are proposed wind farms that may never be built as planning permission may not be granted.

Table 7-14 Cumulative Collision Risk Totals

Wind Farm	Golden plover	Greenland white-fronted goose	Hen harrier	King-fisher	Little egret	Merlin	Peregrine	Whooper swan	Lesser Black-backed Gull	Barn owl	Curlew	Kestrel	Lapwing	Snipe	Woodcock	Buzzard	Long-eared owl	Sparrow-hawk
Proposed Project	10[34]	0.0323	0.017	0	0.009	0.004	0.059	0.367	0.397	0	0.015	5.669	0.175	2.202	0.139	4.659	0.002	0.199
Cushaling Wind Farm	20[35]	-	-	-	-	-	0.068	0.082	-	-	-	0.718	0.607	0.02	0	1.32	0	0.001
Cloncreen Wind Farm	0.71	-	0	-	-	-	0.009	0.002	-	-	-	0.14	0.09	0.007	0	0.12	-	0.005
Drehid Wind Farm	0.56	-	0	0	0	0	0	0.05	0.49	-	0	0.7	0	0	0	1.68	0	0.2
Ballinla Wind Farm	2.88	-	0	0	0	0	0.01	0	0.26	-	-	0.35	0	0.01	0	0.5	-	0.01
Derrynadarragh Wind Farm	47.8	-	0.001	-	-	-	-	0.005	-	-	0.021	0.2	0.2	0.0003	0.0003	0.3	-	0.3

[34] *Post mitigation collision risk for Ballydermot Wind Farm.*
[35] *Post mitigation collision risk for Cushaling Wind Farm.*

Wind Farm	Golden plover	Greenland white-fronted goose	Hen harrier	King-fisher	Little egret	Merlin	Peregrine	Whooper swan	Lesser Black-backed Gull	Barn owl	Curlew	Kestrel	Lapwing	Snipe	Woodcock	Buzzard	Long-eared owl	Sparrow-hawk
Mountlucas Wind Farm[36]	0.95	-	0	-	-	-	0.012	0.003	-	-	-	0.19	0.12	0.009	0	0.16	-	0.007
Yellow River Wind Farm[37]	11.9	-	0	0	0	0	0.04	0	1.08	-	-	1.45	0	0.04	0	2.07	-	0.04
Clonarrow Wind Farm	3.53	-	-	-	-	-	0.17	-	0.17	-	-	0.17	7.19	0.01	-	0.47	-	-
Moanvane Wind Farm	13.9	-	0.001	-	-	0	0.01	0.01	-	-	-	-	-	-	-	0	-	0.1
Ballivor Wind Farm	15.5	-	0.003	0	-	0.014	0.224	1.34	-	0	-	2.21	2.79	0.237	0	2.48	0	0.097
Dernacart Wind Farm	0.23	-	-	0	-	0.005	0.001	-	0.015	-	0.017	0.4	0.285	0.009	0.005	0	-	0.025
Cumulative Collision Risk	**127.96**	**0.0323**	**0.022**	**0**	**0.009**	**0.02**	**0.603**	**1.859**	**2.412**	**0**	**0.053**	**12.197**	**11 457**	**2.544**	**0.1443**	**13.759**	**0.002**	**0.984**

[36] *Estimated collisions based on Cloncreen Wind Farm.*
[37] *Estimated collisions based on Ballinla Wind Farm.*

7.8.3.3 Golden Plover (National Importance)

At a national level, the main threats and pressures for golden plover listed in Article 12 reporting are: hunting; temperature change due to climate change; wind, wave and tidal power; sports, tourism and leisure activities; and modification to flooding regimes. All of these threats and pressures are of medium importance. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative Habitat Review

The Project Site contains bog habitats which are suitable for foraging and roosting golden plover. Cushaling, Cloncreen, Mountlucas, Yellow River, Garryhinch and Ballivor wind farms are located within, or partially within, bog habitats. Cushaling, Drehid, Ballinla, Derrynadarragh, Yellow River, Clonarrow, Fassa, Moanvane, Dernacart and Cushina wind farms are located within, or partially within, agricultural habitats. Both of these habitats are suitable for golden plover. However, these habitats (agricultural grassland and bog habitats) are not a scarce resource in the area. Agricultural grassland in particular (which is favoured by golden plover) is abundant locally and is one of the most abundant habitat types within the Ornithology Cumulative Study Area (and at a national level). Furthermore, the rehabilitation schemes within some of these peatland habitats (on deep cutover peat), are likely to increaser the quality of these habitats in the wider surroundings for this species and, relatedly, their potential carrying capacity. This abundance limits the potential for significant habitat loss effects to result on an individual project basis or cumulatively. Furthermore, the Proposed Project includes an extensive Biodiversity Management Plan that includes offsetting measures for the benefit of golden plover, which limits the potential for the Proposed Project to meaningfully contribute to a significant cumulative effect. No significant residual (habitat loss) effects are predicted to result from the Proposed Project.

Landscape-level Analysis

The results of the landscape-level analysis provide the following information: excluding the Proposed Project, there are 225,550ha of potentially suitable golden plover habitat (agricultural land and open peatland) greater than 500m from a turbine in the Ornithology Cumulative Study Area. In the same Ornithology Cumulative Study Area, there are 18,025ha of forestry greater than 500m from a cumulative wind farm turbine and Proposed Turbines. This species is an open habitat species that does not use forestry, therefore there is 225,550ha of available suitable habitat. It is acknowledged that this is likely an overestimation of the amount of available habitat due to distance from edge effect from closed habitats being a limiting factor. Within the Project Site, there is 3,284ha within 500m of the Proposed Turbines, 2,463ha of which is suitable open habitat (agricultural land and open peatland) which is within 500m of a turbine. The total available habitat for this species within 500m of the Proposed Turbines, but greater than 500m from other turbines, is therefore 2,463ha, which represents a 1.1% loss of the remaining habitat greater than 500m from a turbine (225,550ha) within the cumulative assessment landscape. This is not a significant (direct/indirect) contribution to the cumulative loss of habitat for this species. Furthermore, the remaining 223,087ha continues to constitute a significant amount of suitable habitat for this species. Golden plover are predicted to be displaced by 250m from operating turbines (adapted from Hötker *et al.*, 2006) rather than the 500m displacement discussed within the landscape level assessment, and therefore, the displacement effect on golden plover are likely to be less than that outlined here.

Cumulative Impacts of Other Developments

With regard to the cumulative impact of other developments relating to the key threats and pressures on golden plover, there are limited areas of amenity grasslands (sports, tourism and leisure activities), therefore significant cumulative effects of the Proposed Project and this key threat and pressure are not anticipated. There are only two flood relief scheme projects within the cumulative assessment area,

along the River Morell and River Owenass, neither of which are near the Project Site. Therefore, significant cumulative impacts with regard to the modification of flooding regimes is not anticipated. Cumulative impacts on the golden plover population from hunting are not anticipated given the low levels of mortality associated with this threat. No negative cumulative impacts on golden plover relating to the key pressure of temperature change due to climate change are anticipated given that the Proposed Project will contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions. Therefore, significant cumulative effects of the Proposed Project and the key threats and pressures for golden plover are not anticipated.

Cumulative Collision Risk

As outlined in Table 7-14, the cumulative collision risk for golden plover is c. 118 birds per year across all wind farms within the Ornithology Cumulative Study Area (excluding the Proposed Turbines). Given the regional population of golden plover is 6,598 and the annual mortality of adult golden plover has been calculated at 27% per year (Sandercock, 2003). The loss of c. 118 birds per year would result in an increase in the annual mortality of the regional population by 6.6%. This is a medium magnitude effect (as per Percival (2003) criteria), cross tabulated with a high sensitivity species is a high effect significance. The baseline collision risk when considering all projects within the area, excluding the Proposed Project, is a long-term significant negative cumulative collision risk impact (as per EPA (2022) criteria). Derrynadarragh Wind Farm is the key contributor, i.e. where 41% of collisions are predicted, which is a proposed development and therefore, the consent process is unknown at this time. Therefore, the baseline collision risk when considering all projects within the area, excluding the Proposed Project, is a significant cumulative collision risk impact.

If the ten potential collisions resulting from the Proposed Project are included in this cumulative assessment of collision risk, the (revised) predicted increase in the annual mortality of the regional population is c. 7.2%. This 0.6% increase in background mortality is a negligible contribution (as per Percival (2003) criteria) to an existing potentially significant cumulative effect. Ten potential collisions are a precautionary scenario that may never occur, as a comprehensive deterrent and enhancement plan is proposed to ensure collisions are limited. Furthermore, the ten potential collisions is a maximum threshold beyond which mitigation is proposed (i.e. curtailment of turbines). Please see Section 7.6.4.1 for details on the curtailment strategy. The Proposed Project therefore does not significantly increase the baseline cumulative collision risk.

Cumulative Summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision risk effects is considered to be limited. Furthermore, no significant residual effects of habitat loss, displacement and collision risk were reported for any of the other wind farms. Taking into consideration the above reported effects and the predicted effects with the Proposed Project, cumulative effects on golden plover are considered to be influenced primarily by the broader effects of commercial forestry and agricultural practices on habitat availability and quality, rather than by the relatively limited contribution associated with the Proposed Project.

Significant changes to the baseline cumulative impacts are not predicted.

7.8.3.4 Greenland White-fronted Goose (Regional Importance)

At a national level, the main threats and pressures for Greenland white-fronted goose listed in Article 12 reporting are: sports, tourism and leisure activities which are of high importance; and illegal shooting/killing; Conversion from one type of agricultural land use to another (excluding drainage and burning); conversion to forest from other land uses, or afforestation (excluding drainage); wind, wave and tidal power, including infrastructure; Transmission of electricity and communications (cables); roads, paths, railroads and related infrastructure (e.g. bridges, viaducts, tunnels); conversion from other

land uses to housing, settlement or recreational areas (excluding drainage and modification of coastline, estuary and coastal conditions); mixed source marine water pollution (marine and coastal); and marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species, which are of medium importance. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

The Irish population primarily winters in the Wexford Slobs and breeds in Greenland, migrating between the two locations. As the migratory route has the potential to cross the Project Site, the only potentially significant cumulative effects associated with this species are barrier effect and collision risk. However, neither is likely to result in significant effects based on the following rationale. On the 30th of May 2024, information was provided by NPWS to BnM, which provided a summary of the results of a GPS satellite tagging study of migratory Greenland white-fronted geese. Based on the information provided from a recently published peer-reviewed paper by the University of Saskatoon, no significant collision risk or barrier effect is likely, given the altitude at which the geese were flying when migrating between the Wexford Slobs and Iceland. In every instance where information on migratory geese was provided (by NPWS) the geese were flying nearly ten times the height of the proposed turbines (i.e. 1,606m, 2,210m or 2,235m). This information was provided in relation to the Ballivor Wind Farm in County Westmeath; however, this information remains relevant for the Proposed Project also, as a majority of migratory Greenland white-fronted geese fly directly between Iceland and the Wexford Slobs (Fox *et al.,* 2003) at altitude. A minority stop briefly (stage) in Lough Foyle in Northern Ireland. A review of the literature shows that many species of birds including water birds like swans and geese fly at high altitudes when migrating. When on migration Greenland white-fronted geese have previously been recorded to fly at altitudes of >2,500m when crossing the 2,500m high Greenland Ice Cap (Fox *et al.,* 2003). Other related species also fly at high elevations when migrating: Pacific greater white-fronted goose, tule white-fronted goose, lesser snow goose migrate at flight altitudes of between 2,500m and 3,500m (Weiser *et al.*, 2024). In summary, owing to the high-altitude of the majority of flights of Greenland white-fronted geese when migratory, no interactions with turbines are likely. Therefore, no significant barrier effect or collision risk is predicted. In the unlikely event that birds would be migrating at lower altitudes, it would result in a slight deviation to the flight path of the birds migrating over the Proposed Wind Farm. Given that the Proposed Turbines are spread approximately 7.5km apart in an east-west orientation (i.e. perpendicular to the north-south migration pathway of this species), the maximum distance deviation required to avoid the Proposed Wind Farm is approximately 4km (east or west of the centre point of the Proposed Turbines), which is insignificant in the context of a migration pathway from the Irish stronghold in Wexford to Iceland (approximately 1,500km). Therefore, significant displacement or barrier effect are not anticipated.

