Planning and Environmental Consultants

Environmental Impact Assessment Report

Proposed Cahermurphy West Wind Farm

Chapter 7 - Birds

DOCUMENT DETAILS

Client:	**Cahermurphy Wind Designated Activity Company**
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Prepared By:	**MKO** **Tuam Road** **Galway** **Ireland** **H91 VW84**

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Rev	Status	Date	Author(s)	Approved By
01	Draft	31/07/2025	PM	PC
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7. BIRDS

7.1 Introduction

This chapter assesses the likely significant effects of the Proposed Project on avian receptors. As detailed in Section 1.1.1 in Chapter 1, for the purposes of this EIAR, the various project components are described and assessed using the following terminology: 'Proposed Project', 'Proposed Wind Farm' and the 'Proposed Grid Connection'.

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) as amended. Where potentially significant effects on avian receptors are identified, mitigation is described, and the residual effects are assessed.

This chapter is supported by Technical Appendices 7-1 to 7-8. Appendices 7-1 to 7-4 contain data from the surveys undertaken including full details of the survey times, weather conditions, and other relevant information together with the bird records themselves. Confidential Appendix 7-5 contains sensitive records of protected species breeding and roosting sites[1]. Appendix 7-6 contains the Collision Risk Assessment (CRA) document, which illustrates how the collision risk modelling was undertaken for the assessment of the Proposed Project. Appendix 7-7 contains the bird monitoring plan for the construction and operational phases of the Proposed Project. Appendix 7-8 contains the hen harrier enhancement plan. The Proposed Wind Farm and survey radii are provided in Figures 7-1 to 7-6 below.

The chapter is structured as follows:

- The Introduction provides a description of the Proposed Project and the relevant legislation, guidance and policy context.
- The Assessment Approach and 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 Wind Farm.
- The Receptor Evaluation section identifies key ornithological receptors and determines their sensitivity.
- The Potential Impacts section details the impact assessment (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 and best practice measures to ameliorate the identified impacts.
- The Monitoring section outlines a schedule for monitoring birds during each phase of the Proposed Project if planning permission is granted: commencement and construction, operation and decommissioning.
- The Residual Effects section considers the implications of the proposed mitigation and best practice.
- Finally, the Cumulative Effects section fully assesses potential cumulative effects of the Proposed Project in combination with other projects.
- The Conclusion provides a summary statement on the overall significance of predicted effects on birds.

The following other definitions are used in this chapter:

[1] *This appendix is classified as confidential as (in theory) the sensitive information it contains could inform the persecution of protected species. It is recommended that this information not be widely circulated and be made available only on request.*

- The "Study Areas" will differ based on the survey type and species, these are described in detail in Section 7.2.4. These study areas are in accordance with NatureScot (SNH [2017], which was revised in NatureScot [2025]) guidance.
- "Key Ornithological Receptor" (KOR) is defined as a species occurring within the Study Areas of the Proposed Project upon which potential impacts are anticipated and assessed.

7.1.1 Description of the Proposed Project

A full description of the Proposed Project is provided in Chapter 4 of this EIAR. In brief, Cahermurphy Renewables Designated Activity Company (the Applicant) is seeking a 35-year planning permission for a renewable energy development consisting of 8 no. turbines and the associated works. The proposed turbines will be between 98.5m and 110.5m at hub height, with 3 blades of a rotor diameter range between 149m and 163m, giving a maximum blade tip height of between 180m and 185m and lowest swept height of between 17m and 36m. The Proposed Project will have an operational life of 35 years from the date of commissioning.

7.1.2 Legislation, Guidance and Policy Context

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

- The Wildlife Act 1976 as amended. 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 as amended)
- 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.

In the absence of specific national ornithological survey guidance for Ireland, the following guidance documents published by NatureScot (formerly Scottish Natural Heritage [SNH]) have been followed to inform this assessment, which is in line with current best practice in Ireland:

- SNH (2000). Wind farms and birds: calculating a theoretical collision risk assuming no avoidance action. Scottish Natural Heritage, Inverness, Scotland. Available at: https://www.nature.scot/sites/default/files/2017-09/Guidance%20Note%20-%20Windfarms%20and%20birds%20-%20Calculating%20a%20theoretical%20collision%20risk%20assuming%20no%20avoiding%20action.pdf
- 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/2017-09/Guidance%20Note%20-%20Monitoring%20the%20impact%20of%20onshore%20windfarms%20on%20birds.pdf
- SNH (2016). Assessing connectivity with Special Protection Areas (SPAs). Scottish Natural Heritage, Inverness, Scotland. Available at: https://www.nature.scot/sites/default/files/2018-08/Assessing%20connectivity%20with%20special%20protection%20areas.pdf
- SNH (2017). Recommended bird survey methods to inform impact assessment of onshore wind farms. Scottish Natural Heritage, Inverness, Scotland. Available at: https://www.nature.scot/sites/default/files/2018-06/Guidance%20Note%20-%20Recommended%20bird%20survey%20methods%20to%20inform%20impact%20assessment%20of%20onshore%20windfarms.pdf
- SNH (2018a) Avoidance rates for the onshore SNH wind farm collision risk model. Scottish Natural Heritage, Inverness, Scotland. Available at: https://www.nature.scot/sites/default/files/2018-09/Wind%20farm%20impacts%20on%20birds%20-

%20Use%20of%20Avoidance%20Rates%20in%20the%20SNH%20Wind%20Farm%20Collision%20Risk%20Model.pdf

- SNH (2018b). Assessing the cumulative impacts of onshore wind farms on birds. Scottish Natural Heritage, Inverness, Scotland. Available at: https://www.nature.scot/sites/default/files/2018-08/Guidance%20-%20Assessing%20the%20cumulative%20impacts%20of%20onshore%20wind%20farms%20on%20birds.pdf
- SNH (2018c). Assessing significance of impacts from onshore wind farms out with designated areas. Scottish Natural Heritage, Inverness, Scotland. Available at: https://www.nature.scot/doc/guidance-assessing-significance-impacts-bird-populations-onshore-wind-farms-do-not-affect-protected
- 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. NatureScot, Inverness, Scotland. Available at: https://www.nature.scot/doc/recommended-bird-survey-methods-inform-impact-assessment-onshore-windfarms
- NatureScot (2025b). Guidance - Assessing the cumulative impacts of onshore wind farms on birds. https://www.nature.scot/doc/guidance-assessing-cumulative-impacts-onshore-wind-farms-birds

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: v 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 in accordance with the various planning policies and strategy guidance documents listed below:

- 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.
- 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.
- Clare County Development Plan 2023-2029

7.1.3 Statement of Authority

This ornithology chapter has been prepared by Patrick Manley (B.Sc., MCIEEM), Senior Ornithologist of MKO and reviewed by Padraig Cregg (M.Sc., MCIEEM), Principal Ornithologist.

Patrick holds a BSc in Geology. He has over eight years' experience in designing, executing and project management of ornithological assessments in the renewables sector. Padraig holds a MSc in Evolutionary and Behavioural Ecology and has over 15 years' experience in environmental consultancy. He is the technical advisor for the MKO ornithology team helping to take projects through their full lifecycle, from site selection through survey design, constraints studies, impact assessment and lodgement of the planning application. Both are suitably qualified ornithologists with experience in completing avifaunal assessments and competent experts for the purposes of the preparation of this EIAR.

The scope of works and survey methodology was devised by Alex Ash (B.Sc.), Senior Ornithologist, and is fully compliant with NatureScot (formerly Scottish Natural Heritage) guidance (SNH, 2017). Field surveys were undertaken by David Miley, John Hehir and Sean Dundon. Surveyors are competent experts in ornithological surveying.

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 Proposed Wind Farm and its hinterland. The assessment consisting of a thorough review of the available ornithological data consisting of:

- Designated sites.
- Bird atlases.
- Bird sensitivity mapping tool.
- Online web-mappers from the National Biodiversity Data Centre.
- Irish Wetland Bird Survey data.
- Birds of Conservation Concern (BoCCI) (Gilbert *et al.*, 2021)
- Review of specially requested records from the National Parks and Wildlife Service Rare and Protected Species Database.
- The EIAR for a previous wind farm application on the Site (PL03.311044)

7.2.2 Consultation

Consultation was undertaken with the relevant statutory and non-statutory organisations as part of the EIAR scoping to inform the current assessment. Full details can be found in Section 2.5 of Chapter 2 of this EIAR. Table 7-1 below 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	Issues Raised	Issued Addressed
An Taisce	No response received	-	-
BirdWatch Ireland	No response received	-	-
Department of Agriculture, Food and the Marine	Response received 08/05/2024	No issues raised in relation to birds	-

Consultee	Response	Issues Raised	Issued Addressed
Development Applications Unit (NPWS/NMS)	Response received 17/05/2024	No issues raised in relation to birds	-
Irish Red Grouse Association	Response received 14/05/2024	Raised concerns relating to lack of mitigation measures in the renewable sector and they would like to see net gain measures in place.	Mitigation measures are outlined in Section 7.6
Irish Peatland Conservation Council	No response received	-	-
Irish Raptor Study Group	No response received	-	-
Irish Wildlife Trust	No response received	-	-

7.2.3 Identification of Target Species and Key Ornithological Receptors

Following a comprehensive desk study, initial site visit and consultation, a list of "target species" likely to occur in the Study Areas of the Proposed Wind Farm was compiled. Bird surveys conducted at the Proposed Wind Farm were then specifically designed to survey for these target species, in accordance with SNH (2017). Additionally, the Proposed Grid Connection was surveyed as part of a multidisciplinary, ecological walkover (see Section 7.2.4.1.7) and has been utilised within this assessment. The target species list was drawn from:

- Species listed on Annex I of the EU Birds Directive.
- Special Conservation Interests (SCI) of Special Protection Areas (SPA) within the zone of likely significant effects.
- Red listed Birds of Conservation Concern in Ireland (BoCCI)
- Species that are particularly sensitive to wind farm developments, e.g. raptors.

Following analysis of field survey data (described below), a precautionary screening approach was followed to identify KORs: the list of target species observed during surveys (see Appendix 7-1) was refined to KORs, excluding those for which pathways for a significant effect could not be identified.

7.2.4 Field Surveys

Field surveys were undertaken during the survey period from April 2023 to March 2025, consisting of two breeding seasons (April – September) and two winter seasons (October – March). These surveys represent the core dataset used for the impact assessment within this chapter. Additionally, supplementary data is also available which was undertaken during the survey period April 2017 to September 2019. These data are presented in the EIAR prepared for a previous planning application on this site under planning number (PL03.311044), which does not form part of the core dataset for the purposes of this application. A summary of these data is provided in Section 7.3.7 to give an overview of the longer-term bird distribution and abundance trends within the study area.

Based on the results of the desk study, consultation and reconnaissance site visit described in the previous sections (Section 7.2.1 to 7.2.3), the assemblage of bird species within the Proposed Wind Farm and the likely importance of the Proposed Wind Farm for these species were ascertained. Then, adopting a precautionary approach, a site-specific scope for ornithological surveys was devised. The data provided in the field surveys is robust and allows clear, precise and definitive conclusions to be made on the avian receptors identified within the Proposed Wind Farm.

The survey work that was undertaken between April 2023 and March 2025 forms the core dataset for the assessment of impacts on ornithology. 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' (SNH, 2017) which was available when surveys were being undertaken. This guidance has been updated in NatureScot (2025), and surveys remain in accordance with this updated guidance. The various ornithological surveys undertaken at the Proposed Wind Farm and hinterland are described in detail below.

7.2.4.1.1 Vantage Point Surveys

Vantage point (VP) surveys were undertaken in accordance with NatureScot guidance (SNH [2017], which was revised in NatureScot [2025]) to monitor flight activity at the Proposed Wind Farm and within a 500m radius of the proposed turbines. Surveys were conducted from four fixed point VPs with comprehensive coverage of the proposed turbines (see Figure 7-1 below). The VP 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 elevation model in QGIS (Version 3.28) using a notional layer suspended at 22m (as the minimum swept area was not known when surveys commenced), which is representative of the minimum height considered for the potential collision risk. The lowest swept height of 22m was used for the analysis with the understanding that the actual lowest swept of the candidate turbine would likely be similar to this. Note, that while the relevance of being able to view as much of the Proposed Wind Farm 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 VPs such that the airspace of the turbine rotor swept area is in view using the fewest possible number of VPs. The VP 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 22m 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 proposed turbine specifications were confirmed, the viewshed analysis was recalculated based on the (actual) minimum swept height of the turbines, 17m. The viewshed analysis results at 17m were not significantly different from the original viewsheds calculated at the initiation of the surveys. Viewsheds at 17m are provided in Figure 7-1 below.

Survey methodology followed SNH (2017, which was 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 2023 to March 2025 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 watch duration

Survey Season and Number of VPs	Effort per VP
Breeding Season 2023 (4 VPs)	36 hours per VP
Winter Season 2023/2024 (4 VPs)	36 hours per VP
Breeding Season 2024 (4 VPs)	36 hours per VP
Winter Season 2024/2025 (4 VPs)	36 hours per VP

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 for the site. Bands were split into 0-15m, 15-25m, 25-200m and >200m. Following a highly precautionary approach, all flight activity within height bands 15-25m and 25-200m is considered to be within the potential collision height with regard to the proposed turbine swept area. The actual proposed turbine dimension scenarios (17-180m) fall within these height bands (15-25m and 25-200m). Please see further details in Appendix 7-5. In addition, the presence of any non-target species was recorded to inform the evaluation of supporting habitat. The survey effort is presented in Appendix 7-2, including full details of dates, times and weather conditions.

7.2.4.1.2 Breeding Walkover Surveys

Breeding walkover surveys were undertaken to determine possible, probable or confirmed breeding bird activity within the Proposed Wind Farm and within a 500m radius of the on-site proposed infrastructure. The methodology follows NatureScot (SNH [2017], which was revised in NatureScot [2025]) guidance, and in particular, Brown and Shepard (1993) and Calladine *et al.* (2009), combined with a reduced visit Common Bird Census method (British Trust for Ornithology, 2021) for dense habitats. Transect routes were walked across different habitat complexes within the survey area where access was 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 (BTO) breeding status codes[2]. In addition, the presence of any non-target species was recorded to inform the evaluation of supporting habitat. The survey area for these surveys was the Proposed Wind Farm and a 500m survey radius of the proposed infrastructure.

Transect routes were devised to ensure the required coverage of different habitats was achieved within the survey area. Transects were selected to ensure all areas of suitable breeding/ foraging habitat were approached to within 100m, where access was allowed. Target species included waders, raptors, waterbirds, gulls and other birds of conservation concern. Along with target species, all additional non-target species observed were recorded to inform the evaluation of supporting habitat.

Breeding walkover surveys were carried out over four visits during the core breeding season months April to July (2023 & 2024), with the Proposed Wind Farm being visited two days per month on each occasion. Following all survey visits, the field maps were analysed to determine the number and location of breeding territories. All non-breeding individuals and species encountered were also recorded.

The survey effort is presented in Appendix 7-2, including full details of dates, times and weather conditions for each survey. Figure 7-2 shows the survey transects.

7.2.4.1.3 Breeding Raptor Surveys

Breeding raptor surveys were undertaken within the Proposed Wind Farm and up to 5km of the proposed infrastructure to identify occupied territories and monitor their breeding success near or within the Proposed Wind Farm. Raptors include all harrier, falcon, buzzard, eagle, hawk, owl, kite and osprey species. The survey methodology followed Hardey *et al.* (2013). Raptor surveys were undertaken in the form of short vantage point watches. All raptor species observed were recorded and mapped and breeding status was assigned following BTO breeding status codes. Surveyors did not approach nest sites to avoid disturbance.

Surveys primarily targeted suitable hen harrier breeding habitat, and areas where known historic nests were located. Breeding raptor surveys were conducted on five days per month during the core breeding season between April and July (2023 & 2024). Each survey location was visited at least once per survey month.

Survey effort is presented in Appendix 7-2, including full details of dates, times and weather conditions. Figure 7-3 shows the breeding raptor locations.

7.2.4.1.4 Breeding Woodcock Surveys

Breeding woodcock surveys were undertaken in accordance with Gilbert *et al.* (1998). Surveys were undertaken at the Proposed Wind Farm in May and June (2023 & 2024). The survey area extended 500m beyond the proposed infrastructure and was focused on areas of suitable habitat. Surveys commenced one hour before sunset and continued for one hour after sunset or until it was too dark to see, as per Gilbert *et al.* (1998). Transects were slowly walked through areas of suitable woodland habitat onsite and to a 500m radius of the proposed infrastructure. All observations of woodcock (as well as the areas covered) were mapped. The survey aimed to record the presence of roding (displaying) male

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

woodcock and thereby establish the distribution and abundance of the species in the surveyed area. This survey method also allowed the observer to survey for owls, i.e. barn owls and long-eared owls.

Survey effort is presented in Appendix 7-2, including full details of dates, times and weather conditions. Figure 7-4 shows the transect routes.

7.2.4.1.5 Winter Walkover Surveys

Winter walkover surveys were undertaken to record the presence of bird species within the Proposed Wind Farm and within a 500m radius of proposed infrastructure, including areas away from vantage point locations. The methodology follows described in Bibby *et al.* (2000) and Gilbert *et al.* (1998), combined with Common Bird Census methods (British Trust for Ornithology, 2021). Transect routes were walked across different habitat complexes within the survey area where access was 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. Figure 7-5 shows the survey transects.

Winter walkover surveys were conducted in daylight hours over four visits between October and March (i.e. four visits in each winter; 2023/2024 & 2024/2025). Survey effort is presented in Appendix 7-2, including full details of dates, times and weather conditions for each survey.

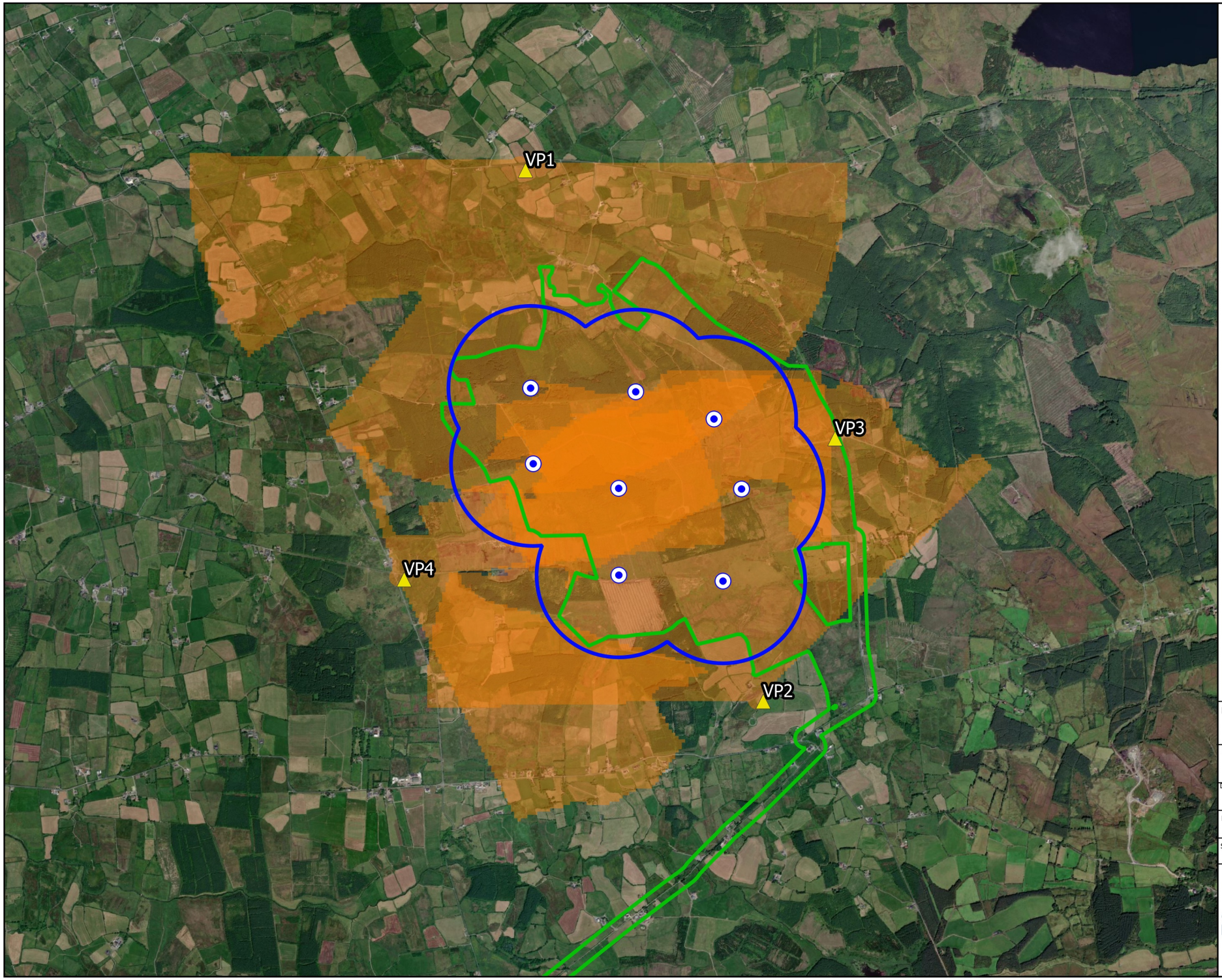
7.2.4.1.6 Hen Harrier Roost Surveys

Hen harrier roost surveys were undertaken within the Proposed Wind Farm and within 2km of the proposed infrastructure. These surveys aimed to identify active winter hen harrier roosts near or within the Proposed Wind Farm. Survey methodology followed Gilbert *et al.* (1998) and O'Donoghue (2019). Roost watches of 2-3 hours were conducted at up to six hen harrier vantage point locations from dusk until it was too dark to see. During these surveys all hen harrier observations were recorded and mapped.

