

Chapter 7 Ornithology

Slieveacurry Renewable Energy Development, Co. Clare

Environmental Impact Assessment
Report (EIAR)



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7. ORNITHOLOGY

7.1 Introduction

This chapter assesses the likely significant impacts of the Slieveacurry Renewable Energy Development on avian receptors. Particular attention has been paid to bird species with national and international protection under the Irish Wildlife Acts 1976-2022 and the European Union (EU) Birds Directive (2009/147/EC). Where potential impacts on avian receptors are identified, mitigation is described and the residual effects are assessed. As detailed in Section 1.1.2 in Chapter 1, for the purposes of this EIAR, the various project components are described and assessed using the following terminology:

- Where the 'Proposed Project' is referred to, this encompasses the entirety of the project for the purposes of this EIA in accordance with the EIA Directive. The Proposed Project is described in detail in Chapter 4 of this EIAR.
- Where the 'Site' is referred to, this relates to the primary study area for the EIAR, as delineated by the EIAR Site Boundary in green as shown on Figure 1-1 of the EIAR and encompasses an area of approximately 1,260 hectares.
- Where the 'Proposed Grid Connection Site' is referred to, this refers to the part of the Site containing the proposed extension to the existing 110kV Sliveacallan substation and the extent of 33kV underground cabling from the wind farm road to the proposed substation extension.
- Where the 'Proposed Wind Farm Site' is referred to, this refers to the portion of the Site containing the Proposed Turbines and ancillary infrastructure, excluding the Proposed Grid Connection Site.
 - The 'Proposed Turbines' refers to the 9 no. turbines associated with the Proposed Wind Farm Site as outlined above.
- Where the 'Proposed Enhancement Site' is referred to, this refers to the portion of the Site containing the proposed biodiversity and ornithology enhancement and management areas, excluding the Proposed Wind Farm Site and Proposed Grid Connection Site.

The chapter is structured as follows:

- The **Introduction** provides a description of the Proposed Project and the relevant legislation, guidance and policy context.
- The **Methodology** section is a comprehensive description of the ornithological surveys and impact assessment methodology used to inform a robust assessment of potential impacts of the Proposed Project on birds.
- The **Baseline Ornithological Conditions** section describes the existing bird population at the Proposed Project.
- The **Receptor Evaluation** section identifies key ornithological receptors and determines their sensitivity.
- The **Impact Assessment** section assesses the impact of the Proposed Project on birds, including direct habitat loss, disturbance/displacement and collision risk. Impacts are described with regard to each phase of the Proposed Project: completion of construction, operation and decommissioning.
- The **Mitigation and Best Practice Measures** section describes proposed mitigation, best practice and enhancement measures to ameliorate the identified impacts. The residual effects of the proposed mitigation, best practice, enhancement measures and monitoring are considered.
- The **Cumulative Effects** section fully assesses potential cumulative effects of the Proposed Project in combination with other projects.

- › 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 **Conclusion** provides a summary statement on the overall significance of predicted effects on birds.

This chapter is supported by Appendices 7-1 to 7-7. 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 sites¹. 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, operational and decommissioning phases of the Proposed Project.

The following definitions are used in this chapter:

- › ‘Study Area’ refers to the focal area during field surveys, which was defined as a 500m radius of all possible turbine locations, and the Proposed Grid Connection Site at the outset of field surveys. This is the minimum area covered during all field surveys.
- › “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, the applicant is seeking a ten-year planning permission for a project consisting of 9 No. turbines and the associated works. The turbines will be 100 metres at hub height, with 3 blades of 75 metres length, giving a maximum rotor height of 175 metres and minimum rotor height of 25 metres. The Proposed Turbines 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 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.

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

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

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

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.