Greenland white-fronted goose were not observed using habitats within the Core Ornithology Survey Area. Birds observed were on migration from their wintering grounds in County Wexford to Iceland. No significant cumulative habitat loss effects are predicted given that this species does not use habitats within the Ornithology Cumulative Study Area for foraging or roosting.

Cumulative Impacts of Other Developments

With regard to the cumulative impact of other developments relating to the key threats and pressures on Greenland white-fronted goose, the only relevant threats and pressures associated with the migration routes are transmission of electricity and communications cables and roads, paths, railroads and related infrastructure (e.g. bridges, viaducts, tunnels), which could result in a cumulative collision risk effect. There are a number of projects relating to telecommunications towers and overhead lines, and roads and paths within 25km of the Project Site, however, collisions with overhead lines, tower guy wires and motor vehicles on roads and paths are rare events. There is the potential that larger overhead lines or telecommunication towers may lie within the known migration corridors of this species however as Greenland white-fronted goose, in general, migrate at high altitude above the height of the majority of overhead lines and roads. Significant cumulative effects are not anticipated.

Cumulative Collision Risk

As outlined in Table 7-14, the cumulative collision risk for Greenland white-fronted goose is 0.0323 birds per year across all wind farms within the Ornithology Cumulative Study Area. No significant cumulative collision risk effects are anticipated given the collision risk is effectively zero.

Cumulative Summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative barrier and collision risk effects is considered to be limited. Furthermore, no significant residual effects of barrier effect and collision risk were reported for any of the other wind farms. Taking into consideration the above reported effects and the predicted effects with the Proposed Project, cumulative effects on Greenland white-fronted goose are considered to be limited within regard to wind farms and other infrastructure and land uses within this Ornithology Cumulative Study Area. No residual additive, antagonistic or synergistic significant effects have been identified with regard to barrier effects or collision risk. No significant impacts on Greenland white-fronted goose are anticipated at the county, national or international scale.

Significant cumulative impacts are not predicted.

7.8.3.5 Hen Harrier (Regional Importance)

At a national level, the main threats and pressures for wintering hen harrier listed in Article 12 reporting are: conversion from mixed farming and agroforestry systems to specialised (e.g. single crop) production; conversion to forest from other land uses, or afforestation (excluding drainage); and drainage for use as agricultural land; which are of high importance. Wind, wave and tidal power, including infrastructure; conversion to forest from other land uses, or afforestation (excluding drainage); reseeding of grasslands and other semi-natural habitats; use of plant protection chemicals in agriculture; and tillage practices (e.g. ploughing) in agriculture; conversion from one type of agricultural land use to another (excluding drainage and burning); which are of medium importance. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative Habitat Review

The Project Site contains bog habitats which are suitable for foraging and roosting hen harrier. Cushaling, Cloncreen, Mountlucas, Yellow River, Garryhinch and Ballivor wind farms are located within, or partially within, bog habitats. Cushaling, Drehid, Ballinla, Derrynadarragh, Yellow River, Clonarrow, Fassa, Moanvane, Dernacart and Cushina wind farms are located within, or partially within, agricultural habitats, the majority of which is of some value to wintering hen harrier for foraging or roosting. However, these habitats are not a scarce resource in the area. Open peatland/bog and agricultural grassland is abundant both locally and regionally. This abundance limits the potential for significant habitat loss effects to result on an individual project basis or cumulatively. Furthermore, the Proposed Project includes an extensive Biodiversity Management Plan that includes enhancement measures for the benefit of hen harrier, this limits the potential for the Proposed Project to meaningfully contribute to a significant cumulative effect. No significant residual (habitat loss) effects are predicted to result from the Proposed Project.

Landscape-level Analysis

The results of the landscape-level analysis provide the following information: excluding the Proposed Project, there are 225,550ha of potentially suitable hen harrier wintering habitat (agricultural land and open peatland) greater than 500m from a turbine in the Ornithology Cumulative Study Area. In the same Ornithology Cumulative Study Area, there are 18,025ha of forestry greater than 500m from a turbine. This species is an open habitat species that does not use mature forestry, forestry is therefore

omitted from this landscape-level calculation as it is of limited value to hen harrier as a whole within the Ornithology Cumulative Study Area (while clear-fell and recently planted forestry is of some benefit to foraging hen harrier, this would not be a significantly large proportional of the available habitat within the Ornithology Cumulative Study Area and therefore has not been included in this assessment). While it is acknowledged that not all agricultural land is suitable for wintering hen harrier, the majority of this land will be suitable for either foraging or roosting hen harrier in some capacity. Therefore, there is 225,550ha of available suitable habitat. Within the Project Site, there is 3,284ha within 500m of Proposed Turbines, 2,463ha of which is suitable open habitat (agricultural land and open peatland) which is within 500m of a turbine. The total available habitat for this species within 500m of the Proposed Turbines, but greater than 500m from other turbines, is therefore 2,463ha, which represents a 1.1% loss of the remaining habitat greater than 500m from a turbine (225,550ha) within the Ornithology Cumulative Study Area. This is not a significant (direct/indirect) contribution to the cumulative loss of habitat for this species. Furthermore, the remaining 223,087ha continues to constitute a significant amount of suitable habitat for this species. Foraging hen harrier are predicted to be displaced by 250m from operating turbines (Pearce-Higgins *et al.*, 2009) rather than the 500m displacement discussed within the landscape level assessment, and therefore, the displacement effect on hen harrier are likely to be less than that outlined here.

Cumulative Impacts of Other Developments

With regard to the cumulative impact of other developments relating to the key threats and pressures on hen harrier, the majority of these threats and pressures relate to agricultural and forestry practices. However, despite these threats and pressures being widespread across Ireland, there is limited potential for significant cumulative effects of these threats and pressures based on the following rationale. The majority of the key threats and pressures are primarily during the breeding season, the population that occurs at the Project Site is a wintering population which is less affected by these threats and pressures as the birds are more mobile during the winter and are not reliant on specific habitats within the uplands. If farming/forestry practices were to change in some areas in the ways which are outlined in Article 12, the abundance of agricultural grassland within the Ornithology Cumulative Study Area limits the potential for significant cumulative habitat loss effects as a significant proportion of the agricultural grassland and forestry is likely to remain suitable for this species during the winter months. Therefore, significant cumulative effects of the Proposed Project and the key threats and pressures for hen harrier are not anticipated.

Cumulative Collison Risk

As outlined in Table 7-14, the cumulative collision risk for hen harrier is 0.022 birds per year across all wind farms within the Ornithology Cumulative Study Area. No significant cumulative collision risk effects are anticipated given the collision risk is effectively zero.

Cumulative Summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision risk effects is considered to be limited. Furthermore, no significant residual effects of habitat loss, displacement and collision risk were reported for any of the other wind farms. Taking into consideration the above reported effects and the predicted effects with the Proposed Project, cumulative effects on hen harrier are considered to be influenced primarily by the broader effects of commercial forestry and agricultural practices on habitat availability and quality, rather than by the relatively limited contribution associated with the Proposed Project. No significant residual additive, antagonistic or synergistic cumulative effects have been identified with regard to habitat loss or displacement/barrier effects. No significant impacts on hen harrier are anticipated at the county, national or international scale.

Significant cumulative impacts are not predicted.

7.8.3.6 Kingfisher (National Importance)

At a national level, the main threats and pressures for kingfisher listed in Article 12 reporting are: hunting; temperature change due to climate change; agricultural activities generating point source pollution to surface or ground waters; agricultural activities generating diffuse pollution to surface or ground waters; forestry activities generating pollution to surface or ground waters; pollution to surface or ground water due to urban run-offs; mixed source pollution to surface and ground waters (limnic and terrestrial); other invasive alien species (other then species of Union concern); problematic native species; and sports, tourism and leisure activities. All of these threats and pressures are of medium importance. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative Habitat Review

The Project Site contains bog habitats which in general contain drainage ditches, streams and rivers that are suitable for kingfisher. Cushaling, Cloncreen, Mountlucas, Yellow River, Garryhinch and Ballivor wind farms are located within, or partially within, bog habitats. Cushaling, Drehid, Ballinla, Derrynadarragh, Yellow River, Clonarrow, Fassa, Moanvane, Dernacart and Cushina wind farms are located within, or partially within, agricultural habitats. Both of these habitats, in general, contain drainage ditches, streams and rivers that are suitable for kingfisher. In particular, the extensive drainage channels within areas of regenerating peatland within the Project Site would not be considered of particularly high-quality habitat, rare locally or unique to the Project Site or above wind farms. There are a large number of higher quality habitats, streams and rivers within the Ornithology Cumulative Study Area that are suitable for kingfisher. This abundance limits the potential for significant habitat loss effects to result on an individual project basis or cumulatively. Furthermore, the Proposed Project includes extensive mitigation measures to protect water quality within the Project Site during construction and operation (see Chapter 9 for further details), this limits the potential for the Proposed Project to have a cumulative effect given that the Proposed Project will have a minimal residual effect on kingfisher.

Landscape-level Analysis

At a landscape-level significant cumulative effects on kingfisher are not anticipated based on the following rationale: the Project Site does not contain any major rivers, with only small rivers present onsite, including the River Figile and its tributaries the Crabtree River and the Cushaling River. At a regional level this only accounts for a small portion of the river system which is suitable to kingfisher. Furthermore, the Proposed Project includes setbacks from these rivers and water quality protection measures to minimise the impact on these rivers. Therefore, significant cumulative impacts of habitat loss or deterioration at a landscape-level are not anticipated.