Surveys were undertaken once per month at up to four survey locations during the winter season between October and March inclusive (in winter 2023/2024 & 2024/2025). Survey locations varied throughout both winter seasons, in response to changes in hen harrier activity and/or the lack of observations at some survey locations. Survey effort is presented in Appendix 7-2, including full details of dates, times and weather conditions. Figure 7-6 shows the hen harrier vantage point locations.

7.2.4.1.7 Multidisciplinary Walkover Survey

The Proposed Grid Connection underground cabling route was surveyed through a multidisciplinary ecological walkover survey, as set out in Section 6.2.3.1 of Chapter 6 of this EIAR. The route was systematically walked, while the surveyor recorded a range of protected species, including birds. Further details on this survey are available in Chapter 6 of this EIAR.



Map Legend

- EIAR Site Boundary
- Proposed Turbine Layout
- 500m Buffer of Proposed Turbine Layout
- Vantage Point Locations
- Viewshed

N

Drawing Title
Vantage Point Locations

Project Title
Proposed Cahermurphy West Wind Farm

Drawn By	Checked By
CC	PM
Project No. 230403	Drawing No. Fig 7-1
Scale 1:30,000	Date 04.09.25

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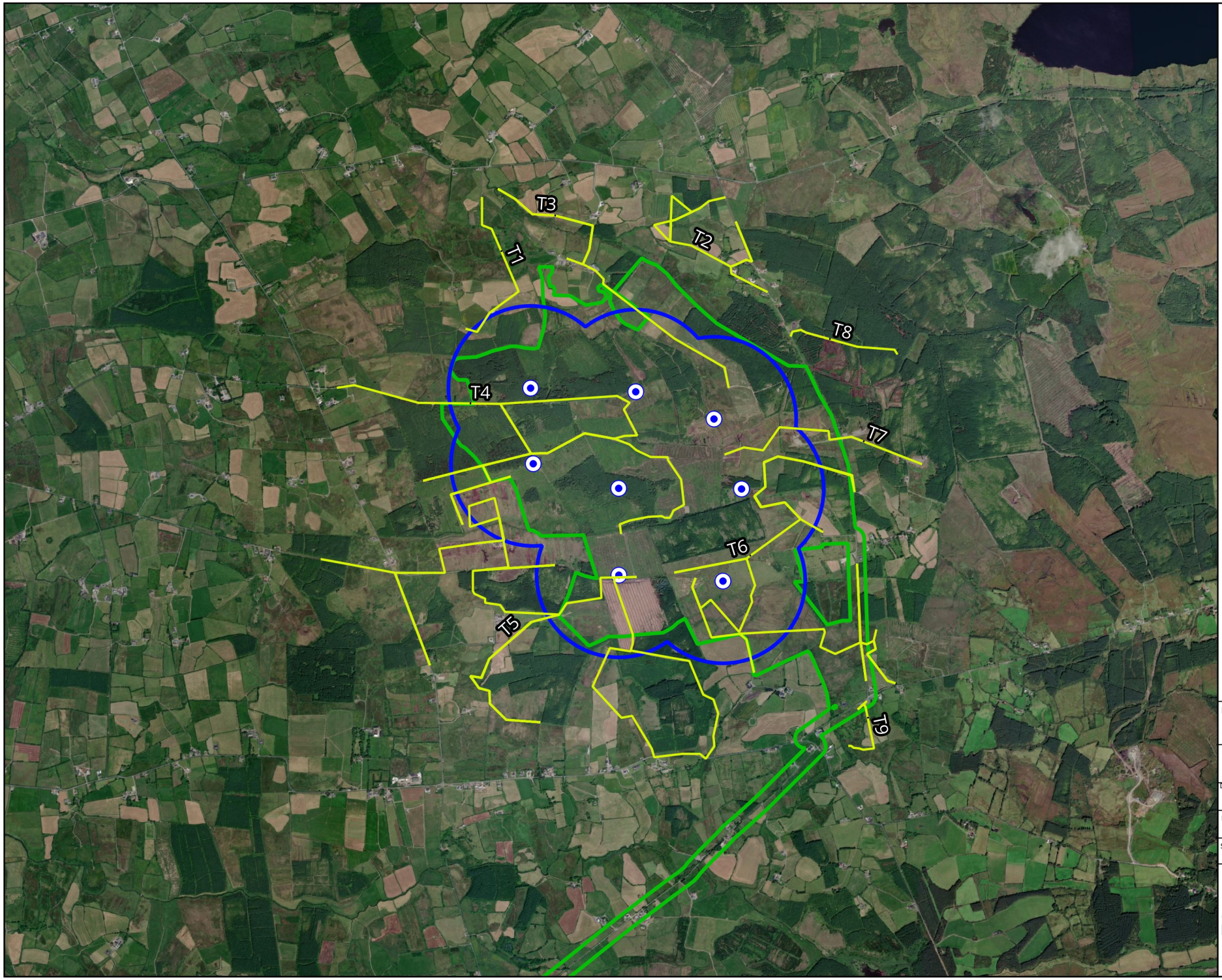

Map Legend

- EIAR Site Boundary
- Proposed Turbine Layout
- 500m Buffer of Proposed Turbine Layout
- Transect

N

Drawing Title
Breeding Walkover Survey Area

Project Title
Proposed Cahermurphy West Wind Farm

Drawn By	Checked By
CC	PM
Project No. 230403	Drawing No. Fig 7-2
Scale 1:30,000	Date 04.09.25

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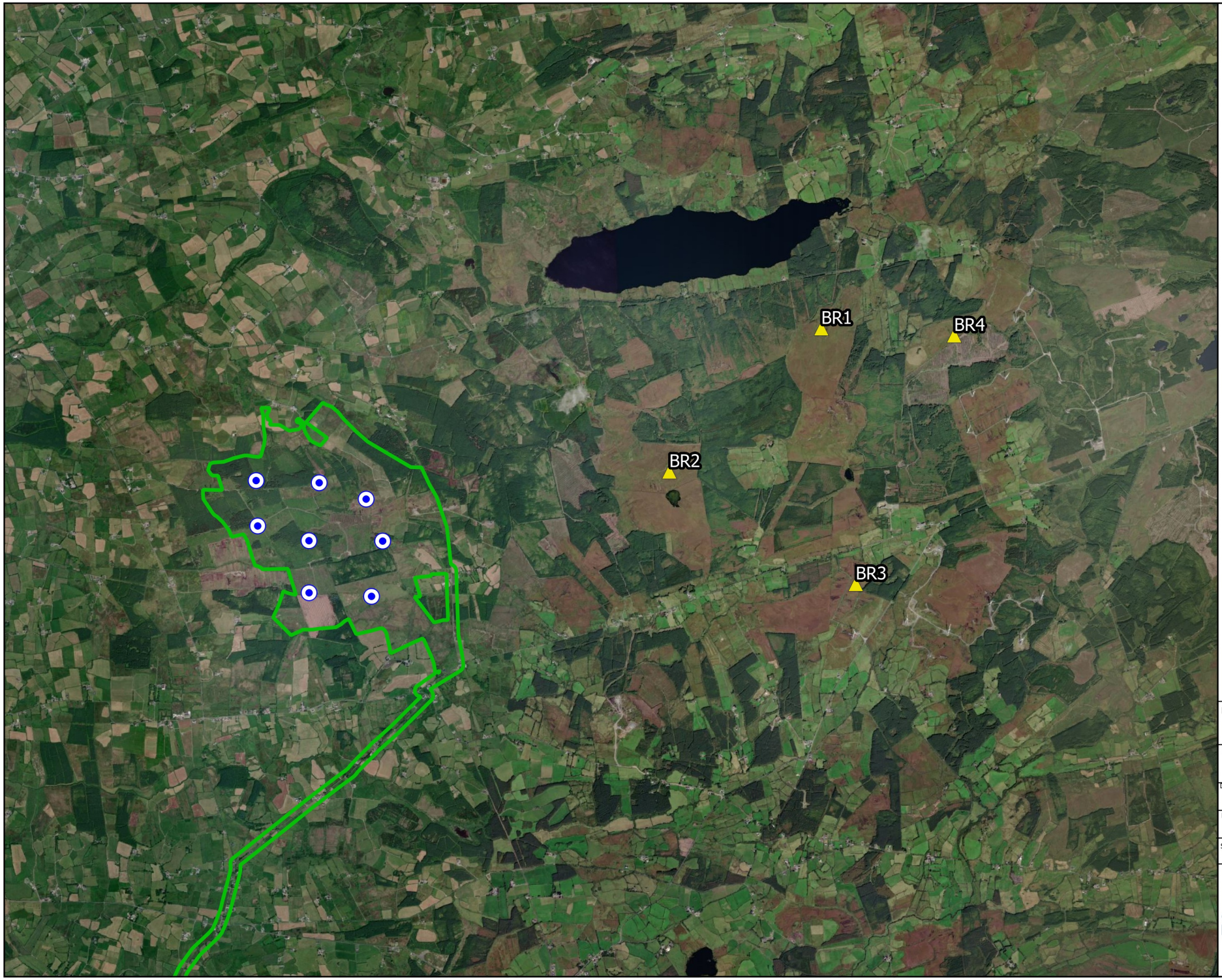

Map Legend

- EIAR Site Boundary
- Proposed Turbine Layout
- Breeding Raptor VP

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Drawing Title	Breeding Raptor Survey Locations
Project Title	Proposed Cahermurphy West Wind Farm
Drawn By: CC	Checked By: PM
Project No.: 230403	Drawing No.: Fig 7-3
Scale: 1:50,000	Date: 04.09.25

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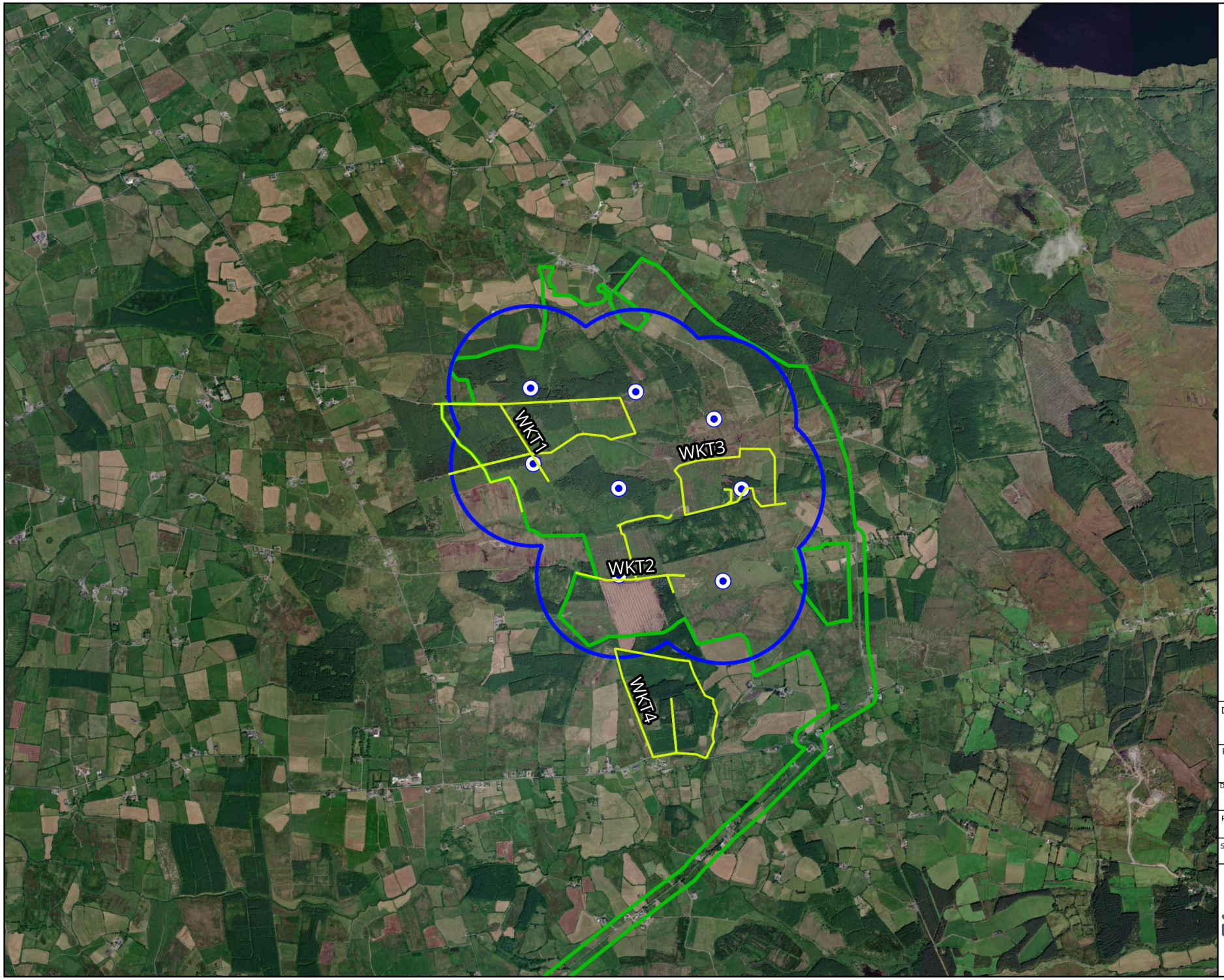

Map Legend

- EIAR Site Boundary
- Proposed Turbine Layout
- 500m Buffer of Proposed Turbine Layout
- Transect

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Drawing Title
Breeding Woodcock Survey Area

Project Title
Proposed Cahermurphy West Wind Farm

Drawn By	Checked By
CC	PM
Project No.	Drawing No.
230403	Fig 7-4
Scale	Date
1:30,000	04.09.25

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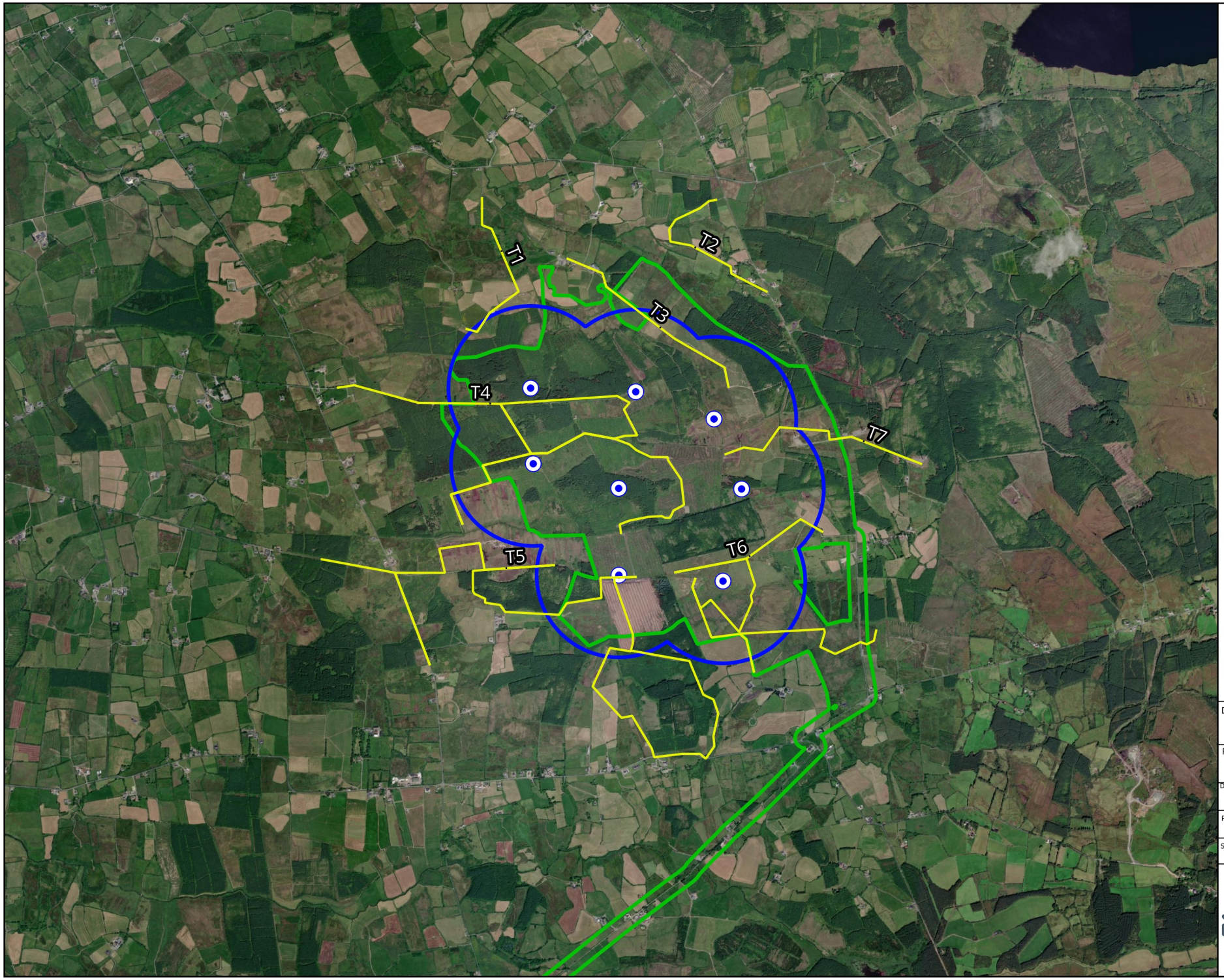

Map Legend

- EIAR Site Boundary
- Proposed Turbine Layout
- 500m Buffer of Proposed Turbine Layout
- Transect

N

Drawing Title
Winter Walkover Survey Area

Project Title
Proposed Cahermurphy West Wind Farm

Drawn By	Checked By
CC	PM
Project No. 230403	Drawing No. Fig 7-5
Scale 1:30,000	Date 04.09.25

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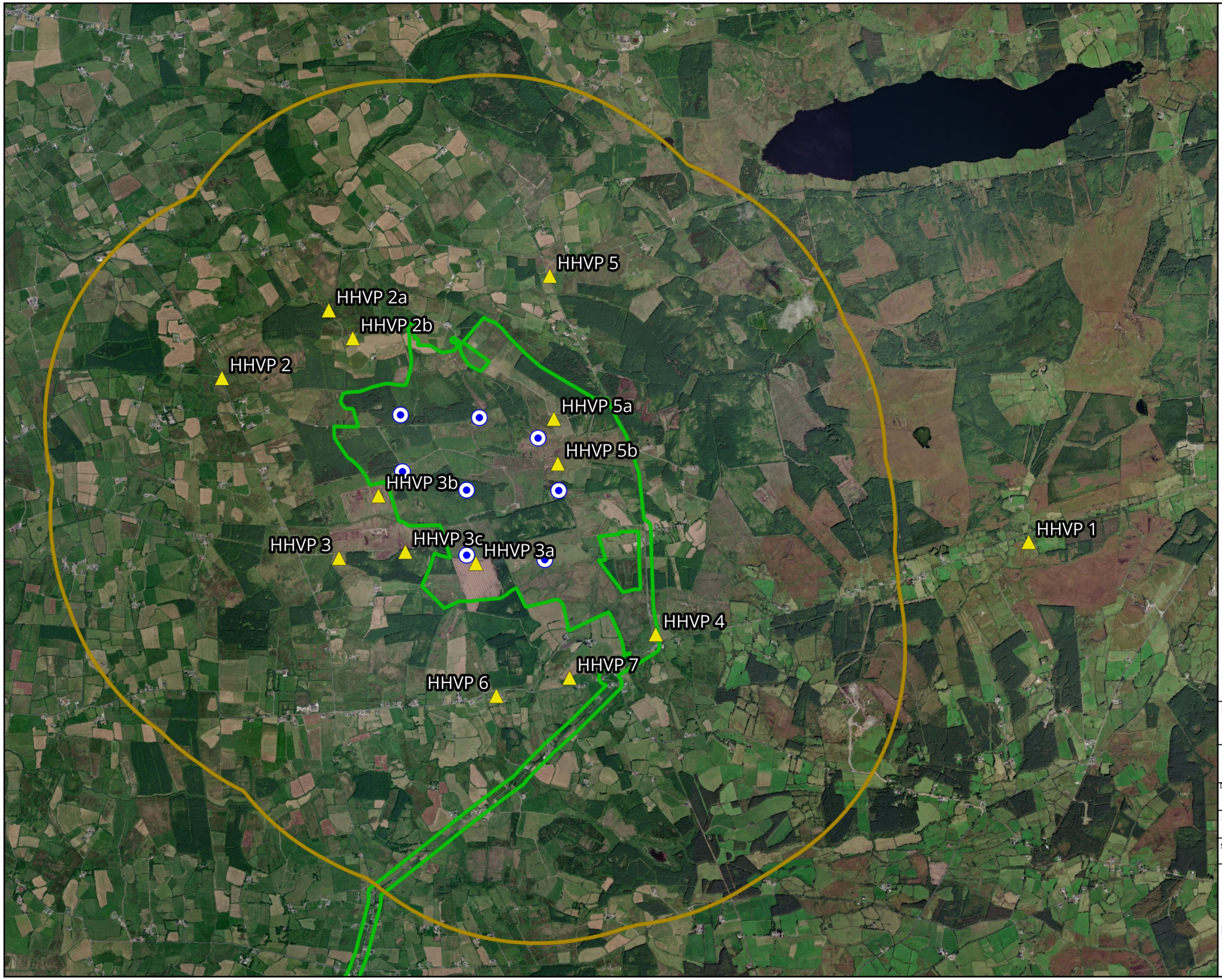

Map Legend

- EIAR Site Boundary
- Proposed Turbine Layout
- Survey Area
- Hen Harrier VP

N

Drawing Title
Hen Harrier Survey Area

Project Title
Proposed Cahermurphy West Wind Farm

Drawn By	Checked By
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Project No. 230403	Drawing No. Fig 7-6
Scale 1:40,000	Date 04.09.25

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7.2.5 Receptor Evaluation and Impact Assessment

7.2.5.1 Potential Impacts Associated with the Proposed Project

Wind farms present three potential risks to birds (Drewitt and Langston 2006, 2008; *Band et al.,* 2007):

- **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[3].