- › SNH (2009). Monitoring the impact of onshore wind farms on birds. Scottish Natural Heritage, Inverness, Scotland. Available at: <https://www.nature.scot/sites/default/files/2025-05/guidance-note-monitoring-the-impact-of-onshore-windfarms-on-birds.pdf>
- › SNH (2016). Assessing connectivity with Special Protection Areas (SPAs). Scottish Natural Heritage, Inverness, Scotland. Available at: <https://www.nature.scot/sites/default/files/2022-12/Assessing%20connectivity%20with%20special%20protection%20areas.pdf>
- › 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>
- › 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 (2025a). Recommended bird survey methods to inform impact assessment of onshore wind farms. Scottish Natural Heritage, Inverness, Scotland. Available at: <https://www.nature.scot/doc/recommended-bird-survey-methods-inform-impact-assessment-onshore-windfarms>
- › NatureScot (2025b). Assessing the cumulative impacts of onshore wind farms on birds. NatureScot, Inverness, Scotland. Available at: <https://www.nature.scot/doc/guidance-assessing-cumulative-impacts-onshore-wind-farms-birds>
- › NatureScot (2025c). Assessing the significance of impacts on bird populations from onshore wind farms that do not affect protected areas. NatureScot, Inverness, Scotland. Available at: <https://www.nature.scot/doc/guidance-note-assessing-significance-impacts-bird-populations-onshore-wind-farms-do-not-affect>

The following Irish guidance documents were also consulted:

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

Furthermore, this assessment has been prepared in accordance with the various planning policies and strategy guidance documents listed below and as detailed in Section 1.3 in Chapter 1 of this EIAR:

- › European Commission (2002). Assessment of plans and projects significantly affecting Natura 2000 sites. Publications Office of the European Union, Luxembourg.
- › European Commission (2020). Guidance document on wind energy developments and EU nature legislation. Publications Office of the European Union, Luxembourg.
- › Planning and Development Acts 2000 (as amended).
- › NRA (2009). Guidelines for Assessment of Ecological Impacts of National Road Schemes. National Roads Authority, Ireland.
- › EPA (2022). Guidelines on the information to be contained in Environmental Impact Statement reports. Environmental Protection Agency, Johnstown Castle Estate, Wexford.
- › DoHPLG (2018). Guidelines for planning authorities and An Bord Pleanála on carrying out Environmental Impact Assessment. Department of Housing, Planning and Local Government, Government of Ireland, Dublin.

County Clare Development Plan.

7.1.3 Statement of Authority

This ornithology chapter has been prepared by Ciarán McKenna (BSc.), Project Ornithologist of MKO and reviewed by Patrick Manley (BSc., MCIEEM), Senior Ornithologist. 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 Padraig Cregg (MSc.), Principal Ornithologist of MKO and is fully compliant with recent NatureScot guidance (SNH, 2017; revised in NatureScot, 2025). Field surveys were undertaken by Allan Mee (BSc.), Conor Geoghan (BSc.), Eoghan Phelan (BSc.), Fionn O'Donoghue (BSc.), John Curtain (BSc.), John Downes (BSc.), Jonah Gaine (BSc.), Jack Kennedy (BSc.), Jamie Quirke (BSc.), Louis De Vries (MSc.), Marcus Hogan (BSc.), Mike Sylvia (BSc.), Óisín Casasin (BSc.), Patrick Manley (BSc.), Susan Doyle (PhD), Seán O'Brien (BSc.), Tony Keanelly (BSc.), Tom Rae (BSc.), Zuzana Erosova (BSc.), Zak O'Connor (BSc.). Surveyors are suitably qualified competent experts for the purposes of the preparation of this EIAR.

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 Site. The assessment included a thorough review of the available ornithological data including:

- › Designated sites
- › Bird atlases.
- › Bird sensitivity mapping tool.
- › Online web-mappers from the National Biodiversity Data Centre.
- › Irish Wetland Bird Survey data.
- › 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 (PL03.312728)

7.2.2 Scoping and Consultation

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

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

Table 7-1 Consultation responses

Consultee	Response	Issued Addressed
Birdwatch Ireland	No response at time of writing.	-
Irish Wildlife Trust	No issues raised.	-

Consultee	Response	Issued Addressed
Irish Raptor Study Group	No response at time of writing.	-
Irish Red Grouse Association	No response at time of writing.	-
Department of Housing, Local Government and Heritage	In summary, the Department have breeding records of hen harrier in the area surrounding the Site. The significance of impacts on hen harrier should be characterised in terms of the regional and national populations. The Department also outlined how compensation/enhancement measures should be proposed and outlined some recommendations for forest-to-bog restoration.	An impact assessment on hen harrier is presented in Section 7.5.2.2 and 7.7.3.3 and a comprehensive enhancement plan for hen harrier is outlined in Appendix 6-4.