Cumulative Impacts of Other Developments

With regard to the cumulative impact of other developments relating to the key threats and pressures on kingfisher, the majority of these threats and pressures relate to farming practices and land management changes or water quality. The extent of suitable habitat for kingfisher within the wider landscape surrounding the Project Site, which has a widespread drainage and river network, limited the likelihood of significant cumulative impacts at the local scale. If farming practices were to change in some areas in the ways which are outlined in Article 12, the abundance of agricultural grassland within the Ornithology Cumulative Study Area limits the potential for significant cumulative habitat loss effects as a significant proportion of the agricultural grassland is likely to remain suitable for this species. Furthermore, as outlined in Chapter 9 Water, significant cumulative impacts on water quality are not anticipated. Therefore, significant cumulative effects of the Proposed Project and the key threats and pressures for kingfisher are not anticipated.

Cumulative Collison Risk

As outlined in Table 7-14, there is no cumulative collision risk for kingfisher across all wind farms within the Ornithology Cumulative Study Area, as no wind farms predicted any collision mortality for this species. No significant cumulative collision risk effects are anticipated.

Cumulative Summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision risk effects is considered to be limited. Furthermore, no significant residual effects of habitat loss, displacement and collision risk were reported for any of the other wind farms. Taking into consideration the above reported effects and the predicted effects with the Proposed Project, cumulative effects on kingfisher are considered to be influenced primarily by the broader effects of water quality and agricultural practices on habitat availability and quality, rather than by the relatively limited contribution associated with the Proposed Project. No significant residual additive, antagonistic or synergistic cumulative effects have been identified with regard to habitat loss or displacement/barrier effects. No significant impacts on kingfisher are anticipated at the county, national or international scale.

Significant cumulative impacts are not predicted.

7.8.3.7 Little Egret (Regional Importance)

At a national level, there were no threats or pressures identified for little egret listed in Article 12 reporting. Although it is reasonable to assume that pollution of water sources is likely to impact this aquatic species.

Cumulative Habitat Review

The Project Site contains bog habitats which in general contain drainage ditches, streams and rivers that are suitable for little egret. Cushaling, Cloncreen, Mountlucas, Yellow River, Garryhinch and Ballivor wind farms are located within, or partially within, bog habitats. Cushaling, Drehid, Ballinla, Derrynadarragh, Yellow River, Clonarrow, Fassa, Moanvane, Dernacart and Cushina wind farms are located within, or partially within, agricultural habitats. Both of these habitats, in general, contain drainage ditches, streams and rivers that are suitable for little egret. However, these habitats are not a scarce resource in the area. There are a large number of streams and rivers within the Ornithology Cumulative Study Area that are suitable for little egret. This abundance limits the potential for significant habitat loss effects to result on an individual project basis or cumulatively. Furthermore, the Proposed Project includes extensive mitigation measures to protect water quality within the Project Site during construction and operation (see Chapter 9 for further details), this limits the potential for the Proposed Project to have a cumulative effect given that the Proposed Project will have a minimal residual effect on kingfisher.

Landscape-level Analysis

At a landscape-level significant cumulative effects on little egret are not anticipated based on the following rationale: the Project Site does not contain any major rivers, with only small rivers present onsite, including the River Figile and its tributaries the Crabtree River and the Cushaling River. At a regional level this only accounts for a small portion of the river system which is suitable to little egret. Furthermore, the Proposed Project includes setbacks from these rivers and water quality protection measures to minimise the impact on these rivers. Therefore, significant cumulative impacts of habitat loss or deterioration at a landscape-level are not anticipated.

Cumulative Collison Risk

As outlined in Table 7-14, the cumulative collision risk for little egret is 0.009 birds across all wind farms within the Ornithology Cumulative Study Area. No significant cumulative collision risk effects are anticipated given the collision risk is effectively zero.

Cumulative Summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision risk effects is considered to be limited. Furthermore, no significant residual effects of habitat loss, displacement and collision risk were reported for any of the other wind farms. Taking into consideration the above reported effects and the predicted effects with the Proposed Project, cumulative effects on little egret are considered to be influenced primarily by the broader effects of water quality and agricultural practices on habitat availability and quality, rather than by the relatively limited contribution associated with the Proposed Project. No significant residual additive, antagonistic or synergistic cumulative effects have been identified with regard to habitat loss or displacement/barrier effects. No significant impacts on little egret are anticipated at the county, national or international scale.

Significant cumulative impacts are not predicted.

7.8.3.8 Merlin (Regional Importance)

At a national level, the main threats and pressures for merlin listed in Article 12 reporting are: conversion from mixed farming and agroforestry systems to specialised (e.g. single crop) production; conversion into agricultural land (excluding drainage and burning) which is of high importance. replanting with or introducing non-native or non-typical species (including new species and GMOs); clear-cutting, removal of all trees; peat extraction; and wind, wave and tidal power, including infrastructure; which are of medium importance. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative Habitat Review

The Project Site contains bog habitats which are suitable for foraging and roosting merlin. Cushaling, Cloncreen, Mountlucas, Yellow River, Garryhinch and Ballivor wind farms are located within, or partially within, open peatland habitats. Cushaling, Drehid, Ballinla, Derrynadarragh, Yellow River, Clonarrow, Fassa, Moanvane, Dernacart and Cushina wind farms are located within, or partially within, agricultural habitats, the majority of which is of some value to merlin for foraging. However, these habitats are not a scarce resource in the area. Agricultural grassland in particular is abundant locally and is one of the most abundant habitat types within the Ornithology Cumulative Study Area. This abundance limits the potential for significant habitat loss effects to result on an individual project basis or cumulatively.

Landscape-level Analysis

The results of the landscape-level analysis provide the following information: excluding the Proposed Project, there are 225,550ha of potentially suitable merlin habitat (agricultural land and open peatland) greater than 500m from a turbine in the Ornithology Cumulative Study Area. In the Ornithology Cumulative Study Area, there are 18,025ha of forestry greater than 500m from a turbine. This species is an open habitat species that does not use mature forestry, apart from occasionally using the margins of mature forestry for nesting, forestry is therefore omitted from this landscape-level calculation as it is of limited value to merlin as a whole within the Ornithology Cumulative Study Area. Therefore, there is 225,550ha of available suitable habitat. Within the Project Site, there is 3,284ha within 500m of the Proposed Turbines, 2,463ha of which is suitable open habitat (agricultural land and open peatland)

which is within 500m of a turbine. The total available habitat for this species within 500m of the Proposed Turbines, but greater than 500m from other turbines, is therefore 2,463ha, which represents a 1.1% loss of the remaining habitat greater than 500m from a turbine (225,550ha) within the Ornithology Cumulative Study Area. This is not a significant (direct/indirect) contribution to the cumulative loss of habitat for this species. Furthermore, the remaining 223,087ha continues to constitute a significant amount of suitable habitat for this species.

Cumulative Impacts of Other Developments

With regard to the cumulative impact of other developments relating to the key threats and pressures on hen harrier, the majority of these threats and pressures relate to agricultural and forestry practices. However, despite these threats and pressures being widespread across Ireland, there is limited potential for significant cumulative effects of these threats and pressures and the Proposed Project given that the affected habitats (agricultural land and forestry) are limited within the Project Site, are not unique to the Project Site and are abundant in the wider area surrounding the Project Site. With regard to the threat and pressure of peat extraction, the large scale industrial removal of peat within the Project Site and other peatland within the region by Bord na Mona has ceased; this significantly reduces this threat/pressure. However, there is some peat cutting in the form of turf extraction in the bogs surrounding the Project Site, given the scale of these operations and that these turf cutting areas are increasingly abandoned, significant cumulative effects of these activities and the Proposed Project are not anticipated. Therefore, significant cumulative effects of the Proposed Project and the key threats and pressures for merlin are not anticipated.

Cumulative Collison Risk

As outlined in Table 7-14, the cumulative collision risk for merlin is 0.02 birds per year across all wind farms within the Ornithology Cumulative Study Area. No significant cumulative collision risk effects are anticipated given the collision risk is effectively zero.

Cumulative Summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision risk effects is considered to be limited. Furthermore, no significant residual effects of habitat loss, displacement and collision risk were reported for any of the other wind farms. Taking into consideration the above reported effects and the predicted effects with the Proposed Project, cumulative effects on merlin are considered to be influenced primarily by the broader effects of commercial forestry and agricultural practices on habitat availability and quality, rather than by the relatively limited contribution associated with the Proposed Project. No significant residual additive, antagonistic or synergistic cumulative effects have been identified with regard to habitat loss or displacement/barrier effects. No significant impacts on merlin are anticipated at the county, national or international scale.

Significant cumulative impacts are not predicted.

7.8.3.9 Peregrine (Regional Importance)

At a national level, there are no pressures are listed for peregrine in Article 12 reporting and the key threat on peregrine is human intrusions and disturbance, which is of medium importance. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative Habitat Review

The Project Site contains open peatland habitats which are suitable for foraging peregrine. Cushaling, Cloncreen, Mountlucas, Yellow River, Garryhinch and Ballivor wind farms are located within, or partially within, open peatland habitats. Cushaling, Drehid, Ballinla, Derrynadarragh, Yellow River, Clonarrow, Fassa, Moanvane, Dernacart and Cushina wind farms are located within, or partially within, agricultural habitats, which are suitable habitats for foraging peregrine. However, these habitats are not a scarce resource in the area. Agricultural grassland in particular is abundant locally and is one of the most abundant habitat types within the Ornithology Cumulative Study Area. This abundance limits the potential for significant habitat loss effects to result on an individual project basis or cumulatively.

Landscape-level Analysis

The results of the landscape-level analysis provide the following information: excluding the Proposed Project, there are 225,550ha of potentially suitable peregrine habitat (agricultural land and open peatland) greater than 500m from a turbine in the Ornithology Cumulative Study Area. In the Ornithology Cumulative Study Area, there are 18,025ha of forestry greater than 500m from a turbine. This species is an open habitat species that does not use mature forestry. Therefore, there are 225,550ha of available suitable habitat. Within the Project Site, there are 3,284ha within 500m of the Proposed Turbines, 2,463ha of which is suitable open habitat (agricultural land and open peatland) which is within 500m of a turbine. The total available habitat for this species within 500m of the Proposed Turbines, but great than 500m from other turbines, is therefore 2,463ha, which represents a 1.1% loss of the remaining habitat greater than 500m from a turbine (225,550ha) within the cumulative assessment landscape. This is not a significant (direct/indirect) contribution to the cumulative loss of habitat for this species. Furthermore, the remaining 223,087ha continues to constitute a significant amount of suitable habitat for this species.

Cumulative Impacts of Other Developments

With regard to the cumulative impact of other developments relating to the key threats and pressures on peregrine, the only pressure on peregrine is from other human intrusions and disturbance. Given the nature of this threat and the Proposed Project, it is not anticipated that there would be any cumulative effects based off this threat, as there will be limited human disturbance for maintenance and monitoring activities and amenity use within the operational wind farm. Therefore, significant cumulative effects of the Proposed Project and the key threats and pressures for peregrine are not anticipated.