For each of these three risks, the detailed knowledge of bird distribution and flight activity within and surrounding the Proposed Wind Farm has been used to predict potential impacts of the Proposed Project on birds. Impacts associated with the Proposed Grid Connection are also assessed, including habitat loss and disturbance related to construction works. These impacts are also assessed cumulatively with other projects. The geographical framework and description of impacts are described below.

7.2.5.2 Geographical Framework

Guidance on Ecological Impact Assessment (CIEEM, 2019) recommends categories of ornithological value that relate to a geographical framework (e.g. international through to local). This EIAR utilises the geographical framework described in 'Guidelines for Assessment of Ecological Impact of National Road Schemes' (NRA, 2009). The following geographic frame of reference is 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.

7.2.5.3 Description of Impacts

The sensitivity, magnitude and significance of impacts on bird populations resulting from the Proposed Project were quantified according to two assessment criteria: Percival (2003) and the Environmental Protection Agency (EPA, 2022). The two assessment criteria have been used to independently characterise impacts to inform a robust assessment of potential impacts. EPA, 2022 impact assessment criteria has been used for consistency between the Biodiversity and Ornithology chapters of this EIAR, while Percival (2003) has also been followed, given its specific focus on birds. These assessment criteria are considered best practice in ornithological assessments in Ireland.

[3] *Three collision risk assessments were undertaken to allow for the full range of possible turbine dimensions to be assessed (17-185m). Taking a precautionary approach, the highest predicted collision risk for each species was then presented in Section 7.6.2 in Chapter 7 of the EIAR. See Section 2.3 of Appendix 7-6 for further details.*

Percival's (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 7-3, Table 7-4 and Table 7-5 outline the assessment criteria for each stage.

Table 7-3 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 7-4 Determination of magnitude of effects (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 7-5 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

EPA (2022) Criteria

EPA, 2022 uses 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. Further details regarding EPA, 2022 are available in Chapter 1, Section 1.6.1 of this EIAR.

7.2.5.4 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), as recommended by NatureScot guidance. The Band Model first determines the number of birds transits through the air space swept by the rotor blades of the proposed 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 (estimate) for each species. See Appendix 7-6 for full details on the collision risk modelling method.

7.2.6 Assessment Justification

7.2.6.1 Survey Data

A comprehensive suite of bird surveys was undertaken at the Proposed Wind Farm between April 2023 and March 2025. Results derived from a continuous two years of surveying at the Proposed Wind Farm and hinterland, undertaken in line with NatureScot guidance, are analysed to inform this assessment. Furthermore, supplementary data from surveys at the Proposed Wind Farm site undertaken between April 2017 to September 2019 was also considered. 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 avian receptors.

7.2.6.2 Mitigation

The Proposed Project has been designed to specifically avoid, reduce and minimise impacts on all avian 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 measures and best practices (refer to Section 7.6 for further details).

7.2.6.3 Limitations

The information provided in this EIAR 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 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 limitations in the scope, scale or context of the assessment have been identified.

7.3 Baseline Ornithological Conditions

7.3.1 Designated Sites

An Appropriate Assessment Screening Report and Natura Impact Statement (NIS) were 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 and nationally designated sites. For a detailed assessment of any potential impacts on SPAs, refer to the Appropriate Assessment and NIS associated with Chapter 6 of this EIAR.

Sites designated for nature conservation within the potential Zone of Influence (as defined in the NIS) of the Proposed Project were identified. The Zone of Influence is derived utilising a precautionary approach. Sites within the Zone of Influence of the proposed works are identified and assessed for pathways for impacts. In this case, the potential for ex-situ direct effects on black-headed gull and cormorant associated with the River Shannon and River Fergus Estuaries SPA and barnacle geese associated with the Mid-Clare Coast SPA were identified.

7.3.2 Breeding and Wintering 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. Previous bird atlases have been the primary source of information on the distribution and abundance of British and Irish birds prior to Bird Atlas 2007–11. The three previously published atlases were:

- The atlas of breeding birds in Britain and Ireland (Sharrock, 1976)
- The atlas of wintering birds in Britain and Ireland (Lack, 1986)
- The new atlas of breeding birds in Britain and Ireland: 1988-1991. (Gibbons *et al.*, 1993)

The Proposed Wind Farm lies within two hectads[4] (R06 & R07), while the Proposed Grid Connection extends into hectad R05. Table 7-6 and Table 7-7 present a list of species of conservation interest recorded from the relevant hectads, with regard to breeding and wintering, respectively.

Table 7-6 Breeding Bird Atlas data. The following applies to conservation status: Annex I of the Birds Directive, Red List species on the BoCCI

Species Name	Breeding Atlas 1968-1972			Breeding Atlas 1988-1991			Breeding Atlas 2007-2011		
	R05	R06	R07	R05	R06	R07	R05	R06	R07
Barn owl	poss	prob							
Black-headed gull	conf		conf	seen		seen			
Common tern				seen					
Cormorant						seen			
Corncrake	prob	prob	prob			seen			
Curlew	prob	prob	prob	seen	bred	seen			
Grey wagtail	prob	conf	prob	bred	bred	bred	conf	prob	conf
Hen harrier								conf	
Kestrel	conf	conf	conf	bred	bred		poss	conf	conf

[4] *A hectad is a 10km x 10km grid square*

Species Name	Breeding Atlas 1968-1972			Breeding Atlas 1988-1991			Breeding Atlas 2007-2011		
	R05	R06	R07	R05	R06	R07	R05	R06	R07
Kingfisher		prob	conf						
Lapwing						bred			
Long-eared owl	poss						conf	conf	conf
Meadow pipit	conf	conf	conf	bred	bred	bred	conf	poss	conf
Merlin			poss						
Peregrine							conf		
Red grouse		prob	prob						
Redshank			prob						
Ringed plover				seen		bred			poss
Sandwich tern			poss	seen		seen			
Snipe	prob	prob	prob	bred	seen	bred	conf		poss
Sparrowhawk				seen			prob	conf	poss
Stock dove						seen			
Swift	prob	prob	conf	bred		seen			
Teal	conf		prob						
Woodcock	prob						poss		
Yellowhammer	conf	conf	conf						

Conf = confirmed breeding; prob = probable breeding; poss = possible breeding; bred = breeding; seen = bird observed but no breeding activity.

Table 7-7 Wintering Bird Atlas data. The following applies to conservation status: Annex I of the Birds Directive, Red List species on the BoCCI.

Species Name	Wintering Atlas 1981-1984			Wintering Atlas 2007-2011		
	R05	R06	R07	R05	R06	R07
Barnacle goose						✓
Bar-tailed Godwit	✓		✓			✓
Bewick's Swan			✓			
Black-headed gull	✓	✓	✓	✓	✓	✓
Black-tailed Godwit			✓	✓		
Chough						✓
Cormorant	✓		✓	✓		✓
Curlew	✓	✓	✓	✓		✓
Dunlin	✓			✓		✓
Golden plover	✓		✓			✓
Great northern diver			✓			
Greenshank	✓		✓	✓		
Grey plover			✓			✓
Grey wagtail	✓	✓		✓	✓	
Hen harrier		✓		✓	✓	✓
Kestrel	✓	✓	✓	✓	✓	✓
Kingfisher				✓		
Lapwing	✓	✓		✓	✓	✓
Little egret				✓		
Little Gull						✓
Meadow pipit	✓	✓	✓	✓	✓	✓
Merlin		✓				

Species Name	Wintering Atlas 1981-1984			Wintering Atlas 2007-2011		
	R05	R06	R07	R05	R06	R07
Pintail	✓					
Redshank	✓		✓	✓		✓
Redwing	✓	✓	✓	✓	✓	✓
Ringed Plover				✓		✓
Peregrine			✓			
Purple sandpiper			✓			✓
Sanderling			✓			✓
Scaup	✓					
Snipe	✓	✓		✓	✓	✓
Sparrowhawk	✓	✓	✓	✓	✓	
Teal	✓	✓	✓	✓		✓
Turnstone	✓		✓			✓
Whooper swan	✓		✓	✓	✓	✓
Wigeon	✓	✓	✓	✓		✓
Woodcock		✓		✓		

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 Proposed Wind Farm is located within an area of low sensitivity, with respect to hen harrier. No other species are defined as being sensitive species within this area. The Proposed Wind Farm is approximately 12km from the nearest area of high sensitivity, which lies within the Mid-Clare Coast SPA.

7.3.4 Irish Wetland Bird Survey Records

The Irish Wetland Bird Survey (I-WeBS), coordinated by BirdWatch Ireland, monitors wintering waterbird populations at their wetland sites across Ireland. I-WeBS site locations are available at https://birdwatchireland.ie/our-work/. The Proposed Wind Farm is not covered by an I-WeBS site and the nearest site is located approximately 6.8km west of the Proposed Wind Farm – i.e., Mid-Clare Coast (Mal Bay – Doonbeg Bay). I-WeBS sites within County Clare were reviewed. Datasets for the following sites were sourced from www.birdwatchireland.ie:

- Ballyallia Lake
- Ballycar Lough
- Carran Polje
- Castlelough
- Corofin Wetlands
- Dromore Lakes (Clare)
- Farrihy Lough
- Inagh River
- Knockaunroe/Rinnamona
- Liscannor Bay (Liscannor - Rinaoughter)
- Lough Atorick
- Lough Girroge
- Lough Graney

- Lough O'Grady
- Mid-Clare Coast (Mal Bay - Doonbeg Bay)
- Poulataggle
- Pouleenacoona
- River Shannon (Lower)
- River Shannon (Lower) Aerial
- Scarriff Area
- Shannon & Fergus Estuary
- Shannon & Fergus Estuary Aerial
- South East Clare Lakes
- Tullaher Lough
- Turloughmore (Clare)

7.3.5 Rare and Protected Species Dataset

An information request was sent to NPWS requesting records from the Rare and Protected Species Database. The sections below provide the records obtained from the NPWS (21/03/2019) regarding rare and protected bird species, and confirmed to be the most up to date data on 26/07/2019. A request for up to date data was sent on 22/01/2025 and response was received on 17/08/2025, however no new data was available since the previous data request. Additional data on hen harrier from the NPWS High-Likelihood Nesting Area (HLNA) dataset was requested on 05/02/2026 following the consultation meeting with the NPWS detailed below. However, no response was received prior to submission of this application. The data received from the NPWS is outlined below:

Greenland White-fronted Goose

NPWS provided records of Greenland white-fronted goose within the areas surrounding the Proposed Project, the nearest observation to the Proposed Wind Farm site was 7km and from the proposed grid connection route was 1.5km. However, the most recent survey data provided was from 1996/97, with oldest data being from 1982/83.

Hen Harrier

Table 7-8 below provides the NPWS records for Hen Harrier within defined distances of the Proposed Wind Farm site.

Table 7-8 NPWS Hen Harrier Records

Year	0-1km from the Proposed Wind Farm site	1-3km from the Proposed Wind Farm site	3-5km from the Proposed Wind Farm site
2015	1 record of confirmed breeding 1 record of possible breeding	No Records	1 record of confirmed breeding
2010	2 records of confirmed breeding	2 confirmed breeding sites and 3 add. sightings recorded	No Records
2003	No Records	1 confirmed breeding site recorded	No Records

7.3.6 NPWS Consultation Meeting

A consultation meeting was held with the NPWS on the 28th of January 2026. During this meeting the project was presented to the NPWS and the proposed Hen Harrier Enhancement Plan was outlined in detail. The key concerns raised by the NPWS included the following:

- The NPWS acknowledged that this area is a stronghold for hen harrier and that the impact assessment should be undertaken with respect to impacts on the regional population of hen harrier.
- With regard to the enhancement plan, the NPWS stated that we should be mindful of encroachment of trees into the enhancement areas, particularly of birch as there can be a large seedbank in these areas and if saplings are not removed, birch can grow rapidly and removal of trees may prove difficult.
- Straightforward indicators should be established to monitor the suitability of the enhancement areas.
- The NPWS advised against removing the stumps of lodgepole pine.
- The NPWS recommended requesting the NPWS High-Likelihood Nesting Area (HLNA) dataset for hen harrier.

7.3.7 Hen Harrier Threat Response Plan 2024-2028

Based on the results of the desk study, it became clear that hen harrier were likely to be a key species of interest at the Site. Therefore, the Hen Harrier Threat Response Plan was consulted. The Hen Harrier Threat Response Plan 2024-2028 was published by the National Parks and Wildlife Service. As per the published document, '*the aim of the Hen Harrier Threat Response Plan is to improve the long-term prospects for the species and to meet the objectives of the Birds Directive by:*

- *synthesising the key scientific evidence for the hen harrier population decline,*
- *outlining the views and concerns presented by the relevant sectors,*
- *laying out a coordinated set of targeted actions and measures to cease, avoid, reverse, reduce, eliminate or prevent the identified threats, pressures and hazards.'*

The Threat Response Plan details 47 actions across five areas: Cross-cutting Sectoral Actions, Agriculture, Forestry, Wind Energy and Review & Update. The broad topics included under Wind Energy are copied below:

- Informing assessment procedures with fit for purpose data construction monitoring actions.
- Improving access to data.
- Promoting effective cumulative level assessments, including collision risk modelling, at various scales.
- Efficacy of adaptive management measures, including for offsetting purposes.
- Robustness of Environmental Assessments.
- Wind Energy Development Guidelines.
- Early identification of potential problems.
- Collation of relevant planning documents.
- Promoting high quality assessments.

7.3.8 Previous Surveys at the Site

As previously stated, a summary of the previous survey data is provided to give an overview of the longer-term bird distribution and abundance trends within the study area. The site was previously surveyed from April 2017 to September 2019. Full details of the surveys undertaken and survey results are presented in the EIAR prepared for a previous planning application on this site under planning number (PL03.311044). The following species were observed during surveys and discussed within the EIAR for the previous application: golden plover, hen harrier, merlin, peregrine, common tern, lapwing, curlew, black-headed gull, cormorant, red grouse, woodcock, herring gull, tufted duck, buzzard, sparrowhawk, kestrel, snipe, meadow pipit and grey wagtail. The species which were assessed to be Key Ornithological

Receptors were: golden plover, hen harrier, merlin, peregrine, common tern, herring gull, black-headed gull, buzzard, sparrowhawk, kestrel and snipe. Summaries of the observations for each of these species is outlined below.

Golden Plover

Golden plover were recorded on two occasions during on-site surveys, with flocks of up to 30 birds being observed travelling. There were two additional observations during off-site surveys.

Hen Harrier

Hen harrier were observed on 25 occasions during on-site surveys, with most observations being of one or two birds travelling or hunting. There was one observation of two birds going to roost adjacent to the site in 2019. There were 21 observations of hen harrier during the breeding raptor surveys, with a probable territory identified to the south of Doo Lough, approximately 3.4km from the site. Additionally, there were seven observations during hen harrier roost surveys, with roost sites being identified, 400m, 580m and 3km from the site. There were no nest or roost sites identified within the Proposed Wind Farm site during this survey period.

Merlin

Merlin were observed on two occasions during on-site surveys, with both observations being of individuals travelling or hunting. Additionally, there were two observations during off-site surveys. There were no nest or roost sites identified within the Proposed Wind Farm site during this survey period.

Peregrine

Peregrine were observed on two occasions during on-site surveys, with both observations being of individuals travelling. Additionally, there were two observations during off-site surveys. There were no nest or roost sites identified within the Proposed Wind Farm site during this survey period.

Common Tern

Common tern were only observed on one occasion during on-site surveys. An individual was observed travelling over the site. There were no nest or roost sites identified within the Proposed Wind Farm site during this survey period.

Curlew

There was only one observation of curlew, a flock of 12 birds was observed 900m from the site. There were no nest or roost sites identified within the Proposed Wind Farm site during this survey period.

Herring Gull

Herring gull were observed on 81 occasions during on-site surveys. Observations were of up to 40 birds travelling or foraging within the site. Additionally, there were three observations during off-site surveys. There were no nest or roost sites identified within the Proposed Wind Farm site during this survey period.

Lapwing

There was only one observation of lapwing, a flock of three birds were observed travelling over the site. There were no nest or roost sites identified within the Proposed Wind Farm site during this survey period.

Black-headed Gull

There were four observations of black-headed gull during on-site surveys. Flocks of between 5 and 18 were observed travelling over the site. There were no nest or roost sites identified within the Proposed Wind Farm site during this survey period.

Cormorant

There was only one observation of cormorant, an individual was observed travelling adjacent to the site. There were no nest or roost sites identified within the Proposed Wind Farm site during this survey period.

Woodcock

There was only one observation of woodcock, two birds were observed roding (displaying) 730m from the site.

Tufted Duck

There was only one observation of tufted duck, a flock of 10 birds were observed on Doo Lough (2.5km from the site). There were no nest or roost sites identified within the Proposed Wind Farm site during this survey period.

Buzzard

Buzzard were observed on 12 occasions during the on-site surveys. Observations were of one or two birds travelling, soaring or perched. Additionally, there were two observations during the off-site surveys. These observations were of one or two birds soaring. There were no nest or roost sites identified within the Proposed Wind Farm site during this survey period.

Sparrowhawk

Sparrowhawk were observed on 28 occasions during the on-site surveys. Observations were of one or two birds travelling, soaring or hunting. Additionally, there were 15 observations during the off-site surveys. These observations were of one or two birds travelling or hunting. There were no nest or roost sites identified within the Proposed Wind Farm site during this survey period.

Kestrel

Kestrel were observed on 99 occasions during the on-site surveys. Observations were of one or two birds travelling or hunting. There was one probable nest site identified 450m from the site in 2019. Additionally, there were 28 observations during the off-site surveys. These observations were of individuals travelling or hunting.

Snipe

Snipe were observed on 35 occasions during the on-site surveys. Observations were of between 1 and 16 birds travelling or calling. There was two observations of birds drumming/chipping (displaying), indicating probable breeding within the site. Additionally, there were five observations during the off-site surveys. These observations were of between 1 and 12 birds travelling.