Cumulative Collision Risk

As outlined in Table 7-14, the cumulative collision risk for peregrine is c. 0.603 birds per year across all wind farms within the Ornithology Cumulative Study Area (including the Proposed Turbines). Given the regional population of peregrine is 17 birds and the annual mortality of adult peregrine has been calculated at 19% per year (Craig et al., 2004). The loss of 0.603 birds per year would result in an increase in the annual mortality of the regional population by 18.7%. This is a medium magnitude effect (as per Percival (2003) criteria), cross tabulated with a medium sensitivity species is a low effect significance. The baseline collision risk when considering all projects within the area is a long-term slight negative cumulative collision risk impact (as per EPA (2022) criteria), which is not significant. The Proposed Project. Furthermore, it is proposed to discourage open habitat species from the vicinity of the Proposed Turbines through the scrub encouragement, this will likely remove an attractant for

peregrine from the Proposed Wind Farm site, therefore reducing flight activity and the associated collision risk per year.

Cumulative Summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision risk effects is considered to be limited. Furthermore, no significant residual effects of habitat loss, displacement and collision risk were reported for any of the other wind farms. Taking into consideration the above reported effects and the predicted effects with the Proposed Project, cumulative effects on peregrine are considered to be influenced primarily by the broader effects of commercial forestry and agricultural practices on habitat availability and quality, rather than by the relatively limited contribution associated with the Proposed Project. No significant residual additive, antagonistic or synergistic cumulative effects have been identified with regard to habitat loss or displacement/barrier effects. No significant impacts on peregrine are anticipated at the county, national or international scale.

Significant cumulative impacts are not predicted.

7.8.3.10 Whooper Swan (Regional Importance)

At a national level, the main threats and pressures for whooper swan listed in Article 12 reporting are: wind, wave and tidal power, including infrastructure; transmission of electricity and communications (cables); sports, tourism and leisure activities; and modification of flooding regimes, flood protection for residential or recreational development. All of these threats and pressures are of medium importance. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative Habitat Review

The Project Site contains bog habitats which are suitable for foraging and roosting whooper swan. Cushaling, Cloncreen, Mountlucas, Yellow River, Garryhinch and Ballivor wind farms are located within, or partially within, bog habitats. Cushaling, Drehid, Ballinla, Derrynadarragh, Yellow River, Clonarrow, Fassa, Moanvane, Dernacart and Cushina wind farms are located within, or partially within, agricultural habitats. Both of these habitats are suitable for whooper swan. However, these habitats are not a scarce resource in the area. Agricultural grassland in particular (which is favoured by whooper swan) is abundant locally and is one of the most abundant habitat types within the Ornithology Cumulative Study Area. This abundance limits the potential for significant habitat loss effects to result on an individual project basis or cumulatively. Furthermore, the Proposed Project includes and extensive Biodiversity Management Plan that includes enhancement measures for the benefit of whooper swan, this limits the potential for the Proposed Project to have a cumulative effect given that the Proposed Project will have a minimal residual effect on whooper swan.

Landscape-level Analysis

The results of the landscape-level analysis provide the following information: excluding the Proposed Project, there are 225,550ha of potentially suitable whooper swan habitat (agricultural land and open peatland) greater than 500m from a turbine in the Ornithology Cumulative Study Area. In the Ornithology Cumulative Study Area, there are 18,025ha of forestry greater than 500m from a turbine. This species is an open habitat species that does not use forestry, therefore there is 225,550ha of available suitable habitat. Within the Project Site, there is 3,284ha within 500m of Proposed Turbines, 2,463ha of which is suitable open habitat (agricultural land and open peatland) which is within 500m of a turbine. Only a minority of this open habitat is likely suitable, i.e. the areas that are associated with wetlands. Therefore the 2,463ha figure is highly conservative and as such should be considered precautionary. The total available habitat for this species within 500m of the Proposed Turbines, but

great than 500m from other turbines, is therefore 2,463ha, which represents a 1.1% loss of the remaining habitat greater than 500m from a turbine (225,550ha) within the Ornithology Cumulative Study Area. This is not a significant (direct/indirect) contribution to the cumulative loss of habitat for this species. Furthermore, the remaining 223,087ha continues to constitute a significant amount of suitable habitat for this species.

Cumulative impacts of other developments

With regard to the cumulative impact of other developments relating to the key threats and pressures on whooper swan, transmission of electricity and communications cables could result in a cumulative collision risk effect. There are a number of projects relating to telecommunications towers and overhead lines within 25km of the Project Site, however, collisions with overhead lines and tower guy wires are rare events. Given that whooper swan, in general, commute and migrate above the height of the majority of overhead lines, however larger overhead lines or telecommunication towers may lie within known commuting or migration corridors.

Fitting overhead lines and guy wires with devices to make them more visible to flying birds is widely used to mitigate bird collisions at high-risk sites. A meta-analysis of experimental studies (confined to studies with flight frequency data as well as corpse searches) found an overall mortality reduction of 78% at marked compared with unmarked wires (Barrientos *et al.,* 2011). Line markers will be fitted to the proposed overhead lines which form part of the Proposed Project. Significant cumulative collision risk effects for whooper swan are not anticipated. There are limited areas of amenity grasslands (sports, tourism and leisure activities), therefore significant cumulative effects of the Proposed Project and this key threat and pressure are not anticipated.

There are only two flood relief scheme projects within the cumulative assessment area, along the River Morell and River Owenass, neither of which are near the Project Site. Therefore, significant cumulative impacts with regard to the modification of flooding regimes is not anticipated.

Cumulative Collision Risk

As outlined in Table 7-14, the cumulative collision risk for whooper swan is 1.859 birds per year across all wind farms within the Ornithology Cumulative Study Area. Given the regional population of whooper swan is 414 birds and the annual mortality of adult whooper swan has been calculated at 20% per year (Brazil, 2003). The loss of 1.859 birds per year would result in an increase in the annual mortality of the regional population by 2.25%. This is a low magnitude effect (as per Percival (2003) criteria), cross tabulated with a medium sensitivity species is a low effect significance. The cumulative collision risk when considering all projects within the area is a long-term slight negative cumulative collision risk impact (as per EPA (2022) criteria). No significant cumulative collision risk effects are therefore anticipated given the low increase in background mortality for this species.

Cumulative Summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision risk effects is considered to be limited. Furthermore, no significant residual effects of habitat loss, displacement and collision risk were reported for any of the other wind farms. Taking into consideration the above reported effects and the predicted effects with the Proposed Project, cumulative effects on whooper swan are considered to be influenced primarily by the broader effects of commercial forestry and agricultural practices on habitat availability and quality, rather than by the relatively limited contribution associated with the Proposed Project. No significant residual additive, antagonistic or synergistic cumulative effects have been identified with regard to habitat loss or displacement/barrier effects. No significant impacts on whooper swan are anticipated at the county, national or international scale.

Significant cumulative impacts are not predicted.

7.8.3.11 Lesser Black-backed Gull (Regional Importance)

At a national level, wind, wave and tidal power are listed as the key pressure to lesser black-backed gull, which is of medium importance. There are no key threats listed for this species. The plans and projects which relate to this pressure have been considered within this cumulative assessment.

Cumulative Habitat Review

The Project Site contains bog habitats which are suitable for roosting lesser black-backed gull. Cushaling, Cloncreen, Mountlucas, Yellow River, Garryhinch and Ballivor wind farms are located within, or partially within, bog habitats. Cushaling, Drehid, Ballinla, Derrynadarragh, Yellow River, Clonarrow, Fassa, Moanvane, Dernacart and Cushina wind farms are located within, or partially within, agricultural habitats. Both of these habitats are suitable for lesser black-backed gull. However, these habitats are not a scarce resource in the area. Agricultural grassland in particular (which is favoured by lesser black-backed gull) is abundant locally and is one of the most abundant habitat types within the Ornithology Cumulative Study Area. This abundance limits the potential for significant habitat loss effects to result on an individual project basis or cumulatively. Furthermore, the Proposed Project includes an extensive Biodiversity Management Plan with enhancement measures that will also benefit lesser black-backed gull, this limits the potential for the Proposed Project to have a cumulative effect given that the Proposed Project will have a minimal residual effect on lesser black-backed gull.

Landscape-level Analysis

The results of the landscape-level analysis provide the following information: excluding the Proposed Project, there are 225,550ha of potentially suitable lesser black-backed gull habitat (agricultural land and open peatland) greater than 500m from a turbine in the Ornithology Cumulative Study Area. In the Ornithology Cumulative Study Area, there are 18,025ha of forestry greater than 500m from a turbine. This species is an open habitat species that does not use forestry, therefore there is 225,550ha of available suitable habitat. Within the Project Site, there is 3,284ha within 500m of Proposed Turbines, 2,463ha of which is suitable open habitat (agricultural land and open peatland) which is within 500m of a turbine. The total available habitat for this species within 500m of the Proposed Turbines, but great than 500m from other turbines, is therefore 2,463ha, which represents a 1.1% loss of the remaining habitat greater than 500m from a turbine (225,550ha) within the Ornithology Cumulative Study Area. This is not a significant (direct/indirect) contribution to the cumulative loss of habitat for this species. Furthermore, the remaining 223,087ha continues to constitute a significant amount of suitable habitat for this species.

Cumulative Collision Risk

As outlined in Table 7-14, the cumulative collision risk for lesser black-backed gull is 2.412 birds per year across all wind farms within the Ornithology Cumulative Study Area. Given the regional population of lesser black-backed gull is 1,444 birds and the annual mortality of adult lesser black-backed gull has been calculated at 9% per year (Wanless *et al.*, 1996). The loss of 2.412 birds per year would result in an increase in the annual mortality of the regional population by 1.86%. This is a low magnitude effect (as per Percival (2003) criteria), cross tabulated with a very high sensitivity species is a low effect significance. The cumulative collision risk when considering all projects within the area is a long-term slight negative cumulative collision risk impact (as per EPA (2022) criteria). No significant cumulative collision risk effects are therefore anticipated given the low increase in background mortality for this species.).

Cumulative Summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision risk effects is considered to be limited. Furthermore, no

significant residual effects of habitat loss, displacement and collision risk were reported for any of the other wind farms. Taking into consideration the above reported effects and the predicted effects with the Proposed Project, cumulative effects on lesser black-backed gull are considered to be influenced primarily by the broader effects of commercial forestry and agricultural practices on habitat availability and quality, rather than by the relatively limited contribution associated with the Proposed Project. No significant residual additive, antagonistic or synergistic cumulative effects have been identified with regard to habitat loss or displacement/barrier effects. No significant impacts on lesser black-backed gull are anticipated at the county, national or international scale.

Significant cumulative impacts are not predicted.

7.8.3.12 Barn Owl (Regional Importance)

At a national level, the main threats and pressures for barn owl listed in Article 12 reporting are: roads, paths, railroads and related infrastructure (e.g. bridges, viaducts, tunnels); use of plant protection chemicals in agriculture; conversion from one type of agricultural land use to another (excluding drainage and burning); and wind, wave and tidal power, including infrastructure. All of these threats and pressures are of medium importance. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative Habitat Review

The Project Site contains bog habitats which are suitable for foraging barn owl. Cushaling, Cloncreen, Mountlucas, Yellow River, Garryhinch and Ballivor wind farms are located within, or partially within, bog habitats. Cushaling, Drehid, Ballinla, Derrynadarragh, Yellow River, Clonarrow, Fassa, Moanvane, Dernacart and Cushina wind farms are located within, or partially within, agricultural habitats. Both of these habitats are suitable for barn owl. However, suitable habitats (bogs and agricultural grassland) are not a scarce resource in the area. Agricultural grassland in particular (which is favoured by barn owl) is abundant locally and is one of the most abundant habitat types within the Ornithology Cumulative Study Area. This abundance limits the potential for significant habitat loss effects to result on an individual project basis or cumulatively.

Landscape-level Analysis

The results of the landscape-level analysis provide the following information: excluding the Proposed Project, there are 225,550ha of potentially suitable barn owl habitat (agricultural land and open peatland) greater than 500m from a turbine in the Ornithology Cumulative Study Area. In the Ornithology Cumulative Study Area, there are 18,025ha of forestry greater than 500m from a turbine. This species is an open habitat species that does not use forestry, therefore there is 225,550ha of available suitable habitat. Within the Project Site, there is 3,284ha within 500m of Proposed Turbines, 2,463ha of which is suitable open habitat (agricultural land and open peatland) which is within 500m of a turbine. The total available habitat for this species within 500m of the Proposed Turbines, but great than 500m from other turbines, is therefore 2,463ha, which represents a 1.1% loss of the remaining habitat greater than 500m from a turbine (225,550ha) within the Ornithology Cumulative Study Area. This is not a significant (direct/indirect) contribution to the cumulative loss of habitat for this species. Furthermore, the remaining 223,087ha continues to constitute a significant amount of suitable habitat for this species.

Cumulative impacts of other developments

With regard to the cumulative impact of other developments relating to the key threats and pressures on barn owl, the majority of these threats and pressures relate to farming practices and land management changes. The extent of suitable habitat for barn owl within the wider landscape surrounding the Project Site, which is dominated by agricultural farmland, limited the likelihood of

significant cumulative impacts. If farming practices were to change in some areas in the ways which are outlined in Article 12, significant cumulative impacts are not predicted given how widespread these habitats are in the area, and that barn owl are a generalist species that can hunt within a wide variety of open habitat types. Therefore, significant cumulative effects of the Proposed Project and the key threats and pressures for barn owl are not anticipated.

Cumulative Collision Risk

As outlined in Table 7-14, there is no cumulative collision risk for barn owl across all wind farms within the Ornithology Cumulative Study Area as no wind farms predicted any collision mortality for this species. No significant cumulative collision risk effects are anticipated. Mortality through collisions with turbines is not likely to significantly impact this species, given barn owls fly at low elevation when foraging (Barn Owl Trust, 2021[38]). Owing to the rarity of turbine collisions, significant cumulative effects are not predicted to result in combination with the sources of collisions mentioned in Article 12, i.e. road collisions etc.

Cumulative Summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision risk effects is considered to be limited. Furthermore, no significant residual effects of habitat loss, displacement and collision risk were reported for any of the other wind farms. Taking into consideration the above reported effects and the predicted effects with the Proposed Project, cumulative effects on barn owl are considered to be influenced primarily by the broader effects of agricultural practices on habitat availability and quality, rather than by the relatively limited contribution associated with the Proposed Project. No significant residual additive, antagonistic or synergistic cumulative effects have been identified with regard to habitat loss or displacement/barrier effects. No significant impacts on barn owl are anticipated at the county, national or international scale.

Significant cumulative impacts are not predicted.

7.8.3.13 Curlew (National Importance)

At a national level, the main threats and pressures for curlew listed in Article 12 reporting are: wind, wave and tidal power; tourism and leisure activities; marine fish and shellfish harvesting; other impacts from marine aquaculture; and modification of coastline and estuaries are listed as key pressures and threats to wintering curlew which are of medium importance. With regard to breeding curlew, mowing or cutting of grassland; conversion to forest; problematic native species; other invasive alien species and drainage for agricultural land are listed as the key threats and pressures which are of high importance, while conversion from one type of agricultural land to another; abandonment of grassland management; burning for agriculture; peat extraction; and wind, wave and tidal power are of medium importance. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative Habitat Review

The Project Site contains bog habitats which are suitable for foraging and breeding curlew. Cushaling, Cloncreen, Mountlucas, Yellow River, Garryhinch and Ballivor wind farms are located within, or partially within, bog habitats. Cushaling, Drehid, Ballinla, Derrynadarragh, Yellow River, Clonarrow, Fassa, Moanvane, Dernacart and Cushina wind farms are located within, or partially within, agricultural habitats. Both of these habitats are suitable for curlew. However, suitable habitats are not a scarce resource in the area. Agricultural grassland in particular is abundant locally and is one of the most abundant habitat types within the Ornithology Cumulative Study Area. This abundance limits the

[38] https://www.barnowltrust.org.uk/hazards-solutions/barn-owls-wind-turbines/

potential for significant habitat loss effects to result on an individual project basis or cumulatively. Furthermore, the Proposed Project includes and extensive Biodiversity Management Plan that includes enhancement measures for the benefit of breeding waders, this limits the potential for the Proposed Project to have a cumulative effect given that the Proposed Project will have a minimal residual effect on curlew.

Landscape-level Analysis

The results of the landscape-level analysis provide the following information: excluding the Proposed Project, there are 225,550ha of potentially suitable curlew foraging, roosting and nesting habitat (agricultural land and open peatland) greater than 500m from a turbine in the Ornithology Cumulative Study Area. In the Ornithology Cumulative Study Area, there are 18,025ha of forestry greater than 500m from a turbine. This species is an open habitat species that does not use forestry, therefore there is 225,550ha of available suitable habitat. It is acknowledged that this is likely an overestimation of the amount of available habitat due to distance from edge effect from closed habitats being a limiting factor. Within the Project Site, there is 3,284ha within 500m of the Proposed Turbines, 2,463ha of which is suitable open habitat (agricultural land and open peatland) which is within 500m of a turbine. The total available habitat for this species within 500m of the Proposed Turbines, but great than 500m from other turbines, is therefore 2,463ha, which represents a 1.1% loss of the remaining habitat greater than 500m from a turbine (225,550ha) within the cumulative assessment landscape. This is not a significant (direct/indirect) contribution to the cumulative loss of habitat for this species. Furthermore, the remaining 223,087ha continues to constitute a significant amount of suitable habitat for this species.

Cumulative impacts of other developments

Curlew are a species which have undergone significant decline in Ireland, particularly during the breeding season. Therefore, this species has a significant number of key threats and pressures, some of which are of high importance. With regard to the cumulative impact of other developments relating to the key threats and pressures on curlew, the majority of these threats and pressures relate to farming practices and land management changes. The extent of suitable habitat for curlew within the wider landscape surrounding the Project Site, which is dominated by agricultural farmland, limited the likelihood of significant cumulative impacts at the local scale. If farming practices were to change in some areas in the ways which are outlined in Article 12, the abundance of agricultural grassland within this Ornithology Cumulative Study Area limits the potential for significant cumulative habitat loss effects as a significant proportion of the agricultural grassland is likely to remain suitable for this species which is primarily used during the winter season. Mortality through collisions with turbines is not likely to significantly impact this species. Owing to the rarity of turbine collisions, significant cumulative effects are not predicted to result in combination with the sources of direct mortality mentioned in Article 12, i.e. problematic native species, invasive aliens etc. Therefore, these causes of mortality in combination will not result in a significant impact on the curlew population at any regional scale. With regard to the threat and pressure of peat extraction, the large-scale industrial removal of peat within the Project Site and other peatland within the region by Bord na Mona has ceased, significantly reducing this threat/pressure. However, there is some peat cutting in the form of turf extraction in the bogs surrounding the Project Site, given the scale of these operations and that these turf cutting areas are becoming abandoned, significant cumulative effects of these activities and the Proposed Project are not anticipated. Therefore, significant cumulative effects of the Proposed Project and the key threats and pressures for curlew are not anticipated. Furthermore, the only known curlew pair were breeding within Lodge Bog, adjacent to the Project Site. These birds will benefit from the breeding wader enhancement measures proposed within Lodge Bog as part of the Biodiversity Management Plan for the Proposed Project. It is therefore unlikely that this pair will be impacted by the majority of the threats and pressures on breeding curlew.

Cumulative Collision Risk

As outlined in Table 7-14, the cumulative collision risk for curlew is 0.053 birds across all wind farms within the Ornithology Cumulative Study Area. No significant cumulative collision risk effects are anticipated given the collision risk is effectively zero.

Cumulative Summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision risk effects is considered to be limited. Furthermore, no significant residual effects of habitat loss, displacement and collision risk were reported for any of the other wind farms. Taking into consideration the above reported effects and the predicted effects with the Proposed Project, cumulative effects on curlew are considered to be influenced primarily by the broader effects of commercial forestry, fragmentation and declining quality of intact raised bogs and agricultural practices on habitat availability and quality, rather than by the relatively limited contribution associated with the Proposed Project. No significant residual additive, antagonistic or synergistic cumulative effects have been identified with regard to habitat loss or displacement/barrier effects. No significant impacts on curlew are anticipated at the county, national or international scale.

Significant cumulative impacts are not predicted.

7.8.3.14 Kestrel (Regional Importance)

At a national level, the main threats and pressures for kestrel listed in Article 12 reporting are: use of plant protection chemicals in agriculture; interspecific relations (competition, predation, parasitism, pathogens); conversion from mixed farming and agroforestry systems to specialised (e.g. single crop) production; and removal of small landscape features for agricultural land parcel consolidation (hedges, stone walls, rushes, open ditches, springs, solitary trees, etc.). All of these threats and pressures are of medium importance. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative Habitat Review

The Project Site contains open peatland habitats which are suitable for foraging kestrel and scrub/woodland suitable for breeding kestrel. Cushaling, Cloncreen, Mountlucas, Yellow River, Garryhinch and Ballivor wind farms are located within, or partially within, open peatland habitats. Cushaling, Drehid, Ballinla, Derrynadarragh, Yellow River, Clonarrow, Fassa, Moanvane, Dernacart and Cushina wind farms are located within, or partially within, agricultural habitats, which are suitable habitats for foraging kestrel. Cushaling, Drehid, Ballinla, Derrynadarragh, Mountlucas, Yellow River, Fassa, Moanvane, Garryhinch, Dernacart and Cushina are located within, or partially within, forestry and woodland habitats, which are suitable for breeding kestrel. However, suitable habitats are not a scarce resource in the area, particularly due to the abundant presence of agricultural grassland. Agricultural grassland in particular is abundant locally and is one of the most abundant habitat types within the Ornithology Cumulative Study Area. This abundance limits the potential for significant habitat loss effects to result on an individual project basis or cumulatively.