7.3.9 Field Survey Results

The target species recorded during field surveys during the survey period from April 2023 to March 2025 are listed in Table 7-9, along with a summary of breeding and roosting status. The following sections

describe the records of each target species under the individual survey headings. Target species recorded greater than 500m from the Proposed Wind Farm are summarised in Table 7-10, these species were not recorded at or near the Proposed Wind Farm and therefore significant effects are not anticipated and they will not be discussed further within this chapter.

Table 7-9 Target species recorded during surveys at the Proposed Wind Farm

Species	Overall breeding status	Overall wintering status
Golden Plover	No breeding sites identified. There was no evidence of breeding observed during surveys.	No regularly used roosts identified. There was no evidence of roosting observed at the Proposed Wind Farm during surveys.
Hen Harrier	No breeding on the Proposed Wind Farm site. **Confirmed Breeding** off-site. One confirmed breeding territory identified in 2023 (5.5km from the Proposed Wind Farm) and two confirmed breeding), territories identified in 2024 (800m and 5.8km from the Proposed Wind Farm).	**Confirmed Roosting**. One regularly used roost, 780m from the nearest proposed turbine. Three infrequently used roost sites; 180m, 220m and 3.5km from the Proposed Wind Farm.
Whooper Swan	There were no observations during the breeding season.	No regularly used roosts identified. There was no evidence of roosting observed at the Proposed Wind Farm during surveys.
Black-headed Gull	No breeding sites identified. There was no evidence of breeding observed during surveys.	No regularly used roosts identified. There was no evidence of roosting observed at the Proposed Wind Farm during surveys.
Curlew	No breeding sites identified. There was no evidence of breeding observed during surveys.	There were no observations of this species during the winter season.
Grey Wagtail	No breeding sites identified. There was no evidence of breeding observed during surveys.	No regularly used roosts identified. There was no evidence of roosting observed at the Proposed Wind Farm during surveys.
Kestrel	**Confirmed breeding** in the wider area in 2023 (150m from the Proposed Wind Farm) and 2024 (20, 900m and 5km from the Proposed Wind Farm). **Probable breeding** in 2024 (3.2km from the Proposed Wind Farm) and within the Proposed Wind Farm in 2025.	No regularly used roosts identified. There was no evidence of roosting observed at the Proposed Wind Farm during surveys.
Meadow Pipit	**Probable breeding** throughout suitable habitat within and adjacent to the Proposed Wind Farm.	No regularly used roosts identified. There was no evidence of roosting observed at the Proposed Wind Farm during surveys.
Redwing	There were no observations during the breeding season.	No regularly used roosts identified. There was no evidence of roosting observed at the Proposed Wind Farm during surveys.
Snipe	**Probable breeding.** Two territories in 2023 (within the Proposed Wind Farm and 4.3km from the Proposed Wind	No regularly used roosts identified. There was no evidence of roosting observed at the Proposed Wind Farm during surveys.

Species	Overall breeding status	Overall wintering status
	Farm). Two territories in 2024 (400m and 600m from the Proposed Wind Farm.	
Woodcock	There were no observations during the breeding season.	No regularly used roosts identified. There was no evidence of roosting observed at the Proposed Wind Farm during surveys.
Buzzard	No breeding sites identified. There was no evidence of breeding observed during surveys.	No regularly used roosts identified. There was no evidence of roosting observed at the Proposed Wind Farm during surveys.
Sparrowhawk	**Confirmed breeding**. There was one territory identified in 2024, 3.5km from the Proposed Wind Farm	No regularly used roosts identified. There was no evidence of roosting observed at the Proposed Wind Farm during surveys.

Table 7-10 Target species recorded greater than 500m from the Proposed Wind Farm

Species	Observations
Merlin	There were three incidental observations of merlin between 5.5km and 7.8km from the Proposed Wind Farm. These observations were of individuals travelling or perched.
Peregrine	There was only one incidental observation of an individual travelling approximately 500m from the Proposed Wind Farm.
Red Grouse	There were two incidental observations of red grouse approximately 4.5km from the Proposed Wind Farm. Observations were of one to five birds flushed or calling.

A list of all bird species recorded during surveys is provided in Appendix 7-1. Appendix 7-3 presents results summary tables including:

- Summary of vantage point survey records
- Summary of breeding walkover survey records
- Summary of breeding raptor survey records
- Summary of winter walkover survey records
- Summary of hen harrier roost survey records
- Summary of non-target species recorded

Breeding territory polygons shown in respective maps in Confidential Appendix 7-5 are the estimated areas in which a suspected nest/roost site is located, e.g. a confirmed territory where a bird was seen visiting a nest site will have a small, targeted polygon whereas a probable territory where birds were seen displaying over suitable habitat will have a larger polygon for the estimated nest site location. Distances from the Proposed Wind Farm and proposed turbines given in sections below are taken from the outer edge of these polygons and therefore represent minimum distances.

7.3.9.1 Golden Plover

Golden plover were observed in the winter and passage seasons. Raw survey data and maps are provided in Appendix 7-4.

Incidental Observations

Golden plover were observed on four occasions as incidental observations (see Appendix 7-4, Figure 7-4-1). Observations were of between 1 and 90 birds travelling, circling or calling. There was only one observation within the Proposed Wind Farm, of 90 birds circling over bog and wet grassland. The remaining observations were between 500m and 2.5km from the Proposed Wind Farm.

7.3.9.2 Hen Harrier

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

Vantage Point Surveys

Hen harrier were observed on 19 occasions during the vantage point surveys, or on average once every 30 hours of vantage point surveys (see Appendix 7-4, Figure 7-4-2). Most observations were of one or two birds hunting or commuting throughout the breeding and winter seasons. There was one observation of a female attempting to skydance (displaying) and hunting within the Proposed Wind Farm in April 2023. Given this wasn't a full display, that this bird had no mate and that there were no subsequent breeding observations, it is assumed that this was a young bird practicing displaying, or prospecting for a mate, and there was no breeding territory in this location. In January 2024, there were two observations of birds going to roost in bog within the Proposed Wind Farm (approximately 780m from the nearest proposed turbine), two birds appeared to go to roost together in the same area (see Confidential Appendix 7-5, Figure 7-5-1). There were nine observations within, or partially within, 500m from the proposed turbines. There were only five observations at the potential collision height.

Breeding Raptor Survey

Hen harrier were observed on 122 occasions during the breeding walkover surveys (see Appendix 7-4, Figure 7-4-3). The majority of the observations were relating to breeding behaviour offsite, 12 of which were in 2023, and 56 observations were in 2024 (see Confidential Appendix 7-5, Figure 7-5-2). There were 54 observations not relating to breeding behaviour. These observations were of one or two birds travelling, hunting or soaring.

In 2023, there was one confirmed breeding territory identified approximately 5.5km from the Proposed Wind Farm. A pair fledged one chick from this area; however, an exact nest site was not located. Observations during surveys were of both adults circling the territory, showing agitated behaviour, provisioning, with observations of the fledged juvenile at the end of July within the territory.

In 2024, there were two confirmed breeding territories identified (800m and 5.8km from the Proposed Wind Farm). The confirmed breeding territory 5.8km from the Proposed Wind Farm was in the same area as the 2023 nest, and fledged four chicks in 2024. The majority of observations during 2024 were related to this nest, with observations of both adults displaying, provisioning, showing agitated behaviour, with observations of the fledglings from mid-July. The second territory was located approximately 800m from the Proposed Wind Farm. There were three observations at this territory, all on the same date in June 2024. A food pass was observed between a male and female bird at this location, confirming breeding. Additionally, there was an observation of a displaying bird approximately 1.5km east of this location, however given there were no further observations here and it was over mature forestry, it is assumed this was a pair displaying over the wider area surrounding this territory.

Winter Walkover Surveys

Hen harrier were observed on only one occasion during winter walkover surveys (see Appendix 7-4, Figure 7-4-4). Birds were observed on 3 of 8 survey dates. This observation was of an individual hunting within the Proposed Wind Farm.

Hen Harrier Roost Surveys

Hen harrier were observed on 18 occasions during the hen harrier roost surveys (see Appendix 7-4, Figure 7-4-5). The majority of observations were of individuals hunting or travelling. There were nine observations of hen harrier going to roost (see Confidential Appendix 7-5, Figure 7-5-3), four of which were of the same bird being disturbed from a roost multiple times in one evening. There were three roost locations which were only utilised on one occasion each, 180m, 220m and 3.5km from the Proposed

Wind Farm. One of these locations had an individual being disturbed (by hooded crows) when trying to roost on three occasions during the survey, with the bird subsequently flying into the Proposed Wind Farm and being lost from view. There was one roost site which was utilised on three occasions across the survey period (twice during the 2023/24 winter season and once during the 2024/25 winter season), this is the same location where two birds were observed going to roost during vantage point surveys, discussed above. This roost is located within bog/wet grassland habitat which is partially within the Proposed Wind Farm, 780m from the nearest proposed turbine and 470m from the nearest proposed infrastructure.

Incidental Observations

There was one incidental observation of hen harrier, on the 19/07/2023. This observation was of an individual travelling to the 2023 nest site (discussed above) with prey (see Confidential Appendix 7-5, Figure 7-5-4).

Hen harrier Summary

In Summary, there was one confirmed breeding territory identified in 2023 (5.5km from the Proposed Wind Farm) and two confirmed breeding territories identified in 2024 (800m and 5.8km from the Proposed Wind Farm). The 2023 nest fledged one chick, while the same nest location in 2024 fledged four chicks. The second breeding territory in 2024 had an unknown outcome, as the majority of observations were of food passes between the adults, likely when the female was incubating. There were no further observations to confirm if chicks fledged from this nest. These territories are presented in Confidential Appendix 7-5, Figure 7-5-5.

There were a total of four winter roost sites identified during surveys. There were three roost sites which were infrequently used (only used on one occasion each), 180m, 220m and 3.5km from the Proposed Wind Farm. The other roost site was utilised on four occasions during the survey period by up to two birds (twice during the 2023/24 winter season and twice during the 2024/25 winter season). This roost is partially within the Site and approximately 780m from the nearest proposed turbine. These roost sites are presented in Confidential Appendix 7-5, Figure 7-5-6.

7.3.9.3 Whooper Swan

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

Vantage Point Surveys

Whooper swan were observed on only one occasion during the vantage point surveys, or on average once every 288 hours of vantage point surveys during the winter season (see Appendix 7-4, Figure 7-4-6). This observation was of an individual commuting over the Proposed Wind Farm within the potential collision height, in December 2024.

7.3.9.4 Black-headed Gull

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

Vantage Point Surveys

Black-headed gull were observed on only four occasions during the vantage point surveys, or on average once every 144 hours of vantage point surveys (see Appendix 7-4, Figure 7-4-7). Observations were of between one and five birds commuting or foraging within wet grassland, 950m from the Proposed Wind Farm. Observations were during the breeding and autumn passage season (September). There were no observations within 500m of the proposed turbines and four observations within the potential collision height.

Incidental Observations

There was one incidental observation of black-headed gull (see Appendix 7-4, Figure 7-4-8). There was an individual commuting 1km from the Proposed Wind Farm in November 2023.

7.3.9.5 Curlew

Curlew were observed in the autumn passage season. Raw survey data and maps are provided in Appendix 7-4.

Vantage Point Surveys

Curlew were observed on only one occasion during the vantage point surveys, or on average once every 576 hours of vantage point surveys (see Appendix 7-4, Figure 7-4-9). This observation was of an individual foraging in a recently cut grass field within the Proposed Wind Farm, in August 2023.

7.3.9.6 Grey wagtail

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

Vantage Point Surveys

Grey wagtail were observed on only one occasion during the vantage point surveys. This observation was of an individual in December 2023.

Breeding Walkover Surveys

Grey wagtail were observed on only one occasion during breeding walkover surveys (see Appendix 7-4, Figure 7-4-10). This observation was of an individual foraging in a drain within the Proposed Wind Farm.

7.3.9.7 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 breeding activity are provided in Confidential Appendix 7-5.

Vantage Point Surveys

Kestrel were observed on 111 occasions during the vantage point surveys, or on average once every 5 hours of vantage point survey (see Appendix 7-4, Figure 7-4-11). Observations were of between one and three birds, with the majority of observations of birds commuting, hunting or perched. There were 61 observations within 500m of the proposed turbines. There were 90 observations within the potential collision height.

There was no evidence of breeding during surveys in 2023, however there were two observations of family groups in July, one of which was within the Proposed Wind Farm and the other was approximately 400m to the west of the Proposed Wind Farm. These observations indicate successful breeding in the wider area surrounding the site. In 2024, there were two observations of kestrel mobbing ravens adjacent to the Proposed Wind Farm, indicating breeding at this location. Later in the season, there were four observations of juveniles/family groups, all of which were within this same area, confirming successful breeding with at least one fledged chick. In March 2025, there was an observation of a kestrel chasing another kestrel, indicating probable breeding within the Proposed Wind Farm. Observations relating to breeding behaviour are provided in Confidential Appendix 7-5, Figure 7-5-7.

Breeding Walkover Surveys

Kestrel were observed on four occasions during breeding walkover surveys (see Appendix 7-4, Figure 7-4-12). There were observations on 2 of 17 survey dates. There were three observations of individuals hunting, one of which was partially within the Proposed Wind Farm. There was one observation of a bird carrying prey in 2023, confirming breeding near this location, adjacent to the Proposed Wind Farm (see Confidential Appendix 7-5, Figure 7-5-8).

Breeding Raptor Surveys

Kestrel were observed on 37 occasions during the breeding raptor surveys (see Appendix 7-4, Figure 7-4-13). There were observations at all four survey locations. The highest frequency of observations was on 27 occasions (BR2) and lowest frequency was only two observations (BR1 and BR4). There were no observations within the Proposed Wind Farm. The majority of observations were of individuals travelling or hunting. There was no evidence of breeding observed in 2023. In 2024, there were two confirmed (carrying prey/presence of chicks) and one probable breeding territories (adults mobbing other birds) identified, 900m, 5km and 3.2km respectively. Additionally, there were observations of fledged young foraging with adults in the wider areas surrounding these territories later in the breeding season. Observations relating to breeding behaviour are provided in Confidential Appendix 7-5, Figure 7-5-9.

Winter Walkover Surveys

There were four observations of kestrel during the winter walkover surveys (see Appendix 7-4, Figure 7-4-14). There were observations on four of the eight survey dates. All observations were of individuals hunting or travelling. There were two observations within, or partially within, the Proposed Wind Farm.

Incidental Observations

There were 19 incidental observations of kestrel during the survey period (see Appendix 7-4, Figure 7-4-15). The majority of observations were of one or two birds travelling or hunting. There were six observations within, or partially within, the Proposed Wind Farm.

Kestrel Breeding Summary

In summary, there was one confirmed breeding territory identified in 2023 (150m from the Proposed Wind Farm). In 2024, there were three confirmed breeding territories (20m, 900m and 5km from the Proposed Wind Farm) and one probable breeding territory (3.2km from the Proposed Wind Farm) identified. In 2025, there was a probably breeding territory identified within the Proposed Wind Farm. These territories are presented in Confidential Appendix 7-5, Figure 7-5-10.

7.3.9.8 Meadow Pipit

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

Vantage Point Surveys

Meadow pipit were observed on 85 occasions during the vantage point surveys, or on average once every 6.8 hours of vantage point survey (see Appendix 7-4, Figure 7-4-16). Observations were of between 1 and 48 birds. The majority of observations were of birds travelling, flitting or foraging. There were seven observations within 500m of the proposed turbines. There were 17 observations of up to 8 birds displaying, indicating probable breeding within the bog and farmland habitats on, and adjacent to, the Proposed Wind Farm during the 2023, 2024 and 2025 breeding seasons.

Breeding Walkover Surveys

Meadow pipit were observed on 68 occasions during breeding walkover surveys (see Appendix 7-4, Figure 7-4-17). The majority of observations (45) were relating to breeding behaviour, with up to 10 birds observed displaying, on nests, mobbing other birds or singing. The remaining observations were of up to eight birds travelling, calling, perched or foraging. There were 21 observations within the Proposed Wind Farm.

Winter Walkover Surveys

There were 31 observations of meadow pipit during the winter walkover surveys (see Appendix 7-4, Figure 7-4-18). There were observations on all eight survey dates. Observations ranged from 1 to 25 birds travelling, foraging or displaying. There were seven observations of birds displaying in February and March 2024 and March 2025, indicating probable breeding. There were 17 observations within the Proposed Wind Farm.

Incidental Observations

There were nine incidental observations of meadow pipit during surveys (see Appendix 7-4, Figure 7-4-19). Observations ranged from 1 to 33 birds travelling, calling, perched or displaying. Of the observations that were mapped, only one was within the Proposed Wind Farm.

Breeding Summary

Meadow pipit are resident at the Proposed Wind Farm and are breeding throughout the suitable habitat within the site. The majority of breeding territories are within the bog habitats around the margins and adjacent to the Proposed Wind Farm. It is difficult to estimate the number of breeding pairs in each breeding season given the nature of the species; however, it is likely that the number of breeding pairs in the area is greater than 15 in each breeding season.

7.3.9.9 Redwing

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

Vantage Point Surveys

Redwing were observed on six occasions during the vantage point surveys, or on average once every 48 hours of vantage point survey[3] (see Appendix 7-4, Figure 7-4-20). Observations were of between one and six birds travelling or foraging. There was only one observation within 500m of the proposed turbines.

7.3.9.10 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 territories are provided in Confidential Appendix 7-5.

Vantage Point Surveys

Snipe were observed on 15 occasions during the vantage point surveys, or on average once every 38 hours of vantage point survey (see Appendix 7-4, Figure 7-4-21). Observations were of between 1 and 3 birds and were throughout the breeding and winter seasons surveyed. The majority of observations were of birds travelling or foraging. There was one observation relating to breeding behaviour, a snipe was observed chipping within the Proposed Wind Farm, indicating probable breeding (see Confidential

[3] *For months when this species was present (i.e. October to March).*

Appendix 7-5, Figure 7-5-11). There were three observations within 500m of the proposed turbines and four observations within the potential collision height.

Breeding Walkover Surveys

Snipe were observed on five occasions during breeding walkover surveys (see Appendix 7-4, Figure 7-4-22). There were observations on 3 of the 17 survey dates. There were four observations of individuals flushed by the surveyor, three of which were within the Proposed Wind Farm. There was an observation of an individual chipping approximately 600m from the Proposed Wind Farm in 2024, indicating probable breeding (see Confidential Appendix 7-5, Figure 7-5-12).

Winter Walkover Surveys

There were 14 observations of snipe during the winter walkover surveys (see Appendix 7-4, Figure 7-4-23). There were observations on six of the eight survey dates. Observations were of one to five birds flushed by the observer. There was one observation of a bird drumming in March 2024, 400m from the Proposed Wind Farm, indicating probable breeding at this location (see Confidential Appendix 7-5, Figure 7-5-13). There were six observations within the Proposed Wind Farm.

Incidental Observations

There were 11 incidental observations of snipe during the survey period (see Appendix 7-4, Figure 7-4-24). Observations were of between one and five birds. The majority of observations were of birds commuting or calling. There were only two observations within the Proposed Wind Farm. There was one observation of a bird chipping 4.3km from the Proposed Wind Farm, indicating probable breeding at this location (see Confidential Appendix 7-5, Figure 7-5-14).

Breeding Summary

In summary, there were two probable breeding territories identified in 2023 (within the Proposed Wind Farm [245m from the nearest proposed infrastructure] and 4.3km from the Proposed Wind Farm). In 2024, there were two probable breeding territories (400m and 600m from the Proposed Wind Farm). These territories are presented in Confidential Appendix 7-5, Figure 7-5-15.

7.3.9.11 Woodcock

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

Vantage Point Surveys

There was one observation of a woodcock during vantage point surveys (see Appendix 7-4, Figure 7-4-25). This observation was of an individual travelling in January 2024 approximately 400m from the nearest proposed turbine.

Incidental Observations

There were three incidental observations of woodcock during the survey period (see Appendix 7-4, Figure 7-4-26). Observations were of one or two birds travelling or roosting along the edge of a forestry track. There were two observations within the Proposed Wind Farm.

7.3.9.12 Buzzard

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

Vantage Point Surveys

Buzzard were observed on 14 occasions during the vantage point surveys, or on average once every 41 hours of vantage point survey (see Appendix 7-4, Figure 7-4-27). Observations were of one or two birds, with the majority of observations of birds commuting or soaring. There were 10 observations within 500m of the proposed turbines and 12 observations within the potential collision height. There was no evidence of breeding during these surveys.

7.3.9.13 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 breeding territories are provided in Confidential Appendix 7-5.

Vantage Point Surveys

Sparrowhawk were observed on six occasions during the vantage point surveys, or on average once every 96 hours of vantage point survey (see Appendix 7-4, Figure 7-4-28). Observations were of individuals travelling or hunting. There was one observation within 500m of the proposed turbines and two observations within the potential collision height.