Landscape-level Analysis

At a landscape level, kestrel is a habitat generalist that will utilise the majority of habitats to varying degrees. The results of the landscape-level analysis provide the following information: excluding the Proposed Project, there are 243,575ha of potentially suitable kestrel habitat (agricultural land and open peatland for foraging, and forestry/woodland for breeding) greater than 500m from a turbine in the Ornithology Cumulative Study Area. Within the Project Site, the total available habitat for this species within 500m of the Proposed Turbines, but great than 500m from cumulative wind farm turbines, is

3,242ha, which represents a 1.3% loss of the remaining habitat greater than 500m from a turbine (243,575ha) within the Ornithology Cumulative Study Area. This is not a significant (direct/indirect) contribution to the cumulative loss of habitat for this species. Furthermore, the remaining 240,333ha continues to constitute a significant amount of suitable habitat for this species.

Cumulative impacts of other developments

With regard to the cumulative impact of other developments relating to the key threats and pressures on kestrel, the majority of these threats and pressures relate to farming practices and land management changes. The extent of suitable habitat for kestrel within the wider landscape surrounding the Project Site, which is dominated by agricultural farmland, limited the likelihood of significant cumulative impacts at the local scale. If farming practices were to change in some areas in the ways which are outlined in Article 12, the abundance of agricultural grassland within the Ornithology Cumulative Study Area limits the potential for significant cumulative habitat loss effects as a significant proportion of the agricultural grassland is likely to remain suitable for this species and given that kestrel are a generalist species that can hunt within a wide variety of habitat types. Therefore, significant cumulative effects of the Proposed Project and the key threats and pressures for kestrel are not anticipated.

Cumulative Collision Risk

As outlined in Table 7-14, the cumulative collision risk for kestrel is 12.197 birds across all wind farms within the Ornithology Cumulative Study Area. Given the regional population of kestrel is 205 birds (the precautionary scenario of the lower value of the County Kildare and County Offaly population was used for this assessment), and the annual mortality of adult kestrel has been calculated at 35% per year (Orta *et al.*, 2020). The loss of 12.197 birds per year would result in an increase in the annual mortality of the regional population by 16.99%. This is a medium magnitude effect (as per Percival (2003) criteria), cross tabulated with a medium sensitivity species is a low effect significance. The baseline collision risk when considering all projects within the area is a long-term slight negative cumulative collision risk impact (as per EPA (2022) criteria), which is not significant.

Cumulative Summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision risk effects is considered to be limited. Furthermore, no significant residual effects of habitat loss, displacement and collision risk were reported for any of the other wind farms. Taking into consideration the above reported effects and the predicted effects with the Proposed Project, cumulative effects on kestrel are considered to be influenced primarily by the broader effects of commercial forestry and agricultural practices on habitat availability and quality, rather than by the relatively limited contribution associated with the Proposed Project. No significant residual additive, antagonistic or synergistic cumulative effects have been identified with regard to habitat loss or displacement/barrier effects. No significant impacts on kestrel are anticipated at the county, national or international scale.

Significant cumulative impacts are not predicted.

7.8.3.15 Lapwing (National Importance)

At a national level, the main threats and pressures for lapwing listed in Article 12 reporting: temperature changes (e.g. rise of temperature & extremes) due to climate change; wind, wave and tidal power, including infrastructure; sports, tourism and leisure activities; and modification of flooding regimes, flood protection for residential or recreational development are listed as key pressures and threats to wintering lapwing which are of medium importance. With regard to breeding lapwing, mowing or cutting of grassland; conversion to forest from other land uses, or afforestation (excluding drainage); problematic native species; other invasive alien species (other than species of Union

concern); and conversion from one type of agricultural land use to another (excluding drainage and burning) are listed as the key threats and pressures which are of high importance, while use of plant protection chemicals in agriculture; abandonment of grassland management (e.g. cessation of grazing or mowing); drainage for use as agricultural land; peat extraction; and wind, wave and tidal power, including infrastructure are of medium importance. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative Habitat Review

The Project Site contains bog habitats which are suitable for foraging and breeding lapwing. Cushaling, Cloncreen, Mountlucas, Yellow River, Garryhinch and Ballivor wind farms are located within, or partially within, bog habitats. Cushaling, Drehid, Ballinla, Derrynadarragh, Yellow River, Clonarrow, Fassa, Moanvane, Dernacart and Cushina wind farms are located within, or partially within, agricultural habitats. Both of these habitats are suitable for lapwing. However, suitable habitats are not a scarce resource in the area, particularly due to the abundance of agricultural grassland. Agricultural grassland in particular (which is favoured by lapwing, particularly during the winter season) is abundant locally and is one of the most abundant habitat types within the Ornithology Cumulative Study Area. This abundance limits the potential for significant habitat loss effects to result on an individual project basis or cumulatively. Furthermore, the Proposed Project includes and extensive Biodiversity Management Plan that includes enhancement measures for the benefit of breeding lapwing, this limits the potential for the Proposed Project to have a cumulative effect given that the Proposed Project will have a minimal residual effect on lapwing.

Landscape-level Analysis

The results of the landscape-level analysis provide the following information: excluding the Proposed Project, there are 225,550ha of potentially suitable lapwing habitat (agricultural land and open peatland) greater than 500m from a turbine in the Ornithology Cumulative Study Area. In the Ornithology Cumulative Study Area, there are 18,025ha of forestry greater than 500m from a turbine. This species is an open habitat species that does not use forestry, therefore there is 225,550ha of available suitable habitat. It is acknowledged that this is likely an overestimation of the amount of available habitat due to distance from edge effect from closed habitats being a limiting factor. Within the Project Site, there is 3,284ha within 500m of the Proposed Turbines, 2,463ha of which is suitable open habitat (agricultural land and open peatland) which is within 500m of a turbine. The total available habitat for this species within 500m of the Proposed Turbines, but great than 500m from other turbines, is therefore 2,463ha, which represents a 1.1% loss of the remaining habitat greater than 500m from a turbine (225,550ha) within the cumulative assessment landscape. This is not a significant (direct/indirect) contribution to the cumulative loss of habitat for this species. Furthermore, the remaining 223,087ha continues to constitute a significant amount of suitable habitat for this species.

Cumulative impacts of other developments

With regard to the cumulative impact of other developments relating to the key threats and pressures on lapwing, the majority of these threats and pressures relate to farming practices and land management changes. The extent of suitable habitat for lapwing within the wider landscape surrounding the Project Site, which is dominated by agricultural farmland, limited the likelihood of significant cumulative impacts at the local scale. If farming practices were to change in some areas in the ways which are outlined in Article 12, the abundance of agricultural grassland within the Ornithology Cumulative Study Area limits the potential for significant cumulative habitat loss effects as a significant proportion of the agricultural grassland is likely to remain suitable for this species which is primarily used in the winter season. Cumulative impacts on the lapwing population from problematic native species and other invasive aliens are not anticipated given the low levels of mortality associated with this threat at a local scale and the fact that collisions with wind turbines are also a rare event. Therefore, these causes of mortality in combination will not result in a significant impact on the lapwing population at any regional scale. With regard to the threat and pressure of peat extraction, the large-

scale industrial removal of peat within the Project Site and other peatland within the region by BnM has ceased, significantly reducing this threat/pressure. However, there is some peat cutting in the form of turf extraction in the bogs surrounding the Project Site, given the scale of these operations and that these turf cutting areas are becoming abandoned, significant cumulative effects of these activities and the Proposed Project are not anticipated. There are limited areas of amenity grasslands (sports, tourism and leisure activities), therefore significant cumulative effects of the Proposed Project and this key threat and pressure are not anticipated. No negative cumulative impacts on lapwing relating to the key pressure of temperature change due to climate change are anticipated given that the Proposed Project will contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions. Therefore, significant cumulative effects of the Proposed Project and the key threats and pressures for lapwing are not anticipated.

Cumulative Collision Risk

As outlined in Table 7-14, the cumulative collision risk for lapwing is 11.457 birds across all wind farms within the Ornithology Cumulative Study Area. Given the regional population of lapwing is 1,309 birds and the annual mortality of adult lapwing has been calculated at 29.5% per year (Peach *et al.*, 1994). The loss of 11.457 birds per year would result in an increase in the annual mortality of the regional population by 2.97%. This is a low magnitude effect (as per Percival (2003) criteria), cross tabulated with a high sensitivity species is a low effect significance. The cumulative collision risk when considering all projects within the area is a long-term slight negative cumulative collision risk impact (as per EPA (2022) criteria), which is not significant.

Cumulative Summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision risk effects is considered to be limited. Furthermore, no significant residual effects of habitat loss, displacement and collision risk were reported for any of the other wind farms. Taking into consideration the above reported effects and the predicted effects with the Proposed Project, cumulative effects on lapwing are considered to be influenced primarily by the broader effects of commercial forestry and agricultural practices on habitat availability and quality, rather than by the relatively limited contribution associated with the Proposed Project. No significant residual additive, antagonistic or synergistic cumulative effects have been identified with regard to habitat loss or displacement/barrier effects. No significant impacts on lapwing are anticipated at the county, national or international scale.

Significant cumulative impacts are not predicted.

7.8.3.16 Snipe (National Importance)

At a national level, the main threats and pressures for breeding snipe listed in Article 12 reporting: mowing or cutting of grassland; intensive grazing or overgrazing by livestock; conversion to forest from other land uses, or afforestation (excluding drainage); problematic native species; and other invasive alien species (other than species of Union concern) are listed as the key threats and pressures which are of high importance, while conversion from one type of agricultural land use to another (excluding drainage and burning); abandonment of grassland management (e.g. cessation of grazing or mowing); drainage for use as agricultural land; peat extraction; and wind, wave and tidal power, including infrastructure are of medium importance. There are no threats and pressures identified for wintering snipe. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative Habitat Review

The Project Site contains bog habitats which are suitable for foraging and breeding snipe. Cushaling, Cloncreen, Mountlucas, Yellow River, Garryhinch and Ballivor wind farms are located within, or partially within, bog habitats. Cushaling, Drehid, Ballinla, Derrynadarragh, Yellow River, Clonarrow, Fassa, Moanvane, Dernacart and Cushina wind farms are located within, or partially within, agricultural habitats. Both of these habitats are suitable for snipe. However, suitable habitats are not a scarce resource in the area, particularly due to the abundance of agricultural grassland. Agricultural grassland in particular is abundant locally and is one of the most abundant habitat types within the Ornithology Cumulative Study Area. This abundance limits the potential for significant habitat loss effects to result on an individual project basis or cumulatively.