Breeding Walkover Surveys

Sparrowhawk were observed on only one occasion during breeding walkover surveys. An individual was observed being mobbed by meadow pipits.

Breeding Raptor Surveys

Sparrowhawk were observed on only one occasion during breeding raptor surveys (see Appendix 7-4, Figure 7-4-29). An individual was observed hunting 3.7km from the Proposed Wind Farm.

Incidental Observations

There were three incidental observations of sparrowhawk during the survey period (see Appendix 7-4, Figure 7-4-30). There were two observations of individual hunting or travelling, 400m and 1.1km from the Proposed Wind Farm. Additionally, there was an observation of an adult with two chicks begging within woodland adjacent to Doo Lough, approximately 3.5km from the Proposed Wind Farm (see Confidential Appendix 7-5, Figure 7-5-16. This observation confirms breeding at this location.

Breeding Summary

There was one confirmed territory identified in 2024, approximately 3.5km from the Proposed Wind Farm.

7.4 Receptor Evaluation

7.4.1 Determination of Population Importance

A determination of population importance for birds within the Study Areas is provided below, following the criteria described in Section 7.2.5. Estimates of national population sizes were obtained from the most recent species-specific national survey 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 County Clare[6], 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 County Importance is a regularly occurring population that exceeds 1% of the 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 Golden Plover

Golden Plover were recorded within the Proposed Wind Farm on only four occasions over the two years of surveying. The Proposed Wind Farm is of **No Ecological Importance** to this species given how infrequently the Proposed Wind Farm is utilised by this species.

7.4.1.2 Hen Harrier

Based on the latest Breeding Hen Harrier Survey (Ruddock *et al.*, 2024), the Republic of Ireland national breeding population is in the range of 85 – 106 pairs. Therefore, a single breeding pair in Ireland conforms to National Importance as per NRA criteria. The estimated national wintering population of hen harrier in Ireland is 311-435 therefore 1% of the Republic of Ireland national wintering population is 3-4 birds. A regularly occurring wintering population of 3-4 hen harrier is required for classification as Nationally/Internationally Importance. The Proposed Wind Farm is located in an upland range that was identified as a regional stronghold for hen harrier (Ruddock *et al.*, 2016).

This species was recorded regularly during the breeding season, with confirmed nests located in 2023 and 2024 in the wider area surrounding the site. Additionally, Hen harrier were observed regularly throughout all winter seasons surveyed. There were hen harrier roosts identified during surveys at the Proposed Wind Farm, with one roost being regularly used within the site, approximately 780m from the nearest proposed turbine.

The Proposed Wind Farm is of **National Importance** to this species throughout the year, given that the species were regularly observed at the Proposed Wind Farm.

7.4.1.3 Whooper Swan

Wintering

Whooper swan were recorded within the Proposed Wind Farm on only one occasion over the two years of surveying. The Proposed Wind Farm is of **No Ecological Importance** to this species given how infrequently the Proposed Wind Farm is utilised by this species.

Breeding

This species does not ordinarily breed in Ireland; therefore, the Proposed Wind Farm is of **No Ecological Importance** for breeding to this species.

7.4.1.4 Black-headed Gull

Black-headed gull were recorded within the Proposed Wind Farm on only four occasions over the two years of surveying. The Proposed Wind Farm is of **No Ecological Importance** to this species given how infrequently the Proposed Wind Farm is utilised by this species.

[6] *Please note that these figures are estimates based on the best available information but should be interpreted with a degree of caution.*

7.4.1.5 Curlew

Curlew were recorded within the Proposed Wind Farm on only one occasion over the two years of surveying. The Proposed Wind Farm is of **No Ecological Importance** to this species given how infrequently the Proposed Wind Farm is utilised by this species.

7.4.1.6 Kestrel

As reported (2013-2018) under Article 12 of the Birds Directive (Directive 2009/147/EC), the national breeding population estimate of kestrel in the Republic of Ireland is 13,500 birds. Using these latest figures, 1% of the National population of kestrel is 135 birds. Therefore, as per NRA 2009, a regularly occurring population of 135 birds is required for classification as Nationally Important.

The Proposed Wind Farm is located in County Clare and there are no published figures for the county population of kestrel. Using the distribution of kestrel across Ireland from the breeding bird atlas[7] (2007-2011) the Clare population of kestrel is estimated to be 664 birds. Therefore, a regularly occurring population of 6 birds is required for classification of County Importance.

There is a resident population of kestrel at the Proposed Wind Farm, with up to four territories identified within the Study Areas. The population recorded across the seasons was assigned **County Importance** on the basis of a resident/regularly occurring population assessed to be important at the county level.

7.4.1.7 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. Using these latest figures, 1% of the National population of snipe is 43 pairs. Therefore, as per NRA 2009, a regularly occurring population of 43 pairs is required for classification as Nationally Important.

The Proposed Wind Farm is in County Clare and there are no published figures for the county population of snipe. Using the distribution of snipe across Ireland from the breeding bird atlas[8] (2007-2011) the Clare population of snipe is estimated to be 200 pairs. Therefore, a regularly occurring population of 2 pairs is required for classification of County Importance.

There were two breeding territories of snipe identified within the Study Areas during the breeding seasons surveyed at the Proposed Wind Farm. Therefore, the population at the Proposed Wind Farm have been assigned **County Importance** on the basis of a regularly occurring resident population assessed to be important to the county level.

7.4.1.8 Woodcock

Woodcock is a BoCCI Red Listed species for the breeding season only in Ireland. Woodcock were not observed during the breeding season, and no evidence of breeding was observed despite undertaking breeding woodcock surveys during the 2023 and 2024 breeding seasons. All observations were during the winter season, when the Irish population is bolstered by migrants from Eastern Europe and Russia. The Proposed Wind Farm is considered to be of **No Ecological Importance** to the resident Irish population of woodcock.

[7] *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.*
[8] *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.*

7.4.1.9 Buzzard

Buzzard is not listed on Annex I of the Birds Directive. The species is Green listed in Ireland (BoCCI). The population recorded across the seasons was assigned **Local Importance (Higher Value)** on the basis of a resident/regularly occurring population assessed to be important at the local level.

7.4.1.10 Sparrowhawk

Sparrowhawk is not listed on Annex I of the Birds Directive. The species is Green listed in Ireland (BoCCI). The population recorded across the seasons was assigned **Local Importance (Higher Value)** on the basis of a resident/regularly occurring population assessed to be important at the local level.

7.4.1.11 Passerines (Red Listed)

Grey wagtail, meadow pipit and redwing are BoCCI Red Listed species in Ireland. Populations recorded at the Proposed Wind Farm were deemed to be of no greater than **Local Importance (Lower Value).**

7.4.2 Identification of Key Ornithological Receptors

Table 7-10 outlines the rationale for including or excluding each target species recorded during field surveys as a KOR. The conservation 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 7-10 Receptor evaluation and selection criteria rationale

Species	Conservation Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
Golden Plover	Annex I, EU Birds Directive; BoCCI Red List & Irish Wildlife Act.	No population of ecological significance recorded	This species was rarely observed within the Proposed Wind Farm during the survey period. There is no evidence to suggest that the Proposed Wind Farm is of significance to this species. Please refer to Section 7.4.1.1 for further detailed discussion. **No pathways for significant effects were identified.**	No
Hen Harrier	Annex I, EU Birds Directive; BoCCI Amber List & Irish Wildlife Act.	National Importance	This species was regularly recorded utilising habitats within the Proposed Wind Farm and within 500m of same. The potential for habitat loss cannot be excluded. **An assessment of direct habitat loss is required.** Birds were regularly recorded within the Proposed Wind Farm, **the potential for displacement exists.** This species was recorded flying over the Proposed Wind Farm 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 for hen harrier (see Section 7.5.2.1).	Yes
Whooper Swan	Annex I, EU Birds Directive; BoCCI Amber List & Irish Wildlife Act	No population of ecological significance recorded	This species was rarely observed within the Proposed Wind Farm during the survey period. There is no evidence to suggest that the Proposed Wind Farm is of significance to this species. Please refer to Section 7.4.1.3 for further detailed discussion. **No pathways for significant effects were identified.**	No
Black-headed Gull	SCI of River Shannon and River Fergus Estuaries SPA;	No population of ecological significance recorded	This species was rarely observed within the Proposed Wind Farm during the survey period. There is no evidence to suggest that the Proposed Wind Farm is of significance to this species. Please refer to Section 7.4.1.4 for further detailed discussion. **No pathways for significant effects were identified.**	No

Species	Conservation Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
	BoCCI Amber List & Irish Wildlife Act			
Curlew	BoCCI Red List & Irish Wildlife Act.	No population of ecological significance recorded	This species was rarely observed within the Proposed Wind Farm during the survey period. There is no evidence to suggest that the Proposed Wind Farm is of significance to this species. Please refer to Section 7.4.1.5 for further detailed discussion. **No pathways for significant effects were identified.**	No
Kestrel	BoCCI Red Listed & Irish Wildlife Act.	County Importance	This species was regularly recorded utilising habitats within the Proposed Wind Farm and within 500m of same during the survey period. The potential for habitat loss cannot be excluded. **An assessment of direct habitat loss is required.** Birds were regularly recorded within the Proposed Wind Farm. Taking a precautionary approach, **the potential for displacement exists.** This species was recorded flying over the Proposed Wind Farm 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 for kestrel (see Section 7.5.2.2).	Yes
Snipe	BoCCI Red List & Irish Wildlife Act.	County Importance	This species was regularly recorded utilising habitats within the Proposed Wind Farm and within 500m of same during the survey period. The potential for habitat loss cannot be excluded. **An assessment of direct habitat loss is required.** Birds were regularly recorded within the Proposed Wind Farm. Taking a precautionary approach, **the potential for displacement exists.** This species was recorded flying over the Proposed Wind Farm 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 for snipe (see Section 7.5.2.3).	Yes

Species	Conservation Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
Woodcock	BoCCI Red Listed (Breeding Populations)	No population of ecological significance recorded	This species was rarely observed within the Proposed Wind Farm during the survey period. There is no evidence to suggest that the Proposed Wind Farm is of significance to this species. Please refer to Section 7.4.1.8 for further detailed discussion. **No pathways for significant effects were identified.**	No
Buzzard	BoCCI Green List & Irish Wildlife Act.	Local Importance (Higher Value)	This species was regularly recorded utilising habitats within the Proposed Wind Farm and within 500m of same during the survey period. The potential for habitat loss cannot be excluded. **An assessment of direct habitat loss is required.** Birds were regularly recorded within the Proposed Wind Farm. Taking a precautionary approach, **the potential for displacement exists.** This species was recorded flying over the Proposed Wind Farm 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 for buzzard (see Section 7.5.2.4).	Yes
Sparrowhawk	BoCCI Amber List & Irish Wildlife Act.	Local Importance (Higher Value)	This species was regularly recorded utilising habitats within the Proposed Wind Farm and within 500m of same during the survey period. The potential for habitat loss cannot be excluded. **An assessment of direct habitat loss is required.** Birds were regularly recorded within the Proposed Wind Farm. Taking a precautionary approach, **the potential for displacement exists.** This species was recorded flying over the Proposed Wind Farm 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 for sparrowhawk (see Section 7.5.2.5).	Yes
Passerines (Red Listed)	BoCCI Red List & Irish Wildlife Act	Local Importance (Lower Value)	Grey wagtail, meadow pipit and redwing were recorded during surveys at the Proposed Wind Farm and its hinterland. However, as per NatureScot guidance (SNH, 2017), it is generally considered that passerine bird species are not significantly impacted by wind farms due to their ecology and large populations. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to	No

Species	Conservation Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
			suggest that the Proposed Wind Farm will have a significant effect on these species. **No pathways for significant effects were identified.**	

7.4.3 Sensitivity Determination

Criteria developed by Percival (2003) for assessing bird sensitivity within the Proposed Wind Farm is presented in Table 7-3 (Section 7.2.5). The sensitivity of the KORs, as per Percival (2003), are listed below, including the rationale (conservation status and/or susceptibility to impacts from this type of development) for their respective sensitivity classification.

High Sensitivity KORs are:

- Hen Harrier (Ecologically sensitive species)

Medium Sensitivity KORs are:

- Kestrel (BoCCI Red Listed)
- Snipe (BoCCI Red Listed)

Low Sensitivity KORs are:

- Buzzard
- Sparrowhawk

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' effect
- Assessment of impacts in relation to KORs during construction and operation
- Assessment of impacts in relation to KORs during decommissioning
- Assessment of impacts associated with the Proposed Grid Connection and the turbine delivery route
- Assessment of impacts on designated areas

7.5.1 Do-Nothing Scenario

The land that forms the Proposed Project site is dominated by commercial forestry plantations at various stages in the rotational cycle.

If the Proposed Project were not to proceed, the Site will continue to function as it does as present, with no change made to the current land-use and the potential for impacts on population and human health through the construction, operational and decommissioning phases of the Proposed Project would not occur. Commercial conifer planting and clear-felling will continue to occur at it's current scale and areas of the Site not subject to human activities and works will revegetate. No habitats will be effected within the Site as a result of any proposed infrastructure, however, over 120 hectares of land proposed for enhancement for the benefit of hen harrier and species with similar ecological requirements will remain in its current condition (i.e. unproductive commercial conifer plantations and high intensity grazed agricultural fields). Whilst areas within the Site where foraging hen harrier have been recorded will remain undisturbed, the enhancement of larger areas of suitable breeding and foraging habitat for hen harrier which are known to breed and forage in the adjacent lands will be lost.

If the Proposed Project were not to proceed, the opportunity to capture a greater part of County Clare's valuable renewable energy resource would be lost, as would the opportunity to contribute to meeting the Government and EU targets for the production and consumption of renewable energy by 2030, as well as the reduction in greenhouse gas emissions. Furthermore, the opportunity to create local employment and investment as well as to diversify the local economy will be lost.

In the specific case of forestry within the Proposed Wind Farm, its value and suitability for local avian receptors will vary with the management of the forestry. Forestry plantations in their initial years prior to canopy closure have the potential to support certain species (e.g., hen harrier), and as the forestry matures it is utilised by other species that favour (closed canopy) woodland conditions. Therefore, as forestry matures/ is felled there is potential for ongoing loss/creation of supporting habitat.

7.5.2 Likely Effects during Construction and Operation

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

7.5.2.1 Hen Harrier (all seasons)

Context: The declining hen harrier population in Ireland favours open habitats such as wet grassland and peatland with heather. The factors implicated in this decline include human-related habitat modification and loss. Such habitat modification includes afforestation, agricultural intensification (High Importance) and the proliferation of turbines (Medium Importance) in the upland regions inhabited by breeding hen harrier, as outlined in Article 12 Reporting 2013-2018 (EU, 2022) and reiterated in the Hen Harrier Threat Response. The Proposed Project is located within a regionally important but non-designated area for hen harrier, where the population is declining (by 22% since the 2015 national survey). The national threats/pressures of afforestation, agricultural intensification and the proliferation of turbines are also evident in these uplands.

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	There were breeding and roosting sites identified within the Study Area during surveys between April 2023 and March 2025, however, they do not overlap with the development infrastructure. In Summary, there was one confirmed breeding territory identified in 2023 (5.5km from the Proposed Wind Farm site boundary) and two confirmed breeding territories identified in 2024 (800m and 5.8km from the Proposed Wind Farm site boundary). There was one regularly used roost site within the Site and approximately 780m from the nearest proposed turbine. There were three roost sites which were infrequently used (only used on one occasion each), 180m, 220m and 3.5km from the Proposed Wind Farm. The Proposed Wind Farm is predominantly a large conifer plantation, with areas of upland blanket bog and wet grassland around its margins. The area surrounding the Proposed Wind Farm is predominately bog and wet grassland habitats. This mosaic of habitats includes suitable breeding, roosting and foraging habitat.	The magnitude of the effect is assessed as ***Low***. The cross tabulation of *High* sensitivity species and *Low* impact corresponds to a ***Low*** effect significance	Likely long-term slight negative effect, which is **Not Significant**

	### Nesting Habitat There was one confirmed breeding territory identified in 2023 (5.5km from the Proposed Wind Farm site boundary) and two confirmed breeding territories identified in 2024 (800m and 5.8km from the Proposed Wind Farm site boundary). Please see Section 7.3.7.2 for further details and Confidential Appendix 7-5, Figure 7.5.5 for location details. As the development footprint does not overlap with the confirmed breeding locations no significant physical loss of nesting habitat is predicted. ### Roosting Habitat Three roost sites were identified within the bog habitats to the east and west of the Proposed Wind Farm, one of which was regularly used by up to two individuals. Additionally, there was one infrequently used roost located 3.5km from the Proposed Wind Farm. The regularly used roost site is located 780m from the nearest proposed turbine and 380m from the nearest proposed infrastructure (the substation). As the development footprint does not overlap with the roosting locations, no significant physical loss of roosting habitat is predicted. ### Foraging Habitat Hen harrier were recorded regularly commuting over the Proposed Wind Farm and occasionally hunting within the Proposed Wind Farm. The majority of foraging flights were within the open habitats within the Proposed Wind Farm, and to the north of the Proposed Wind Farm. Only a small percentage of flights observed were within the forestry that comprises the majority of the Proposed Wind Farm.		

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
	The amount of open habitat (e.g., peatland/wet grassland) that will be lost to the development footprint will be insignificant, relative to the availability of this habitat in the wider surroundings. Hen harrier also foraged in young or pre-thicket forestry however the loss of this habitat to the development footprint is not predicted to be significant given the overall land lost to the development footprint is small (i.e., 15.97ha/4.3%) relative to the total area within the Proposed Wind Farm and abundance of forestry in the wider surroundings. In summary, no significant (direct or physical) habitat loss effects are predicted to breeding, roosting or foraging hen harrier.		
Disturbance	As previously discussed, confirmed hen harrier breeding and roosting sites were recorded within the Study Area. Foraging or commuting hen harrier were frequently recorded within, and adjacent to, the Proposed Wind Farm. The literature identifies the potential for disturbance impacts (associated with construction works) to occur between 500m and 1000m (Ruddock and Whitfield (2007), Fernández-Bellon *et al.* (2017) and Wilson *et al.* (2016)). Such disturbance is dependent on factors including topography and lines of sight. The nearest nest site to the Proposed Wind Farm is located 870m from the nearest proposed infrastructure. Furthermore, there is mature forestry between the nest site and the Proposed Wind Farm, which limits lines of sight. Significant disturbance to nesting hen harrier is not anticipated. Given the separation distance of the other nest sites identified (5.5km and 5.8km from the Proposed Wind Farm), significant disturbance to nesting hen harrier is not anticipated. The majority of identified hen harrier roosts were infrequently used, and therefore significant impacts are not anticipated given that hen harrier do not rely on these areas. However, there was one frequently used roost site located 780m from the nearest proposed turbine and 380m from the nearest proposed infrastructure (the substation). The roost site is partially screened from any construction activity by mature forestry. The short-term disturbance of construction is unlikely to cause significant disturbance to roosting hen harrier.	Key (Nesting and Roosting) Habitats The magnitude of the effect is assessed as ***Low***. The cross tabulation of *High* sensitivity species and *Low* impact corresponds to a ***Low*** effect significance Foraging Habitats The magnitude of the effect is assessed as ***Medium*** *for foraging hen harrier*. The cross tabulation of *High* sensitivity species and *Medium*	Key (Nesting and Roosting) Habitats Likely short-term slight negative effect, which is **Not Significant** Foraging Habitats Likely short-term **Significant** negative effect

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
	Furthermore, the majority of construction activity is likely to be during daylight hours when hen harrier are not roosting. Owing to the short-term nature of construction and the obscuring mature forestry which will be present during the construction phase, no significant disturbance impacts on roost sites are predicted. Without mitigation, there is the potential for significant but short-term disturbance of foraging hen harrier during the construction phase. In summary, before mitigation significant disturbance effects are predicted for foraging hen harrier within the Proposed Wind Farm. Please see Section 7.7 for a detailed mitigation strategy.	impact corresponds to a ***High*** effect significance	
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated.	**No Effect**	**No Effect**
Displacement and Barrier Effect	As previously discussed, confirmed hen harrier breeding, roosting sites and foraging were recorded within the Study Area. Impacts on these activities were considered for the operational phase. Key (nesting and roosting) habitat: As outlined in Section 7.3.7.2, there were up to two breeding territories and one frequently used roost site for hen harrier identified within the Study Area. Of these, the closest breeding territory was 870m from the nearest proposed turbine and the frequently used roost site was 780m from the nearest proposed turbine. Ruddock and Whitfield (2007) noted disturbance displacement to a distance of 500m-750m for hen harrier breeding and resting locations. The key habitats identified (breeding and roosting sites) are greater than 750m from the nearest proposed turbines. Due to the separation distance of greater than 750m from key habitats identified to the nearest turbines no significant impacts are predicted for potentially breeding or roosting birds in these key habitats. Loss of foraging habitat:	Key (Nesting and Roosting) Habitats The magnitude of the effect is assessed as ***Low***. The cross tabulation of *High* sensitivity species and *Low* impact corresponds to a ***Low*** effect significance Foraging Habitats The magnitude of the effect is assessed as ***Medium*** *for foraging hen harrier*.	Key (Nesting and Roosting) Habitats Likely long-term slight negative effect, which is **Not Significant** Foraging Habitats Likely long-term **Significant** negative effect

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
	The presence of the proposed turbines is likely to reduce the frequency of foraging (onsite). Research has identified a reduction of 52.5% activity within 500m of operating wind turbines and significant avoidance within 250m (Pearce-Higgins *et al.*, 2009). To determine the likely significance of this displacement effect, a two-step process was undertaken. Firstly, the amount of habitat loss was calculated, this was then (secondly) considered relative to the availability of foraging habitat locally to quantify the magnitude of the effect. Please see Appendix 7-8 for a detailed discussion of the calculation rationale. Step 1: To calculate the amount of foraging habitat that would be lost through avoidance it was assumed that there would be one hundred percent avoidance to within 250m of turbines by foraging hen harrier[9]. The sum of the predicted loss of suitable[10] foraging habitat (for all eight turbines) is predicted to total 62ha. Step 2: To calculate the amount of available habitat locally, an assessment was undertaken of all suitable habitat within the core foraging range (2km) of the nearest confirmed nest. Hen harrier spend the majority of their time foraging within 2km (Irwin *et al.,* 2012) of their nest. There is 755ha of open habitat within 2km of the nest location and a further 782ha of forestry/woodland habitat, presuming this forestry is suitable for 10 years after planting (depending on growth rate)(Wilson *et al.,* 2012), there is on average 156ha of forestry available to hen harrier in any given year; i.e., 911ha total area available to hen harrier in any given year. Given that there is 911ha of available foraging habitat for hen harrier within their core foraging range, the loss of 62ha represents, approximately, a 6.8% reduction in the amount of available foraging habitat for this pair. The magnitude of this	The cross tabulation of *High* sensitivity species and *Medium* impact corresponds to a ***High*** effect significance	

[9] *Pearce-Higgins et al., (2009) noted significant avoidance of turbines to 250m. Figure 1 shows that the reductions in hen harrier density mainly occur within 250m of a turbine. The statistical model from this paper assumes a linear relationship between bird density and distance from a turbine in 500m distance bands. This means that if the avoidance effect extends for less than 500m the model is likely to overpredict the displacement effect at 500m. There is therefore a sound scientific basis for using a 250m buffer rather than 500m for estimating the hen harrier displacement effect.*

[10] *Suitable habitat was defined as all open habitats likely to contain passerines (e.g., wet grassland and peatland) and forestry in its pre-thicket phase. Under normal forestry management, forestry is available for foraging hen harrier approximately 20% of the lifetime.*

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
	effect is likely to give rise to significant effects for foraging hen harrier without intervention. In summary No significant effects are predicted for nesting or roosting hen harrier. Owing to the importance of the onsite population and magnitude of the effect (a 6.8% loss of habitat) significant displacement effects on foraging hen harrier are predicted without intervention. Accordingly, a comprehensive enhancement strategy is proposed, please see Section 7.7 for details.		
Collision Risk	The species was recorded flying within the potential collision risk zone during vantage point surveys. A non-directional collision risk analysis has been undertaken and full details are provided in Appendix 7-6. The collision risk has been calculated at a rate of 0.002 collisions per year, or one bird every 500 years. A literature review similarly identified that collisions are likely to be rare events for this species. Mortality of harriers may be disproportionately lower than other raptors (Drewitt and Langston, 2008). This is likely due to hen harrier's characteristic low altitude flight[11], particularly when foraging (Madders, 2000; Whitfield and Madders, 2006; Band *et al.*, 2007). This low altitude flight limits the potential for a collision to occur. The WindHarrier research project[12] carried out by University College Cork (UCC) between 2012 and 2014, found the risk of collisions for hen harrier to be low. The predicted collision risk is insignificant over the 35-year lifetime of the Proposed Wind Farm. The enhancement plan is likely to further reduce the collision risk for hen harrier as birds will be attracted away from the site, to lower risk areas.	The magnitude of the effect is assessed as ***Negligible***. The cross tabulation of *High* sensitivity species and *Negligible* impact corresponds to a ***Very Low*** effect significance	Unlikely long-term imperceptible negative effect, which is **Not Significant**

[11] *The only exception to this is early in the breeding season, when display flights can overlap with the turbine rotor swept height.*
[12] *Wilson et al. (2015)*

7.5.2.2 Kestrel (all seasons)

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	This species was frequently recorded within the Proposed Wind Farm during the breeding and winter seasons surveyed. There was a probable breeding territory within the Proposed Wind Farm identified at the start of the 2025 breeding season (March), which overlaps with the proposed infrastructure and is approximately 160m from the nearest proposed turbine. Additionally, there were confirmed breeding territories adjacent to the Proposed Wind Farm in 2023 and 2024, 560m and 570m from the nearest proposed infrastructure respectively. Kestrel were regularly observed hunting within the Proposed Wind Farm, however, the land lost to the permanent footprint is small (i.e., 15.97ha/4.3%) relative to the total area within the Proposed Wind Farm. Direct (physical) loss of foraging habitat will be minimal. Furthermore, the suitable foraging habitats on-site (bogland and agricultural grassland) are not unique to the Proposed Wind Farm and similar habitat is not rare locally. Substantial areas of undisturbed suitable breeding and foraging habitat will remain post construction. Significant effects are not anticipated.	The magnitude of the effect is assessed as ***Low***. The cross tabulation of *Medium* sensitivity species and *Low* impact corresponds to a ***Low*** effect significance	Likely long-term slight negative effect, which is **Not Significant**
Disturbance	The construction of the Proposed Project has the potential to give rise to disturbance impacts; however, significant impacts are not predicted based on the following rationale. While this species was frequently recorded within the Proposed Wind Farm during the breeding and winter seasons, the Proposed Wind Farm does not contain habitats that are unique to the local area. Therefore, were disturbance to occur it would not result in the loss of a scarce resource for the local kestrel population. 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 Proposed Wind Farm.	The magnitude of the effect is assessed as ***Low***. The cross tabulation of *Medium* sensitivity species and *Low* impact corresponds to a ***Low*** effect significance	Likely short-term slight negative effect, which is **Not Significant**

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
	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.	**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 similar suitable foraging habitat exist and will remain in the wider area (e.g., bog and grassland habitats). Onsite habitats are not considered unique to the Proposed Wind Farm. Significant displacement effects are not predicted.	The magnitude of the effect is assessed as ***Low***. The cross tabulation of *Medium* sensitivity species and *Low* impact corresponds to a ***Low*** effect significance	Likely long-term slight negative effect, which is **Not Significant**
Collision Risk	The species was recorded flying within PCH during vantage point surveys. A non-directional collision risk analysis has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated at a rate of 2.1 collisions per year. Annual mortality of adult Kestrel has been calculated at 35% per annum (Orta *et al.,* 2020). If 2.1 collisions were to occur per year, it would mean that the losses at the Proposed Wind Farm would increase the annual mortality of the county population[13] (c. 664) by 0.9%. The predicted collision risk is negligible. No significant effects are anticipated.	The magnitude of the effect is assessed as ***Negligible***. The cross tabulation of *Medium* sensitivity species and *Negligible* impact corresponds to a ***Very Low*** effect significance	Likely long-term slight negative effect, which is **Not Significant**

[13] *The county population was considered a suitable reference population for assessment, based on the following rationale. This is a widespread species (as per the Bird Atlas 2009-11) that utilises a widespread habitat type (agricultural grassland), it is, therefore, reasonable to conclude that there is an exchange of individuals in suitable habitat within the county.*

7.5.2.3 Snipe (all seasons)

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	Snipe were regularly recorded during surveys, with breeding territories within and adjacent to the Proposed Wind Farm, between 245m and 950m from the nearest proposed infrastructure. The majority of the Proposed Wind Farm is of low ecological value to this species (i.e. commercial forestry). The (physical) loss of breeding and foraging habitat will be minimal as the infrastructure is confined to a narrow corridor within the Proposed Wind Farm (i.e., 15.97ha/4.3% of the Proposed Wind Farm site). Significant areas of suitable nesting and foraging habitat will continue to remain post construction (as there is limited infrastructure located within bog habitats onsite) and there is an abundance of suitable habitat in the surrounding area, including abundant wet grassland and upland bog habitats at Cragnashingaun and Doolough. Significant habitat loss effects are not predicted.	The magnitude of the effect is assessed as ***Low***. The cross tabulation of *Medium* sensitivity species and *Low* impact corresponds to a ***Low*** effect significance	Likely long-term slight negative effect, which is **Not Significant**
Disturbance	Pearce-Higgins *et al.* (2009) found that breeding snipe showed significant avoidance of turbines extending to a distance of 400m, and there is also evidence of avoidance of access tracks. It is assumed that snipe will show similar avoidance of construction activity. Snipe were recorded within 400m of the proposed turbines on only 12 occasions. Notwithstanding this, the majority of the optimal habitat for snipe in the local area is located greater than 400m from the proposed turbines and outside the Proposed Wind Farm. There were no breeding territories identified within 400m of the proposed infrastructure, therefore significant avoidance by breeding snipe is not anticipated. Furthermore, the majority of snipe activity was limited to the open habitats adjacent the Proposed Wind Farm, with smaller numbers (16 observations in total) within the Proposed Wind Farm. Significant impacts are not anticipated given the abundance of suitable habitat in the wider surroundings.	The magnitude of the effect is assessed as ***Low***. The cross tabulation of *Medium* sensitivity species and *Low* impact corresponds to a ***Low*** effect significance	Likely short-term slight negative effect, which is **Not Significant**

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
	Significant disturbance during the construction phase is not predicted at the county, national or international scale.		
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated.	**No Effect**	**No Effect**
Displacement and Barrier Effect	Snipe breeding density can be reduced by 50% within 400m of turbines (Pearce-Higgins *et al.*, 2009). Given that no breeding territories were identified within 400m of the proposed turbine layout, significant displacement of breeding snipe is not anticipated. The habitats within and adjacent to the Proposed Wind Farm are abundant in the wider area and are not unique to the Proposed Wind Farm. Therefore, were displacement to occur it would not result in the loss of a scarce resource for the local snipe population. 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. Significant displacement effects are not predicted at the county, national or international scale.	The magnitude of the effect is assessed as ***Low***. The cross tabulation of *Medium* sensitivity species and *Low* impact corresponds to a ***Low*** effect significance	Likely short-term slight negative effect, which is **Not Significant**
Collision Risk	The species was recorded flying within the potential collision risk zone during vantage point surveys. A non-directional collision risk analysis has been undertaken and full details are provided in Appendix 7-6. It is acknowledged that the predicted number of transits and hence predicted rate of collision for snipe may be underestimated, as flight activity for this species is predominantly crepuscular in nature while the vantage point surveys are largely diurnal (Table 1.4, SNH [2017]). To account for this, the collision risk analysis for this species has assumed nocturnal flight activity occurred for the full duration of the night. Please see Appendix 7-6 for further discussion.	The magnitude of the effect is assessed as ***Negligible***. The cross tabulation of *Medium* sensitivity species and *Negligible* impact corresponds to a ***Very Low*** effect significance	Unlikely long-term imperceptible negative effect, which is **Not Significant**

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
	The collision risk has been calculated at a rate of 0.005 collisions per year, or one bird every 200 years. The predicted collision risk is insignificant over the 35-year lifetime of the Proposed Wind Farm.		

7.5.2.4 Buzzard (all seasons)

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	This species was occasionally recorded within the Proposed Wind Farm during the breeding and winter seasons. The construction of the Proposed Project will not result in the (physical) loss of a significant amount of suitable habitat given the permanent footprint is small (i.e. 15.97ha/4.3%) relative to the total area within the Proposed Wind Farm. There were no breeding territories identified for buzzard within the Study Area. Buzzard were observed foraging within the Proposed Wind Farm. However, the habitat types found within the Proposed Wind Farm are not unique to the Proposed Wind Farm and are not a rare resource in the wider area. Significant loss of potential breeding and foraging habitat is not anticipated. Direct loss of foraging habitat to the footprint of the Proposed Project will be minimal. No significant effects of direct habitat loss are anticipated at the county, national or international level.	The magnitude of the effect is assessed as ***Low***. The cross tabulation of *Low* sensitivity species and *Low* impact corresponds to a ***Very Low*** effect significance	Likely long-term slight negative effect, which is **Not Significant**
Disturbance	The construction of the Proposed Project has the potential to give rise to disturbance impacts; however, significant impacts are not predicted based on the following rationale. While this species was occasionally recorded within the Proposed Wind Farm during the breeding and winter seasons, the Proposed Wind Farm does not contain habitats that are unique to the local area. Therefore, were disturbance to occur it would not result in the loss of a scarce resource for the local buzzard population. Significant effects are not anticipated, given that extensive areas of suitable foraging and breeding habitat exist (commercial forestry and grasslands) and will remain in the wider area. Onsite habitats are not considered unique to the Proposed Wind Farm.	The magnitude of the effect is assessed as ***Low***. The cross tabulation of *Low* sensitivity species and *Low* impact corresponds to a ***Very Low*** effect significance	Likely short-term slight negative effect, which is **Not Significant**

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
	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.	**No Effect**	**No Effect**
Displacement and Barrier Effect	This species was occasionally recorded within the Proposed Wind Farm during the breeding and winter seasons. As previously discussed, there were no breeding territories identified within the Study Area during surveys. Pearce-Higgins *et al.* (2009) describes that buzzard show significant turbine avoidance extending to at least 500m. There were 10 observations of buzzard within 500m of the proposed turbines. However, extensive areas of suitable foraging and breeding habitat exist and will remain in the wider area (i.e., outside 500m from the proposed turbines). Furthermore, onsite habitats are not considered unique to the Proposed Wind Farm. In the event of displacement, there is an abundance of suitable habitat for this species greater than 500m from the proposed turbines within the Proposed Wind Farm and its surroundings. No significant effects of displacement or barrier effect are anticipated at the county, national or international level.	The magnitude of the effect is assessed as ***Low***. The cross tabulation of *Low* sensitivity species and *Low* impact corresponds to a ***Very Low*** effect significance	Likely short-term slight negative effect, which is **Not Significant**
Collision Risk	The species was recorded flying within PCH during vantage point surveys. A "Random" collision risk analysis has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated at a rate of 0.016 collisions per year. The favourable conservation status of this species (BoCCI Green-listed) limits the potential for ecologically significant effects to result. The loss of less than one bird over the lifetime of the Proposed Project from the local population of a	The magnitude of the effect is assessed as ***Low***. The cross tabulation of *Low* sensitivity species and *Low* impact corresponds to a ***Very Low*** effect significance	Likely long-term slight negative effect, which is **Not Significant**

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
	green-listed species is considered not to be significant. No significant effects are anticipated.		

7.5.2.5 Sparrowhawk (all seasons)

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	This species was occasionally recorded within the Proposed Wind Farm during the breeding and winter seasons. The construction of the Wind Farms Site will not result in the loss of a significant amount of foraging habitat given the development footprint is small (i.e., 15.97ha/4.3%) relative to the total area within the Proposed Wind Farm. There were no breeding territories identified for sparrowhawk within the Proposed Wind Farm. Sparrowhawks were observed foraging within the Proposed Wind Farm. However, the habitat types found within the Proposed Wind Farm are not unique to the Proposed Wind Farm and are not a rare resource in the wider area, e.g. commercial forestry. Significant loss of potential breeding and foraging habitat is not anticipated. Direct loss of potential foraging habitat to the footprint of the Proposed Project will be minimal. Significant direct habitat loss effects are not anticipated.	The magnitude of the effect is assessed as ***Low***. The cross tabulation of *Low* sensitivity species and *Low* impact corresponds to a ***Very Low*** effect significance	Likely long-term slight negative effect, which is **Not Significant**
Disturbance	The construction of the Proposed Project has the potential to give rise to disturbance impacts; however, significant impacts are not predicted based on the following rationale. While this species was occasionally recorded within the Proposed Wind Farm during the breeding and winter seasons, the Proposed Wind Farm does not contain habitats that are unique to the local area. Therefore, were disturbance to occur it would not result in the loss of a scarce resource for the local sparrowhawk population. Furthermore, there were no breeding territories identified within, or adjacent to, the Proposed Wind Farm. 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 Proposed Wind Farm.	The magnitude of the effect is assessed as ***Low***. The cross tabulation of *Low* sensitivity species and *Low* impact corresponds to a ***Very Low*** effect significance	Likely short-term slight negative effect, which is **Not Significant**

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
	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.	**No Effect**	**No Effect**
Displacement and Barrier Effect	As previously discussed, the Proposed Wind Farm hosted travelling and foraging sparrowhawk. The nearest identified breeding territory was 3.5km from the Proposed Wind Farm. Displacement from turbines is not reported for sparrowhawk, however, it is assumed for the purposes of the assessment that sparrowhawk show avoidance to a distance of 500m from turbines as with other raptors (Pearce-Higgins *et al.,* 2009). This species was occasionally recorded within the Proposed Wind Farm, with only one observation within 500m of the proposed turbines. Furthermore, none of the habitats found onsite are considered to be a scarce resource locally. Therefore, displacement effects are likely to be inconsequential. Significant effects are not predicted particularly given that habitats within the Proposed Wind Farm are not unique to the area. Extensive areas of suitable foraging and breeding habitat will remain post construction. Significant displacement effects are not anticipated.	The magnitude of the effect is assessed as ***Low***. The cross tabulation of *Low* sensitivity species and *Low* impact corresponds to a ***Very Low*** effect significance	Likely long-term slight negative effect, which is **Not Significant**
Collision Risk	The species was recorded flying within the potential collision risk zone during vantage point surveys. A "Random" collision risk analysis has been undertaken and full details are provided in Appendix 7-6. The collision risk has been calculated at a rate of 0.003 collisions per year, or one collision every 316 years. The predicted collision risk is insignificant over the 35-year lifetime of the Proposed Wind Farm.	The magnitude of the effect is assessed as ***Negligible***. The cross tabulation of *Low* sensitivity species and *Negligible* impact corresponds to a ***Very Low*** effect significance	Unlikely long-term imperceptible negative effect, which is **Not Significant**

7.5.3 Likely Effects during Decommissioning

Potential effects on KORs that may occur during the decommissioning of the Proposed Project are described below. The magnitude and significance of these effects are then defined according to Percival (2003) and EPA (2022).

Potential impacts during the decommissioning phase of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
Direct Habitat Loss	Direct or indirect effects are not anticipated.	**No Effect**	**No Effect**
Disturbance	As above for the construction phase for each species in Section 7.5.2.	As above for the construction phase for each species in Section 7.5.2.	As above for the construction phase for each species in Section 7.5.2.

7.5.4 Likely Effect Associated with the Proposed Grid Connection and Turbine Delivery Route

The Proposed Grid Connection will originate from the proposed onsite 110kV substation and will run along the public road corridor and private agricultural lands to the existing 110kV Moneypoint electrical substation. The required works are minor and with the majority of works located within the existing road corridor (full details in Chapter 4 of this EIAR). The proposed turbine delivery route will begin at the Shannon Foynes Port and it is proposed that temporary roads are established through agricultural fields at 3 no. locations for the purposes of turbine components and abnormal load delivery, with a further 4 no. locations requiring accommodation works (full details in Chapter 4 of this EIAR).

For both the Proposed Grid Connection and turbine delivery route, the existing habitats (i.e. existing roads and agricultural land) do not have the potential to support other 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 extent of suitable habitat in the wider area, significant disturbance effects are not predicted. The effect significance for all KORs is classed as no greater than *Low* (Percival, 2003) or a short-term slight negative effect (EPA, 2022) and is **Not Significant**.

7.5.5 Likely Effects on Designated Sites

The Proposed Project is not located within the boundaries of any European Sites (see Section 7.3.1). An Appropriate Assessment screening was prepared to provide the information necessary to complete an Appropriate Assessment for the Proposed Project. The screening identified and assessed a potential pathway for indirect effects on the River Shannon and River Fergus Estuaries SPA and the Mid-Clare Coast SPA.

Following the screening, a Natura Impact Statement was prepared which concluded that:

"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 and operation of the Proposed Project does not adversely affect the integrity of European sites."