Landscape-level Analysis

The results of the landscape-level analysis provide the following information: excluding the Proposed Project, there are 225,550ha of potentially suitable snipe habitat (agricultural land and open peatland) greater than 500m from a turbine in the Ornithology Cumulative Study Area. In the Ornithology Cumulative Study Area, there are 18,025ha of forestry greater than 500m from a turbine. This species is an open habitat species that does not use forestry, therefore there is 225,550ha of available suitable habitat. Within the Project Site, there is 3,284ha within 500m of the Proposed Turbines, 2,463ha of which is additional open habitat (agricultural land and open peatland) which is within 500m of a turbine. The total available habitat for this species within 500m of the Proposed Turbines, but great than 500m from other turbines, is therefore 2,463ha, which represents a 1.1% loss of the remaining habitat greater than 500m from a turbine (225,550ha) within the Ornithology Cumulative Study Area. This is not a significant (direct/indirect) contribution to the cumulative loss of habitat for this species. Furthermore, the remaining 223,087ha continues to constitute a significant amount of suitable habitat for this species.

Cumulative impacts of other developments

With regard to the cumulative impact of other developments relating to the key threats and pressures on snipe, the majority of these threats and pressures relate to farming practices and land management changes. The extent of suitable habitat for snipe within the wider landscape surrounding the Project Site, which is dominated by agricultural farmland, limited the likelihood of significant cumulative impacts at the local scale. If farming practices were to change in some areas in the ways which are outlined in Article 12, the abundance of agricultural grassland within the Ornithology Cumulative Study Area limits the potential for significant cumulative habitat loss effects as a significant proportion of the agricultural grassland is likely to remain suitable for this species. Cumulative impacts on the snipe population from problematic native species and other invasive aliens are not anticipated given the low levels of mortality associated with this threat at a local scale and the fact that collisions with wind turbines are also a rare event. Therefore, these causes of mortality in combination will not result in a significant impact on the snipe population at any regional scale. With regard to the threat and pressure of peat extraction, the large-scale industrial removal of peat within the Project Site and other peatland within the region by BnM has ceased, significantly reducing this threat/pressure. However, there is some peat cutting in the form of turf extraction in the bogs surrounding the Project Site, given the scale of these operations and that these turf cutting areas are becoming abandoned, significant cumulative effects of these activities and the Proposed Project are not anticipated. Therefore, significant cumulative effects of the Proposed Project and the key threats and pressures for snipe are not anticipated.

Cumulative Collision Risk

As outlined in Table 7-14, the cumulative collision risk for snipe is 2.544 birds across all wind farms within the Ornithology Cumulative Study Area. Given the regional population of snipe is 200 birds and the annual mortality of adult snipe has been calculated at 37.5% per year (Spence, 1988). The loss of 2.544 birds per year would result in an increase in the annual mortality of the regional population by

3.4%. This is a low magnitude effect (as per Percival (2003) criteria), cross tabulated with a high sensitivity species is a low effect significance. The baseline collision risk when considering all projects within the area is a long-term slight negative cumulative collision risk impact (as per EPA (2022) criteria), which is not significant.

Cumulative Summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision risk effects is considered to be limited. Furthermore, no significant residual effects of habitat loss, displacement and collision risk were reported for any of the other wind farms. Taking into consideration the above reported effects and the predicted effects with the Proposed Project, cumulative effects on snipe are considered to be influenced primarily by the broader effects of commercial forestry and agricultural practices on habitat availability and quality, rather than by the relatively limited contribution associated with the Proposed Project. No significant residual additive, antagonistic or synergistic cumulative effects have been identified with regard to habitat loss or displacement/barrier effects. No significant impacts on snipe are anticipated at the county, national or international scale.

Significant cumulative impacts are not predicted

7.8.3.17 Woodcock (Regional Importance)

At a national level, the main threats and pressures for breeding woodcock listed in Article 12 reporting: logging without replanting or natural regrowth; clear-cutting, removal of all trees; other human intrusions and disturbance not mentioned above; abandonment of traditional forest management; interspecific relations (competition, predation, parasitism, pathogens); problematic native species; abandonment of grassland management (e.g. cessation of grazing or mowing); removal of small landscape features for agricultural land parcel consolidation (hedges, stone walls, rushes, open ditches, springs, solitary trees, etc.); and hunting. All of which are of medium importance. There are no threats and pressures identified for wintering woodcock. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative Habitat Review

The Project Site contains scrub and woodland habitats which are suitable for breeding woodcock. Cushaling, Drehid, Ballinla, Derrynadarragh, Mountlucas, Yellow River, Fassa, Moanvane, Garryhinch, Dernacart and Cushina wind farms are located within, or partially within, forestry and woodland habitats, which are suitable for breeding woodcock. However, these habitats are not a scarce resource in the area. Commercial forestry in particular is abundant within the Ornithology Cumulative Study Area. This abundance limits the potential for significant habitat loss effects to result on an individual project basis or cumulatively.

The results of the landscape-level analysis provide the following information: excluding the Proposed Project, there are 18,025 of potentially suitable woodcock habitat (forestry/woodland) greater than 500m from a turbine in the Ornithology Cumulative Study Area. Within the Project Site, there is 3,284ha within 500m of the Proposed Turbines, 779ha of which is forestry/woodland habitat which is within 500m of a turbine, which represents a 4.3% loss of the remaining habitat greater than 500m from a turbine (18,025ha) within the Ornithology Cumulative Study Area. This is not a significant (direct/indirect) contribution to the cumulative loss of habitat for this species. Furthermore, the remaining 17,246ha continues to constitute a significant amount of suitable habitat for this species.

Cumulative impacts of other developments

With regard to the cumulative impact of other developments relating to the key threats and pressures on woodcock, the majority of these threats and pressures relate to forestry practices and land management changes with regard to woodland and forestry. The extent of suitable habitat for woodcock within the wider landscape surrounding the Project Site, which has a significant amount of commercial forestry in particular, limited the likelihood of significant cumulative impacts at the local scale. If forestry practices were to change in some areas in the ways which are outlined in Article 12, significant cumulative impacts are not predicted given how widespread these habitats are in the area. Cumulative impacts on the woodcock population from problematic native species, interspecific relations and hunting are not anticipated given the low levels of mortality associated with these threats and pressures at a local scale and the fact that collisions with wind turbines are also a rare event. Therefore, these causes of mortality in combination will not result in a significant impact on the woodcock population at any regional scale. Therefore, significant cumulative effects of the Proposed Project and the key threats and pressures for snipe are not anticipated.

Cumulative Collision Risk

As outlined in Table 7-14, the cumulative collision risk for woodcock is 0.1443 birds across all wind farms within the Ornithology Cumulative Study Area. No significant cumulative collision risk effects are anticipated given the collision risk is effectively zero.

Cumulative Summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision risk effects is considered to be limited. Furthermore, no significant residual effects of habitat loss, displacement and collision risk were reported for any of the other wind farms. Taking into consideration the above reported effects and the predicted effects with the Proposed Project, cumulative effects on woodcock are considered to be influenced primarily by the broader effects of commercial forestry and agricultural practices on habitat availability and quality, rather than by the relatively limited contribution associated with the Proposed Project. No significant residual additive, antagonistic or synergistic cumulative effects have been identified with regard to habitat loss or displacement/barrier effects. No significant impacts on woodcock are anticipated at the county, national or international scale.

Significant cumulative impacts are not predicted.

7.8.3.18 Buzzard (Regional Importance)

At a national level, the main threats and pressures for buzzard listed in Article 12 reporting are: abandonment of grassland management (e.g. cessation of grazing or mowing); poisoning of animals (excluding lead poisoning); illegal shooting/killing; and wind, wave and tidal power, including infrastructure. All of these threats and pressures are of medium importance. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative Habitat Review

The Project Site contains open peatland habitats which are suitable for foraging buzzard and scrub/woodland suitable for breeding buzzard. Cushaling, Cloncreen, Mountlucas, Yellow River, Garryhinch and Ballivor wind farms are located within, or partially within, open peatland habitats. Cushaling, Drehid, Ballinla, Derrynadarragh, Yellow River, Clonarrow, Fassa, Moanvane, Dernacart and Cushina wind farms are located within, or partially within, agricultural habitats, which are suitable habitats for foraging buzzard. Cushaling, Drehid, Ballinla, Derrynadarragh, Mountlucas, Yellow River, Fassa, Moanvane, Garryhinch, Dernacart and Cushina wind farms are located within, or partially

within, forestry and woodland habitats, which are suitable for breeding buzzard. However, these habitats are not a scarce resource in the area. Agricultural grassland in particular is abundant locally and is one of the most abundant habitat types within the Ornithology Cumulative Study Area. This abundance limits the potential for significant habitat loss effects to result on an individual project basis or cumulatively.

Landscape-level Analysis

At a landscape level, buzzard is a habitat generalist that will utilise the majority of habitats to varying degrees. The results of the landscape-level analysis provide the following information: excluding the Proposed Project, there are 243,575ha of potentially suitable buzzard habitat (agricultural land, open peatland and forestry) greater than 500m from a turbine in the Ornithology Cumulative Study Area. Within the Project Site, the total available habitat for this species within 500m of the Proposed Turbines, but great than 500m from other turbines, is 3,242ha, which represents a 1.3% loss of the remaining habitat greater than 500m from a turbine (243,575ha) within the Ornithology Cumulative Study Area. This is not a significant (direct/indirect) contribution to the cumulative loss of habitat for this species. Furthermore, the remaining 240,333ha continues to constitute a significant amount of suitable habitat for this species.

Cumulative impacts of other developments

With regard to the cumulative impact relating to the key threats and pressures on buzzard, cumulative impacts on the buzzard population from poisoning and illegal shooting/killing are not anticipated given the low levels of mortality associated with this threat at a local scale and the fact that collisions with wind turbines are also a rare event. Therefore, these causes of mortality in combination will not result in a significant impact on the buzzard population at any regional scale. The abandonment of grassland is also considered a key threat and pressure on the buzzard population, however, within the Ornithology Cumulative Study Area where the Proposed Project is located, there is an abundance of agricultural grassland, the majority of which is improved agricultural grassland and is likely to remain as such for the duration of the Proposed Project. Furthermore, buzzard is a generalist species that will hunt within a wide variety of habitat types. Therefore, significant cumulative effects of the Proposed Project and the key threats and pressures for golden plover are not anticipated.

Cumulative Collision Risk

As outlined in Table 7-14, the cumulative collision risk for buzzard is 13.759 birds across all wind farms within the Ornithology Cumulative Study Area. The favourable conservation status of this species (Green-listed BoCCI) limits the potential for ecologically significant effects to result. The loss of 13.759 birds per year from the regional population of a Green-listed (BoCCI) species is considered of low significance. No significant cumulative collision risk effects are therefore anticipated for this species.

Cumulative Summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision risk effects is considered to be limited. Furthermore, no significant residual effects of habitat loss, displacement and collision risk were reported for any of the other wind farms. Taking into consideration the above reported effects and the predicted effects with the Proposed Project, cumulative effects on buzzard are considered to be influenced primarily by the broader effects of commercial forestry and agricultural practices on habitat availability and quality, rather than by the relatively limited contribution associated with the Proposed Project. No significant residual additive, antagonistic or synergistic cumulative effects have been identified with regard to habitat loss or displacement/barrier effects. No significant impacts on buzzard are anticipated at the county, national or international scale.

Significant cumulative impacts are not predicted.