As such, it can be concluded that the Proposed Project will not have an adverse impact on any European Sites designated for birds, either alone or in combination with other plans or projects.

No proposed National Heritage Area or National Heritage Area within the Zone of Influence were considered as ornithological ecological receptors in their own right due to the separation distance from the Proposed Project and the absence of connectivity. Please see Chapter 6, Section 6.5.5.2 for further details.

7.6 Mitigation and Best Practice Measures

This section describes the best practice measures that are in place to mitigate potential negative effects associated with the Proposed Project on avian receptors. Effects on avian receptors have been addressed in three ways:

- Design of the Proposed Project.
- Management of the development phases.
- Hen Harrier Enhancement Plan.

7.6.1 Design of the Proposed Project

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

- The Proposed Project avoids any designated SPAs, NHAs and pNHAs
- The Proposed Project avoids wildlife refuge sites (e.g., waterbodies)
- The turbine delivery route has been selected to utilise built infrastructure i.e., public roads, insofar as possible.
- The Proposed Grid Connection has 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 as a result and will avoid effects on roadside hedgerows.

7.6.2 Management of the Proposed Project Phases

The following section describes the mitigation and best practice measures which will be implemented during each phase of the Proposed Project.

7.6.2.1 Construction Phase

A Construction and Environmental Management Plan (CEMP) has been prepared and will be in place prior to the start of the construction phase. The CEMP is included as Appendix 4-5 of this EIAR and details pertinent to birds are summarised below. Note that 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 confirmatory survey results.

- Works will commence outside the bird nesting season (1st of March to 31st of August inclusive). In the event that construction works to run into the subsequent breeding season following commencement, confirmatory bird surveys will be carried out to identify breeding sites of species of high conservation concern, as outlined in the Section 7.8.1 below.
- Significant impacts on hen harrier were predicted, as such an enhancement plan will be implemented. Please see Section 7.7.1 for further details.
- Where sections of woody vegetation are removed for the purposes of the junction and road upgrades, all work will be undertaken in full compliance with Section 40 of the Wildlife Act 1976 – 2022 and areas 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. All plant and equipment for use will comply with the European Communities (Noise Emission By Equipment For Use Outdoors) Regulations, 2001, as amended (SI 632/2001). Plant machinery will also be turned off when not in use. Please see Chapter 12: Noise and Vibration for more detail associated with noise during the construction phase.
- Water protection measures will be implemented around existing watercourses as outlined in Chapter 9, to protect the use of watercourses by birds.
- 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 Proposed Wind Farm.
    - 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 is 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.

7.6.2.2 Operational Phase

Significant displacement impacts on foraging hen harrier were predicted, as such an enhancement plan will be implemented. Please see Section 7.7.1 for further details. No further significant operational phase impacts requiring mitigation were identified.

7.6.2.3 Decommissioning Phase

During the decommissioning phase, disturbance limitation measures will be as per the construction phase described in Section 7.6.2.1.

7.7 Enhancement Measures

7.7.1 Hen Harrier Enhancement

The Proposed Project has been specifically designed to achieve a net gain for hen harrier. Please refer to Appendix 7-8, Hen Harrier Enhancement Plan for details. The net gain will be achieved in two key ways. Firstly, through targeting the key threat/pressures acting on hen harrier that are classed as of high importance (as per Article 12). Secondly, through the rigorous implementation and audits of industry best practice prescriptive measures for the benefit of hen harrier. The enhancement plan aims to provide an increase in the availability of passerine prey within the enhancement lands to mitigate the loss of the foraging habitat due to the Proposed Wind Farm through deforestation and the enhancement of farmland. To achieve this increase in passerine prey, it is planned to promote plant diversity and structure within the enhancement lands, which will increase the diversity and abundance of passerines. For example, the monoculture of commercial forestry prior to felling is likely to be significantly less diverse and hold far fewer passerines than the same area of restored peatland habitat. Prey is also more accessible to foraging hen harrier in open habitats such as heath/bog, which in part explains why hen harrier favour open habitats for foraging over closed canopy forestry. Wilson *et al.* (2015) and Masden (2010) highlight the importance of open habitats that hold a high diversity of prey species for foraging hen harrier. Young conifer plantations provide cover suitable for nesting hen harrier, however forestry may be associated with higher rates of nest predation and lower prey availability around the nest (Wilson *et al.*, 2015; Gómez-Catasús *et al.*, 2021). Three parcels of currently forested land and six farmland folios, totalling c.124ha, are proposed to mitigate the predicted (indirect) habitat loss (62ha). In quantitative terms, it is proposed to permanently deforest 56.3ha, which alone nearly matches the total habitat loss figures calculated for hen harrier within the Proposed Wind Farm (62ha). In addition, it is proposed to enhance a further 67.4ha of farmland. Please see Appendix 7-8, Figure 7-8-4 for location details.

As outlined in Section 7.5.2.1, there is the potential for a significant negative effect (EPA, 2022) on foraging hen harrier during the construction (short-term) and operational (long-term) phases of the Proposed Project. The proposed enhancement plan is a deforestation plan first and foremost. Forestry is a net negative for hen harrier as it is only suitable or available to the species while the forestry is young (>10-12 years typically) and after canopy closure is of no ecological value. As previously outlined (Section 7.5.2.1) afforestation is identified by Article 12 reporting as a key threat/pressure of high importance. BirdWatch Ireland stated that afforestation and forest maturation is one of the primary threats to the hen harrier. The key benefit of this plan is the permanent deforestation of 56.3 ha of commercial forestry and the planned restoration of the underlying peatland which ensures the ongoing (permanent) availability of optimal foraging, nesting and roosting habitat locally. It is proposed to enhance habitats such as heath/bog, scrub and grassland through the retention and reinstatement of beneficial landscape features (e.g. scrub and hedgerows), through rushes management, and through the management of grazing timing and intensity. The proposed measures are based on industry best practices, as prescribed by the Hen Harrier Project (www.henharrierproject.ie), which provides confidence in their likely success.

It is proposed that these enhancement measures will be in place before the construction phase begins, to ensure that there is ample foraging habitat for the local hen harrier pair before disturbance or displacement occurs.

7.8 Monitoring

The following monitoring measures are proposed as industry best practice rather than in response to any identified impacts associated with the Proposed Project, with the exception of hen harrier where the enhancement lands will be monitored.

7.8.1 Pre-Construction and Construction Confirmatory Surveys

It is proposed that construction works will commence outside the bird nesting season (1st of March to 31st of August inclusive) to avoid the most sensitive time of the year for most bird species with the potential to use the Proposed Wind Farm and its environs. Pre-commencement confirmatory surveys will be undertaken within one month prior to the initiation of works at the Proposed Wind Farm to identify sensitive sites (e.g. nests or roosts) that may have been established in the intervening period between the surveys undertaken and the initiation of works at the Site. Any requirement for construction works to run into the subsequent breeding and winter seasons following commencement will be subject to a repeat of the pre-commencement confirmatory bird surveys to confirm the absence of breeding birds of conservation concern once per month during the breeding season (April to July) and once during the winter season (October). The survey will aim to identify sensitive sites e.g., nests or roosts, depending on the season in question. Please refer to Appendix 7-7- for further details.

7.8.2 Operational Phase

In line with best practice measures, a detailed operational phase Bird Monitoring Programme has been prepared for the Proposed Project, please refer to Appendix 7-7 for further details. The programme of works will monitor parameters associated with collision, displacement/barrier effects and habituation during the lifetime of the project. Surveys will be scheduled to coincide with years 1, 2, 3, 5, 10 & 15 of the lifetime of the wind farm. Monitoring measures are based on guidelines issued by NatureScot (SNH, 2009 and NatureScot, 2025). The following individual components will be implemented:

- Monthly flight activity surveys: vantage point surveys.
- Targeted bird collision surveys (corpse searches) 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.

The proposed Bird Monitoring Programme was not put forward in response to any identified significant effect but rather as a best practice measure (as per guidance outlined in NatureScot, 2009). The monitoring programme is comprehensive and considered entirely adequate in this regard. The results of this monitoring will be reported to the Planning Authority following each monitoring year and will include recommendations that may inform additional mitigation or adaptation if required.

7.8.2.1 Monitoring of Hen Harrier Enhancement Lands

The enhancement lands for hen harrier will be the subject of annual monitoring to assess the effectiveness of the measures proposed and employed and to contribute to advances in habitat management methods, which can be applied to future similar projects. The monitoring can also aid adaption and implementation of improved methods and measures as they emerge, or intensification of successful measures deployed from farm plan to farm plan. Please refer to Appendix 7-8 for further details.

The monitoring measures will include the following during the breeding season:

- Hen harrier surveys of each enhancement area.
- Passerine point counts at each of the enhancement areas.
- Habitat mapping and scoring.
- Vegetation sampling.

7.8.3 Decommissioning

The same measures will be followed for decommissioning as outlined for the construction phase in Section 7.9.1

7.9 Residual Effects

The following species were identified as KORs and were subject to detailed impact assessment:

- Hen Harrier (all seasons)
- Kestrel (all seasons)
- Snipe (all seasons)
- Buzzard (all seasons)
- Sparrowhawk (all seasons)

In the particular case of hen harrier, significant impacts on foraging hen harrier from disturbance and displacement were anticipated without mitigation. A comprehensive enhancement plan has been proposed to mitigate these impacts on hen harrier.

Taking into consideration the effect significance levels identified, the proposed best practice and mitigation, and the hen harrier enhancement plan, significant residual effects on the KORs with regard to direct habitat loss, disturbance/displacement or collision mortality are not anticipated. No effect significance greater than ***Low,*** as per Percival criteria or ***Slight,*** as per EPA (2022) criteria, was identified for any KOR.

7.10 Cumulative Effects

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

- **Additive** (a multiple independent additive model)
- **Antagonistic** (the sum of impacts is less than in a multiple independent additive model)
- **Synergistic** (the cumulative impact is greater than the sum of the multiple individual effects)

This section first identifies other plans and projects in the vicinity of the Proposed Wind Farm and then assesses the potential for additive, antagonistic or synergistic impacts to occur.

7.10.1 Other Plans and Projects

Assessment material was compiled for relevant developments within the vicinity of the Proposed Wind Farm. The material was gathered through a search of relevant online Planning Registers, reviews of relevant EIS/EIAR documents, planning application details and planning drawings. It served to identify past and future plans and projects, their activities and their environmental impacts. These are then considered for in-combination or cumulative effects with the Proposed Project. All plans and projects reviewed are outlined below.

7.10.1.1 Plans Considered in the Cumulative Impact Assessment

The following plans were considered in the cumulative impact assessment:

- Clare County Development Plan 2023-2029
- National Biodiversity Action Plan 2023-2030

7.10.1.2 Projects Considered in the Cumulative Impact Assessment

NatureScot guidance (SNH, 2018b; NatureScot, 2025b) was complied with while undertaking the cumulative assessment. SNH (2018b) emphasises that its priority is to 'maintain the conservation status of the species population at the national level.' However, it is acknowledged that consideration should also be allowed for impacts at the regional level 'where regional impacts have national implications (for example where a specific region holds the majority of the national population)'. Following the guidance of SNH (2018b), the cumulative impact assessment has been carried out at the scale of the importance rating of the receptor. Please note that a 25km radius of the Proposed Wind Farm was considered a reasonable approximation of the size of a county and a 5km radius of the Proposed Wind Farm was considered a reasonable approximation for the local level.

To conduct the cumulative impact assessment, County Council and An Coimisiún Pleanála online planning registers, relevant EIAR (or EIS) documents, planning application details and planning drawings within 25km of the Proposed Wind Farm were reviewed to identify past and future projects, their activities and their environmental impacts. The findings of this review are outlined in the following sections.

7.10.1.2.1 *Developments and Land Uses*

The review of the County Council planning register identified relevant planning applications within 25km of the Proposed Wind Farm. Most of these relate to the provision and/or alteration of one-off rural housing and agriculture-related structures, as described in Chapter 2 of this EIAR. Owing to the scale and nature of these developments, significant cumulative impacts are not anticipated.

7.10.1.2.2 *Forestry and Agricultural Practices*

The wider surroundings of the 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 Proposed Wind Farm will be subject to relevant licencing and guidance from the Forestry Service.

These land-uses have been taken into account in this cumulative assessment.

7.10.1.2.3 *Other Wind Farm Developments*

Wind farm projects within 25km of the proposed turbines are provided in Table 7-11, including details of their planning status. A full list of wind farm projects within 25km are detailed in Appendix 2-3. A total of 121 no. existing turbines and 36 no. proposed turbines were identified for consideration. The environmental impacts of each existing or proposed wind farm are outlined in detail in this section.

Table 7-11 Wind energy applications within 25km of the Proposed Wind Farm

Wind Farm	Planning Status	Number of Turbines	Separation Distance (turbine to turbine)
Cahermurphy	Existing	4	450m
Kiltumper	Existing	2	2.7km
Glenmore	Existing	12	4.9km
Booltiagh I	Existing	12	6.2km
Booltiagh Extension	Existing	6	6.4km
Slieve Callan	Existing	29	6.9km
Crossmore	Existing	7	8.7km
Letteragh	Existing	6	9.2km
Slieveacurry	Proposed	9	9.9km

Wind Farm	Planning Status	Number of Turbines	Separation Distance (turbine to turbine)
Illaunbaun	Proposed	6	11.6km
Tullabrack	Existing	6	11.9km
Ballykett	Proposed	4	12km
Moanmore	Existing	7	12.9km
Boolynagleragh	Existing	9	13km
Coolkett	Proposed	14	13.2km
Boolynagleragh Extension	Existing	7	13.9km
Moanmore Lower	Proposed	3	14.9km
Moneypoint	Existing	5	17.2km
Leenamore	Existing	9	22.9km

Cahermurphy Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Cahermurphy Wind Farm was considered. The planning file[14] was reviewed on the An Coimisiún Pleanála website and the EIS was reviewed. The EIS assessed the potential impacts of disturbance and collision during the operational phase of the development for the local bird community. Habitat loss and disturbance of birds was assessed to be a long-term slight negative impact. Collision risk was assessed to be a long-term negligible negative impact for hen harrier and peregrine. A cumulative impact assessment was undertaken with turbines up to 15km being considered. No significant cumulative impacts were identified.

Kiltumper Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Kiltumper Wind Farm was considered. The planning file[15] was reviewed on the An Coimisiún Pleanála website and the EIS was reviewed. Impacts on hen harrier were considered, and it was concluded there would be no significant impacts from disturbance or collision risk with the operating turbines. It was also concluded that there would be no adverse impacts on other bird species (such as meadow pipit and skylark).

Glenmore Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Glenmore Wind Farm was considered. The planning file[16] was reviewed on the An Coimisiún Pleanála website and the EIS was reviewed. The collision risk was assessed to be a long-term negligible negative impact for hen harrier and golden plover. Avoidance (displacement) of turbines was assessed to be a long-term slight negative impact on bird species. A cumulative impact assessment was undertaken with turbines up to 7.5km being considered. No significant cumulative impacts were identified.

Booltiagh I Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Booltiagh I Wind Farm was considered. The planning file[17] was reviewed on the An Coimisiún Pleanála website. There was no impact assessment available within the planning file, however the inspectors report was reviewed. The inspector stated '*In terms of flora and fauna it was*

[14] https://www.pleanala.ie/en-ie/case/245189
[15] https://archive.pleanala.ie/en-ie/case/234010
[16] https://www.pleanala.ie/en-ie/case/245392
[17] https://archive.pleanala.ie/en-ie/case/120616

noted that the area around the site are undisturbed and contain valued plants. These will not be disturbed or effected. Birds and mammals will not be effected.'

Booltiagh Extension Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Booltiagh I Wind Farm was considered. The planning file[18] was reviewed on the Clare County Council website and the Environmental Statement was reviewed. The potential impacts on whooper swan and Greenland white-fronted goose were assessed and no impacts were predicted for these species. A cumulative assessment was undertaken with Booltiagh, Glenmore, High Street and Cahermurphy wind farms. No cumulative impacts were predicted. The Environmental Statement concluded that '*It is felt that this area constitutes a safe area for wind farm development as far as migrating wildfowl are concerned.'* The potential impacts on hen harrier were also assessed, and there were no significant effects of loss of foraging habitat (by direct habitat loss or displacement). Furthermore, it was concluded that the cumulative impact with Cahermurphy and Boolynagleragh wind farms would be negligible. It was also concluded that there would be no significant impacts on other wintering or breeding birds in relation to disturbance or collision risk.

Slieve Callan Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Slieve Callan Wind Farm was considered. The planning file[19] was reviewed on the An Coimisiún Pleanála website and the EIS was reviewed. The impact of collision risk on birds was assessed to be a long-term negligible negative impact. The impact of displacement and barrier effect were assessed to be a long-term slight negative impact on birds. A cumulative assessment was undertaken with wind farms within 16km of the site being considered, it was concluded that there would not be a significant cumulative impact. A condition of the planning permission for that wind farm was a farmland plan similar to the enhancement element proposed on the farmland for the proposed Cahermurphy West Wind Farm. The facts of the territorial occupancy by hen harrier of the Slieve Callan site are as follows. At Slieve Callan Wind Farm, breeding hen harrier were first recorded in 2008 in an area of elevated upland blanket bog (of between 300m and 400m altitude) surrounded by commercial forestry and later the wind farm of 30 turbines. Hen harrier nested onsite in two of the four years since the wind farm first went operational in 2019 (which are on the public record).

Crossmore Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Crossmore Wind Farm was considered. The planning file[20] for the original application was reviewed on the Clare County Council website and the EIS was reviewed. The subsequent applications to extend the appropriate period of the planning application, and the application to increase the blade size was also reviewed, however no additional information on ornithological impacts was provided within these applications.

The impact of permanent habitat loss and long-term displacement was assessed for hen harrier, golden plover, red grouse and merlin. These impacts were assessed to be no more than low magnitude effects, and therefore not significant. Avoidance and collision risk was also assessed for these species and were found to be no more than low magnitude effects, and not significant. Cumulative impacts with wind farms within 15km of the site were considered. No significant cumulative impacts were anticipated.

Letteragh Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Letteragh Wind Farm was considered. The planning file[21] was reviewed on

[18] https://www.eplanning.ie/ClareCC/AppFileRefDetails/072900/0
[19] https://archive.pleanala.ie/en-ie/case/237524
[20] https://www.eplanning.ie/ClareCC/AppFileRefDetails/20824/0
[21] https://archive.pleanala.ie/en-ie/case/239933

the An Coimisiún Pleanála website and the EIS was reviewed. The potential impacts on hen harrier were outlined. The impacts of displacement around turbines and collision risk were assessed. Significant impacts were not anticipated for hen harrier; however adaptive mitigation was proposed if nesting was to occur close to a turbine. Cumulative effects with wind farms within 10km of the site were also considered. No significant cumulative impacts were anticipated. The potential impacts on other birds were considered, but no significant impacts were anticipated.

Slieveacurry Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the proposed Slieveacurry Wind Farm was considered. The proposed Slieveacurry Wind Farm is at the preplanning stage and therefore no planning application has been lodged and no impact assessment has been completed. The proposed Slieveacurry Wind Farm is located within farmland and bog habitats. As such, applying the precautionary principle, there is potential for KOR species of the Proposed Project to occur at the proposed Slieveacurry Wind Farm.

Illaunbaun Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the proposed Illaunbaun Wind Farm was considered. The planning file[22] was reviewed on the Clare County Council website and the EIAR was reviewed. The potential impacts on raptors, waders and waterfowl, and gulls were assessed. During the operational phase of the development, habitat loss, displacement and collision risk were assessed for each species group. For the majority of species, no significant effects were anticipated from these impacts. There was significant effects, pre-mitigation, anticipated from displacement of foraging hen harrier, and displacement and collision risk for kestrel. Enhancement measures for hen harriers and kestrel were proposed, resulting in a residual effect which is not significant. Cumulative impacts were assessed with other wind farms within 20km of the Illaunbaun Wind Farm. No significant cumulative impacts were anticipated.