7.8.3.19 Long-eared Owl (Regional Importance)

At a national level, the main threats and pressures for long-eared owl listed in Article 12 reporting are: roads, paths, railroads and related infrastructure (e.g. bridges, viaducts, tunnels); use of plant protection chemicals in agriculture; removal of small landscape features for agricultural land parcel consolidation (hedges, stone walls, rushes, open ditches, springs, solitary trees, etc.); replanting with or introducing non-native or non-typical species (including new species and GMOs); and clear-cutting, removal of all trees. All of these threats and pressures are of medium importance. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative Habitat Review

The Project Site contains open peatland habitats which are suitable for foraging long-eared owl and scrub/woodland suitable for breeding long-eared owl. Cushaling, Cloncreen, Mountlucas, Yellow River, Garryhinch and Ballivor wind farms are located within, or partially within, open peatland habitats. Cushaling, Drehid, Ballinla, Derrynadarragh, Yellow River, Clonarrow, Fassa, Moanvane, Dernacart and Cushina wind farms are located within, or partially within, agricultural habitats, which are suitable habitats for foraging long-eared owl. Cushaling, Drehid, Ballinla, Derrynadarragh, Mountlucas, Yellow River, Fassa, Moanvane, Garryhinch, Dernacart and Cushina wind farms are located within, or partially within, forestry and woodland habitats, which are suitable for breeding long-eared owl. However, suitable habitats are not a scarce resource in the area. Agricultural grassland in particular is abundant locally and is one of the most abundant habitat types within the Ornithology Cumulative Study Area. This abundance limits the potential for significant habitat loss effects to result on an individual project basis or cumulatively.

Landscape-level Analysis

At a landscape level, long-eared owl is a habitat generalist that will utilise the majority of habitats to varying degrees. The results of the landscape-level analysis provide the following information: excluding the Proposed Project, there are 243,575ha of potentially suitable long-eared owl habitat (agricultural land, open peatland and forestry) greater than 500m from a turbine in the Ornithology Cumulative Study Area. Within the Project Site, the total available habitat for this species within 500m of the Proposed Turbines, but great than 500m from other turbines, is 3,242ha, which represents a 1.3% loss of the remaining habitat greater than 500m from a turbine (243,575ha) within the cumulative assessment landscape. This is not a significant (direct/indirect) contribution to the cumulative loss of habitat for this species. Furthermore, the remaining 240,333ha continues to constitute a significant amount of suitable habitat for this species.

Cumulative impacts of other developments

With regard to the cumulative impact of other developments relating to the key threats and pressures on long-eared owl, the majority of these threats and pressures relate to farming practices and land management changes. The extent of suitable habitat for long-eared owl within the wider landscape surrounding the Project Site, which is dominated by agricultural farmland, limited the likelihood of significant cumulative impacts at the local scale. Were farming or forestry practices to change in some areas in the ways which are outlined in Article 12, significant cumulative impacts are not predicted given how widespread these habitats are in the area, and that long-eared owl are a generalist species that can hunt within a wide variety of habitat types. Cumulative impacts on the long-eared owl population from roads, paths, railways and related infrastructure are not anticipated given the low levels of mortality associated with this threat at a local scale and the fact that collisions with wind turbines are also a rare event. Therefore, these causes of mortality in combination will not result in a significant

impact on the long-eared owl population at any regional scale. Therefore, significant cumulative effects of the Proposed Project and the key threats and pressures for long-eared owl are not anticipated.

Cumulative Collision Risk

As outlined in Table 7-14, the cumulative collision risk for long-eared owl is 0.002 birds across all wind farms within the Ornithology Cumulative Study Area. No significant cumulative collision risk effects are anticipated given the collision risk is effectively zero.

Cumulative Summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision risk effects is considered to be limited. Furthermore, no significant residual effects of habitat loss, displacement and collision risk were reported for any of the other wind farms. Taking into consideration the above reported effects and the predicted effects with the Proposed Project, cumulative effects on long-eared owl are considered to be influenced primarily by the broader effects of commercial forestry and agricultural practices on habitat availability and quality, rather than by the relatively limited contribution associated with the Proposed Project. No significant residual additive, antagonistic or synergistic cumulative effects have been identified with regard to habitat loss or displacement/barrier effects. No significant impacts on long-eared owl are anticipated at the county, national or international scale.

Significant cumulative impacts are not predicted

7.8.3.20 Sparrowhawk (Regional Importance)

At a national level, the main threats and pressures for sparrowhawk listed in Article 12 reporting are: removal of small landscape features for agricultural land parcel consolidation (hedges, stone walls, rushes, open ditches, springs, solitary trees, etc.); conversion from mixed farming and agroforestry systems to specialised (e.g. single crop) production; and use of plant protection chemicals in agriculture. All of these threats and pressures are of medium importance. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative Habitat Review

The Project Site contains open peatland habitats which are suitable for foraging sparrowhawk and scrub/woodland suitable for breeding sparrowhawk. Cushaling, Cloncreen, Mountlucas, Yellow River, Garryhinch and Ballivor wind farms are located within, or partially within, open peatland habitats. Cushaling, Drehid, Ballinla, Derrynadarragh, Yellow River, Clonarrow, Fassa, Moanvane, Dernacart and Cushina wind farms are located within, or partially within, agricultural habitats, which are suitable habitats for foraging sparrowhawk. Cushaling, Drehid, Ballinla, Derrynadarragh, Mountlucas, Yellow River, Fassa, Moanvane, Garryhinch, Dernacart and Cushina wind farms are located within, or partially within, forestry and woodland habitats, which are suitable for breeding sparrowhawk. However, suitable habitats are not a scarce resource in the area. Agricultural grassland in particular is abundant locally and is one of the most abundant habitat types within the Ornithology Cumulative Study Area. This abundance limits the potential for significant habitat loss effects to result on an individual project basis or cumulatively.

Landscape-level Analysis

At a landscape level, sparrowhawk is a habitat generalist that will utilise the majority of habitats to varying degrees. The results of the landscape-level analysis provide the following information: excluding the Proposed Project, there are 243,575ha of potentially suitable sparrowhawk habitat (agricultural land, open peatland and forestry) greater than 500m from a turbine in the Ornithology Cumulative Study

Area. Within the Project Site, the total available habitat for this species within 500m of the Proposed Turbines, but great than 500m from other turbines, is 3,242ha, which represents a 1.3% loss of the remaining habitat greater than 500m from a turbine (243,575ha) within the cumulative assessment landscape. This is not a significant (direct/indirect) contribution to the cumulative loss of habitat for this species. Furthermore, the remaining 240,333ha continues to constitute a significant amount of suitable habitat for this species.

Cumulative impacts of other developments

With regard to the cumulative impact of other developments relating to the key threats and pressures on sparrowhawk, the majority of these threats and pressures relate to farming practices and land management changes. The extent of suitable habitat for sparrowhawk within the wider landscape surrounding the Project Site, which is dominated by agricultural farmland, limited the likelihood of significant cumulative impacts at the local scale. If farming practices were to change in some areas in the ways which are outlined in Article 12, the abundance of agricultural grassland within the Ornithology Cumulative Study Area limits the potential for significant cumulative habitat loss effects as a significant proportion of the agricultural grassland is likely to remain suitable for this species and given that sparrowhawk are a generalist species that can hunt within a wide variety of habitat types. Therefore, significant cumulative effects of the Proposed Project and the key threats and pressures for sparrowhawk are not anticipated.

Cumulative Collision Risk

As outlined in Table 7-14, the cumulative collision risk for sparrowhawk is 1 bird across all wind farms within the Ornithology Cumulative Study Area (within 25km of the Proposed Turbines). The favourable conservation status of this species (Green-listed BoCCI) limits the potential for ecologically significant effects to result. The loss of 1 bird per year from the regional population of a Green-listed (BoCCI) species is considered of low significance. No significant cumulative collision risk effects are therefore anticipated for this species.

Cumulative Summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision risk effects is considered to be limited. Furthermore, no significant residual effects of habitat loss, displacement and collision risk were reported for any of the other wind farms. Taking into consideration the above reported effects and the predicted effects with the Proposed Project, cumulative effects on sparrowhawk are considered to be influenced primarily by the broader effects of commercial forestry and agricultural practices on habitat availability and quality, rather than by the relatively limited contribution associated with the Proposed Project. No significant residual additive, antagonistic or synergistic cumulative effects have been identified with regard to habitat loss or displacement/barrier effects. No significant impacts on sparrowhawk are anticipated at the county, national or international scale.

Significant cumulative impacts are not predicted.

7.9 Monitoring

7.9.1 Construction Phase

A Bird Monitoring Plan with the objective of monitoring the ornithological community at the Project Site during construction works has been prepared. This is presented fully in Appendix 7-7. It includes for pre-commencement and construction monitoring to identify sensitive nests or roosts in proximity to the works.

7.9.2 Operational Phase

A Bird Monitoring Plan with the objective of monitoring the response of the ornithological community at the Proposed Wind Farm to the operating turbines and the Proposed Enhancement Areas has been prepared. This is presented fully in Appendix 7-7. The following individual components are proposed:

- Monthly flight activity surveys: vantage point surveys (All species)
- Winter roost surveys (hen harrier and whooper swan)
- Targeted bird collision surveys (corpse search) will be undertaken with trained dogs. The surveys will include detection and scavenger trials, to correct for these two biases and ensure the resulting data is robust. These surveys can be combined with bat carcass searches.
- Breeding wader census surveys
- Wintering golden plover surveys
- Vegetation monitoring
- Predator proof-fence inspections
- Nest box monitoring

7.9.3 Decommissioning Phase

A Bird Monitoring Plan with the objective of monitoring the ornithological community at the Project Site during decommissioning works has been prepared. This is presented fully in Appendix 7-7. It includes for pre-commencement and construction monitoring to identify sensitive nests or roosts in proximity to the works.

7.9.4 Data Sharing

As a measure to support conservation research and policy, the Applicant proposes to submit the monitoring survey data and information to organisations such as the National Biodiversity Data Centre (NBDC) to contribute to the upcoming bird atlas (2027) and other ongoing research projects on relevant ecological records, for example, information on the location of breeding territories and nest sites of bird species of conservation concern, where available. The submission of the data will follow relevant standards and will be provided in the preferred NBDC excel template. This measure will be fulfilled within three months of each monitoring year, as relevant, in the event of a successful application. This commitment ensures the Proposed Project is contributing to the aims of Objective Four, Outcome 4B of Ireland's 4th National Biodiversity Action Plan: Data relevant to biodiversity and ecosystems, including conservations needs, is widely accessible and standardised.

7.10 Summary

Following consideration of the residual effects (post-mitigation), it is concluded that the Proposed Project will not result in any significant effects on any of the identified Key Ornithological Receptors. No significant effects on receptors of international, national or regional importance were identified. Provided that the Proposed Project is constructed, operated and decommissioned in accordance with the design, best practice mitigation and offsetting measures that are described within this application, significant individual or cumulative effects on the identified KORs are not anticipated.