Tullabrack Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Tullabrack Wind Farm was considered. The planning file[23] for the original application was reviewed on the Clare County Council website and the EIS was reviewed. Collision risk was assessed for Greenland white fronted goose, whooper swan, hen harrier, peregrine and merlin. No significant risk of collision was predicted for the site. The impact of disturbance during the operational phase of the development was assessed to be not present for any species. The EIS concluded that '*the Proposed Project will have no significant impact on any aspects of the natural environment'.*

Ballykett Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the proposed Ballykett Wind Farm was considered. The planning file[24] was reviewed on the An Coimisiún Pleanála website and the EIAR was reviewed. The impact of displacement was assessed for sparrowhawk, buzzard, merlin, kestrel, hen harrier and snipe. No significant impacts were identified. Collison risk was also assessed for these species, as well as lesser black-backed gull and herring gull. No significant collision risk was anticipated. Cumulative impacts were assessed with other wind farms within 20km of the site, however no significant cumulative impacts were anticipated. The EIAR concluded that '*For birds, the predicted effect with mitigation in place is reduced to a Slight Adverse Effect of Short- to Medium-term duration.*'

[22] https://www.eplanning.ie/ClareCC/AppFileRefDetails/2560520/0
[23] https://www.eplanning.ie/ClareCC/AppFileRefDetails/1064/0
[24] https://www.pleanala.ie/en-ie/case/319961

Moanmore Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Moanmore Wind Farm was considered. The planning file[25] was reviewed on the An Coimisiún Pleanála website. There was no impact assessment available within the planning file, however the inspectors report was reviewed. The inspector stated '*The whooper swan population in a nearby lake is the only population of protected species likely to be affected. The evidence seems to suggest that there is not likely to be a significant impact, either through disturbance, habitat loss or blade strike on this population or any other bird species. I consider therefore, that the Proposed Project will not have a significant impact on local flora and flora.*'

Boolynagleragh Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Boolynagleragh Wind Farm was considered. The planning file[26] was reviewed on the Clare County Council website and the EIS was reviewed. Displacement and collision risk from turbines was assessed for hen harrier, and no significant impacts were anticipated. Cumulative impacts with wind farms within 10km of the site were considered. The overall cumulative effect was assessed to '*not likely be of high significance.*' The potential effects on other breeding birds were not considered to be significant. Potential impacts on wintering waterfowl, including Greenland white-fronted goose, and whooper swan, were also assessed. No significant impacts were anticipated. The EIS concluded that '*overall, it is considered that there will be no significant long-term adverse effects on the flora and fauna of this site due to the presence of the wind farm.*'

Coolkett Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the proposed Coolkett Wind Farm was considered. The planning file[27] was reviewed on the An Coimisiún Pleanála website and the EIAR was reviewed. The potential impacts on golden plover, snipe, curlew, grey heron, black-headed gull, lesser black-backed gull, kestrel and hen harrier were assessed. Habitat loss, displacement/displacement and collision risk were assessed for each species. No significant effects were anticipated for any of these species from the proposed wind farm. Cumulative impacts were assessed with other wind farms within 20km of the Coolkett Wind Farm. No significant cumulative impacts with regards to habitat loss, barrier effect, displacement or collision risk were anticipated.

Boolynagleragh Extension Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Boolynagleragh Extension Wind Farm was considered. The planning file[28] was reviewed on the An Coimisiún Pleanála website and the EIS was reviewed. The potential for impacts from displacement and collision risk were assessed for raptor species. It was concluded that the impact of displacement would be no more than a slight negative impact and for collision risk would not be significant. Cumulative impacts on hen harrier with wind farms within 15km of the site was considered. It was concluded that the extension of Boolynagleragh '*would not add significantly to any possible cumulative impact as a result of other projects on the local hen harrier population.*'

Moanmore Lower Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the proposed Moanmore Lower Wind Farm was considered. The planning file[29] was reviewed on the Clare County Council website and the EIAR was reviewed. Displacement impacts were

[25] https://archive.pleanala.ie/en-ie/case/123292
[26] https://www.eplanning.ie/ClareCC/AppFileRefDetails/09479/0
[27] https://www.pleanala.ie/en-ie/case/323783
[28] https://archive.pleanala.ie/en-ie/case/244095
[29] https://www.eplanning.ie/ClareCC/AppFileRefDetails/2560257/0

assessed for hen harrier, buzzard, sparrowhawk, merlin, kestrel, snipe, lesser black-backed gull and herring gull. No significant displacement impacts were identified. The potential for collision risk was assessed for little egret, grey heron, hen harrier, sparrowhawk, buzzard, kestrel, merlin, peregrine, lapwing, whimbrel, curlew, greenshank, lesser black-backed gull and herring gull. Effects no greater than long-term slight adverse effects were anticipated. Cumulative impacts were considered with wind farms within 20km of the site, no significant cumulative impacts were anticipated. The EIAR concluded that '*the proposed Project is not likely to have any adverse residual effects on bird populations in the hinterland of the site.*'

Moneypoint Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Moneypoint Wind Farm was considered. The planning file[30] was reviewed on the Clare County Council website and the EIS was reviewed. Displacement impacts were assessed for skylark, snipe, sparrowhawk and kestrel. No significant impacts on these species were anticipated. Impacts on wintering birds, including whimbrel, cormorant, curlew, lapwing, grey heron and gull species, were also assessed. Significant impacts on these species were not anticipated.

Leenamore Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Leanmore Wind Farm was considered. The planning file[31] was reviewed on the An Coimisiún Pleanála website and the EIS was not available, however the Inspectors Report was reviewed. The report outlines that hen harrier, merlin, kestrel and passerines were assessed. No significant impacts were anticipated from habitat loss or collision risk.

7.10.2 Assessment of Cumulative Effects

There were five KORs identified at the Proposed Wind Farm: hen harrier, kestrel, snipe, buzzard and sparrowhawk. A key consideration in the assessment of the potential for cumulative impacts to result in significant effects on KORs is proximity and whether the existing, permitted or proposed projects under consideration all contain suitable habitats for the species in question. For the purposes of this cumulative assessment, the local scale is considered to be a 5km radius of the Proposed Wind Farm. There are 9 turbines within 5km of the Proposed Wind Farm (Cahermurphy Wind Farm, Kiltumper Wind Farm and three turbines from Glenmore Wind Farm). The remaining wind farms are between 5-25km of the Proposed Wind Farm.

Following SNH (2012) guidance, the cumulative impact assessment has been carried out at the scale of the importance rating of the receptor: National Importance (hen harrier); County Importance (kestrel and snipe); and Local Importance (buzzard and sparrowhawk). The assessment of cumulative effects on KORs is provided in the sections below. In particular, cumulative habitat loss and displacement associated with operational turbines is assessed. Short-term impacts (e.g. construction disturbance) are highly unlikely to give rise to significant cumulative impacts, primarily as it is unlikely that there will be temporal overlap. No significant cumulative effects are predicted to result, and they are not considered further.

For all KORs collision risk no greater than Very Low (as per Percival 2003 criteria) or Long-term Imperceptible (as per EPA, 2022) were predicted. Cumulative collision risk is therefore not considered further given these predicted impacts are effectively zero.

7.10.2.1 Landscape-Level Assessment

A GIS mapping exercise was undertaken that aimed to quantify the amount of land within the wider landscape (i.e. the continuous upland habitat in which the Proposed Wind Farm lies) that is likely to be

[30] https://www.eplanning.ie/ClareCC/AppFileRefDetails/1274/0
[31] http://archive.pleanala.ie/en-ie/case/239233

significantly impacted by the presence of turbines. Impacts were predicted to be restricted to the area near a turbine. Near to a turbine was defined as within the range of 250m to 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, it was found that by including lands above 100m in elevation, a reasonable approximation of the North and West Clare hen harrier stronghold and uplands was achieved and the key local suitable habitats were included. The rationale for this approach was as follows: O'Donoghue (2004) described the modern landscape of the Irish breeding hen harrier as upland, typically above 100m above sea level. The GIS exercise provided the following results.

The total upland area is 19,147ha and of this, 4,188ha (21.9%) is within 500m of a turbine (excluding the proposed turbine layout). The 500m radius of the proposed turbine layout comprises 382ha, of which 295ha is within this upland area of this 19,147ha total (1.5%). The two main land uses in these uplands are forestry, and pastoral agriculture which is the 'open habitat' mentioned below. There is the following breakdown of forestry and open habitat.

- The total area of forestry is 7,590ha (39.6% of the total upland area);
    - Forestry greater than 500m from turbines (excl. the proposed turbine layout) is 5,250ha (or 69.2% of the forestry).
    - Forestry greater than 500m from turbines (incl. the proposed turbine layout) is 5,066ha (or 66.7% of the forestry).
- The total area of open habitat = 11,557ha (60.4% of the total upland area);
    - Open areas greater than 500m from turbines (excl. the proposed turbine layout) is 9,709ha (or 84% of the open habitat).
    - Open area greater than 500m from turbines (incl. the proposed turbine layout) is 9,643ha (or 83.4% of the open habitat).
- The total area within 500m of turbines (incl. the proposed turbine layout) is 4,525ha (23.6% of the total upland area);
    - 2,524ha is within forestry (55.8% of the upland area); and
    - 2,001ha is within open habitats (44.2% of the upland area).

Having undertaken the above analysis of the available area within the surrounding uplands the following is of note:

- The majority of the uplands is comprised of 'open habitats'.
- A significant portion of the land cover of the uplands is commercial forestry (39.6%).
- A slight majority of the turbines are located within forestry (70%).
- Although there is a high density of turbines, relative to other regions, the area occupied by the turbines (plus a 500m radius) is small to moderate in size when compared to the other key industries of commercial forestry and agriculture.
- Displacement effects associated with the 8 no turbines of the proposed Cahermurphy West Wind Farm account for 1.5% of the upland area.

As forestry and agriculture (i.e. open habitat) make up the vast majority of the total 19,147ha within the uplands 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, including hen harrier. While many of the species encountered at the Site 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. Impacts associated with wind farms (renewable abiotic energy use) are likely of medium importance locally.

7.10.2.2 Hen Harrier (National Importance)

"While wind energy production is identified as one of the key pressures on the species, wind energy development is also, more generally, a key part of the global and national response to alleviating climate change. Biodiversity and climate change commitments have equal standing, and creating opportunities to achieve both, without compromising each other, is critical, particularly as biodiversity can assist in climate change mitigation and adaptation." (Hen Harrier Threat Response Plan 2024-2028). The Proposed Project includes a comprehensive enhancement plan to ensure the Proposed Wind Farm avoids any future contribution to a significant cumulative effect, particularly for the hen harrier of the North and West hen harrier stronghold. Please see the following species-specific impact assessment for a detailed discussion of cumulative effects.

The decline in hen harrier populations in Ireland is a result of human related pressures, in particular habitat modification and loss. The industries that most closely overlap with the distribution of hen harrier in the surrounding uplands are commercial forestry, agriculture, and wind farms. As outlined in Article 12 reporting the key threats/pressures acting on hen harrier relate to forestry practise (including forest planting on open ground and forestry management) and the factors associated with agricultural intensification. These threats/pressures are described as of high importance. Impacts associated with wind farms (renewable abiotic energy use) are classified as of medium importance. The recently drafted Threat Response Plan for the Hen Harrier 2024-2028 prepared by NPWS includes a comparable summary of the Article 12 threat/pressures. Similarly, the cause of the local population decline is likely multi-faceted, with the same key threats/pressures implicated, i.e. afforestation, agricultural intensification and impacts associated with wind farms. Although impacts associated with forestry could be having an outsized influence on hen harrier's declining numbers within the North and West hen harrier stronghold, such an argument would be largely academic as all threats and pressures are acting in combination.

Although the decline of the North and West hen harrier stronghold population is acknowledged and the proliferation of turbines is likely one of the factors implicated in the decline, The Proposed Project will not contribute to a significant cumulative effect based on the following rationale:

- The successful implementation of the enhancement plan that accompanies this application ensures that the commissioning of the Proposed Project is not at the expense of suitable hen harrier habitats. In terms of the quantum of land proposed, the amount of deforestation (56.3ha) alone mitigates the majority of the total habitat loss figures of the Proposed Wind Farm (62ha). This is before the consideration of the benefits of enhancing a further 67.4ha of farmland.
- The Proposed Project will not contribute to a significant cumulative effect, as (as is proposed) there is no net loss of hen harrier habitat. Please see Appendix 7-8 for further discussion on justifications.

Significant cumulative effects are not predicted.

7.10.2.3 Kestrel (County Importance)

The potential for other developments to have resulted in significant cumulative or in combination effects when assessed alongside the Proposed Project was considered.

The potential for developments at a county scale (within 25km) to result in significant cumulative or in combination effects when assessed alongside the Proposed Project were considered. The Proposed Wind Farm contains open upland habitats (such as bogs) which are suitable for foraging kestrel and commercial

forestry, which is suitable for nesting kestrel. Cahermurphy, Glenmore, Letteragh, Booltiagh I, Booltiagh Extension, Boolynagleragh Extension, Slieve Callan, Slieveacurry, Illaunbaun, Moanmore, Leanmore wind farms are located within, or partially within, commercial forestry, which are of some ecological value to nesting kestrel. Cahermurphy, Slieve Callan, Moanmore, Leanmore wind farms are located within, or partially within open farmland, which is suitable for foraging kestrel. Kiltumper, Glenmore, Booltiagh I, Coolkett, Booltiagh Extension, Boolynagleragh, Slieve Callan, Slieveacurry, Illaunbaun, Crossmore, Tullabrack, Moanmore Lower and Leanamore are located within, or partially within, open upland habitat and bog habitat which is suitable for foraging. Extensive areas of suitable foraging habitat and nesting habitat will remain post construction, and there is an abundance of suitable habitat in the surrounding area.

No significant impacts on this species were identified for any of the local wind farms (within 5km). Furthermore, no significant effects were reported for any of the wind farms located within a 25km radius of the Proposed Wind Farm. Taking into consideration the above reported effects and the predicted effects with the Proposed Project, no residual additive, antagonistic or synergistic effects have been identified with regard to habitat loss or displacement.

Significant cumulative impacts are not predicted.

7.10.2.4 Snipe (County Importance)

The potential for other developments to have resulted in significant cumulative or in combination effects when assessed alongside the Proposed Project was considered.

The potential for developments at a county scale (within 25km) to result in significant cumulative or in combination effects when assessed alongside the Proposed Project were considered. The Proposed Wind Farm contains and open upland habitats (such as bogs) which are suitable for snipe and commercial forestry, which is of limited ecological value to snipe. Cahermurphy, Slieve Callan, Moanmore, Leanmore wind farms are located within, or partially within open farmland, which is suitable for snipe. Kiltumper, Glenmore, Booltiagh I, Coolkett, Booltiagh Extension, Boolynagleragh, Slieve Callan, Slieveacurry, Illaunbaun Crossmore, Tullabrack, Moanmore Lower and Leanamore are located within, or partially within, open upland habitat and bog habitat which is suitable for snipe. Cahermurphy, Glenmore, Letteragh, Booltiagh I, Booltiagh Extension, Boolynagleragh Extension, Slieve Callan, Slieveacurry, Moanmore, Leanmore wind farms are located within, or partially within, commercial forestry, which are of limited ecological value to snipe. Extensive areas of suitable foraging habitat and breeding habitat will remain post construction, and there is an abundance of similar suitable habitat in the surrounding area.

No significant impacts on this species were identified for any of the local wind farms (within 5km). Furthermore, no significant effects were reported for any of the wind farm located within a 25km radius of the Proposed Wind Farm. Taking into consideration the above reported effects and the predicted effects with the Proposed Project, no residual additive, antagonistic or synergistic effects have been identified with regard to habitat loss or displacement.

Significant cumulative impacts are not predicted.

7.10.2.5 Buzzard (Local Importance)

The potential for local developments to have resulted in significant cumulative or in combination effects when assessed alongside the Proposed Project was considered.

The potential for developments at a local scale (within 5km) to result in significant cumulative or in combination effects when assessed alongside the Proposed Project were considered. The Proposed Wind Farm contains and open upland habitats (such as bogs) which are suitable for foraging buzzard and commercial forestry, which is of some ecological value to nesting buzzard. The disturbance associated with operational turbines will not significantly impact the local population of buzzard onsite. Similar displacement impacts are predicted on other wind farms locally. However, these habitat types are not a rare habitat locally. Therefore, significant cumulative impacts are not predicted.

No significant impacts on this species were identified for any of the local wind farms (within 5km). Taking into consideration the above reported effects and the predicted effects with the Proposed Project, no residual additive, antagonistic or synergistic effects have been identified concerning habitat loss or displacement.

Significant cumulative impacts are not predicted to occur at the local scale.

7.10.2.6 Sparrowhawk (Local Importance)

The potential for local developments to have resulted in significant cumulative or in combination effects when assessed alongside the Proposed Project was considered.

The potential for developments at a local scale (within 5km) to result in significant cumulative or in combination effects when assessed alongside the Proposed Project were considered. The Proposed Wind Farm contains and open upland habitats (such as bogs) which are suitable for foraging sparrowhawk and commercial forestry, which is of some ecological value to nesting sparrowhawk. The disturbance associated with operational turbines will not significantly impact the local population of sparrowhawk onsite. Similar displacement impacts are predicted on other wind farms locally. However, these habitat types are not a rare habitat locally. Therefore, significant cumulative impacts are not predicted.

No significant impacts on this species were identified for any of the local wind farms (within 5km). Taking into consideration the above reported effects and the predicted effects with the Proposed Project, no residual additive, antagonistic or synergistic effects have been identified concerning habitat loss or displacement.

Significant cumulative impacts are not predicted to occur at the local scale.

7.11 Conclusion

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 KOR. No significant effects on receptors of International, National or County Importance were identified. Provided that the Proposed Project is constructed, operated and decommissioned in accordance with the design, enhancement and best practice mitigation that are described within this application, significant individual or cumulative effects on the identified KOR are not anticipated.

EIA CLASSIFICATION SUMMARY

Please see the below table for a summary of all identified impacts for the Proposed Project relating to Birds.

Topic	Pre-Mitigation Effect	Mitigation Section Reference	Residual Effect	Significance
Construction Phase				
Hen Harrier (All Seasons)	**Direct Habitat Loss**: Long-term, Slight negative effect **Disturbance (Nesting and Roosting):** Likely short-term slight negative effect **Foraging Habitats:** Likely short-term, Significant, negative effect	Section 7.6.1 Section 7.6.2.1 Section 7.8.1	No Effect greater than Slight	Not Significant
Kestrel (All Seasons)	**Direct Habitat Loss**: Long-term, Slight Negative effect **Disturbance**: Short-Term, Slight, Negative	Section 7.6.1 Section 7.6.2.1 Section 7.8.1	No Effect greater than Slight	Not Significant
Snipe (All Seasons)	**Direct Habitat Loss**: Long-Term, Slight, Negative **Disturbance**: Short-Term, Slight, Negative	Section 7.6.1 Section 7.6.2.1 Section 7.8.1	No Effect greater than Slight	Not Significant
Buzzard (All Seasons)	**Direct Habitat Loss**: Long-Term, Slight, Negative	Section 7.6.1 Section 7.6.2.1	No Effect greater than Slight	Not Significant

	Disturbance: Short-Term, Slight, Negative	Section 7.8.1		
Sparrowhawk (All Seasons)	**Direct Habitat Loss**: Long-Term, Slight, Negative **Disturbance**: Short-Term, Slight, Negative	Section 7.6.1 Section 7.6.2.1 Section 7.8.1	No Effect greater than Slight	Not Significant
Operational Phase				
Hen Harrier (All Seasons)	**Direct Habitat Loss**: No Effect **Disturbance, Displacement and Barrier Effect - (Key Nesting and Roosting Habitats)**: Long-Term, Slight, Negative **Disturbance, Displacement and Barrier Effect - (Foraging Habitats)**: Long-term, Significant, Negative effect **Collision Risk**: Long-term Imperceptible Negative	Section 7.6.1 Section 7.8.2	No Effect greater than Slight	Not Significant
Kestrel (All Seasons)	**Direct Habitat Loss:** No Effect **Disturbance, Displacement and Barrier Effect**:	Section 7.6.1 Section 7.8.2	No Effect greater than Slight	Not Significant

	Long-term, Slight, Negative **Collision Risk**: Long-term, Slight, Negative			
Snipe (All Seasons)	**Direct Habitat Loss:** No Effect **Disturbance, Displacement and Barrier Effect**: Short-term, Slight, Negative **Collision Risk**: Long-term, Imperceptible, Negative	Section 7.6.1 Section 7.8.2	No Effect greater than Slight	Not Significant
Buzzard (All Seasons)	**Direct Habitat Loss:** No Effect **Disturbance, Displacement and Barrier Effect**: Short-term, Slight, Negative **Collision Risk**: Long-term, Slight, Negative	Section 7.6.1 Section 7.8.2	No Effect greater than Slight	Not Significant
Sparrowhawk (All Seasons)	**Direct Habitat Loss:** No Effect **Disturbance, Displacement and Barrier Effect**: Long-term, Slight, Negative **Collision Risk**:	Section 7.6.1 Section 7.8.2	No Effect greater than Slight	Not Significant

	Long-term Imperceptible, Negative			
Decommissioning Phase				
Ornithological Receptors	**Direct Habitat Loss:** No Effect **Disturbance:** No Effect greater than Slight	7.8.3	No Effect greater than Slight	Not Significant