7.2.3 Field Surveys

7.2.3.1 Identification of Target Species

Based on the results of the desk study, consultation and reconnaissance visits, the assemblage of bird species in the Proposed Wind Farm Site and the likely importance of the Proposed Wind Farm Site for these species was ascertained. A list of 'target species' likely to occur at the Proposed Wind Farm Site was compiled. The list was drawn from:

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

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

7.2.3.2 Survey Methodology

Field surveys were undertaken during the survey period October 2020 to September 2025, consisting of five breeding seasons (April – September) and five non-breeding seasons (October – March). This survey work forms the core dataset for the assessment of impacts on ornithology. The data provided in the field surveys is robust and allows clear, precise and definitive conclusions to be made on the avian receptors identified. All survey effort and location maps are presented in Appendix 7-1.

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; revised in NatureScot, 2025a). The various ornithological surveys undertaken at the Proposed Wind Farm Site and hinterland are described in detail below.

7.2.3.2.1 Vantage Point Surveys

Vantage point surveys were undertaken in accordance SNH (2017; revised in NatureScot, 2025a) to monitor flight activity within a 500m radius of the Proposed Turbines. Surveys were conducted from three fixed vantage points from October 2020 to March 2021 inclusive (VP1, VP2 and VP3), and four fixed point vantage points from April 2021 to September 2025 inclusive (VP1, VP2, VP3, and VP4) due to expansion of the Proposed Wind Farm Site, with comprehensive coverage to a 500m radius of the Proposed Turbines. The vantage point locations were selected by undertaking a viewshed analysis (described below) and confirmed by a reconnaissance visit and initial field surveys to ensure that the Proposed Turbines were entirely covered.

Viewsheds were calculated using the Visibility Analysis plugin (Version 1.8) over a raster digital terrain model (DTM) in QGIS (Version 3.28) Note that while the relevance of being able to view as much of the site to ground level is acknowledged, the NatureScot guidance emphasises the importance of visibility of the ‘collision risk volume’ when the data is to be used to estimate the risk of collision with turbines by birds. Therefore, the viewshed analysis aims to identify the most suitable locations to site vantage points such that the airspace of the turbine rotor swept area is in view using the fewest possible number of vantage points. As no specific turbine model was confirmed at the outset of surveys, the viewsheds were based on a notional layer suspended 20m above the ground. The vantage point locations were tested for visibility coverage by creating a point 1.75m in height (to represent the height of the surveyor) on a map using 10m contours terrain data. The relative height of any surrounding landscape features (e.g., trees) and their effects on visibility was also accounted for in the analysis. The software produced a 360° viewshed 20m from ground level up to a 2km radius around the vantage point. This viewshed was then cropped to a 180° arc representing the area visible to the surveyor. Once the turbine model was confirmed to have a lowest swept height of 25m, the viewsheds were recalculated using a notational layer suspended at 25m. The viewsheds provided adequate coverage of the Proposed Wind Farm Site for a collision risk assessment to be undertaken.

Survey methodology followed SNH (2017; revised in NatureScot, 2025a). 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 October 2020 to September 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). Note that in September 2022 bad weather prevented VP3 from being completed on time and it was completed as early into October as was possible. During May 2024 due to a surveyor miscommunication VP2 was missed and VP4 was carried out twice. However, given the number of seasons completed at the site, these missed surveys are not considered a limitation in the data.

Table 7-2 Vantage point survey duration

Survey Season and Number of Vantage Points (VPs)	Effort per Vantage Point (VP)
Winter Season 2020/2021 (3 VPs)	36 hours per VP
Breeding Season 2021 (4 VPs)	Minimum 36 hours per VP
Winter Season 2021/2022 (4 VPs)	Minimum 36 hours per VP
Breeding Season 2022 (4 VPs)	Minimum 36 hours per VP (VP3 30 hours)
Winter Season 2022/2023 (4 VPs)	36 hours per VP (VP3 42 hours)
Breeding Season 2023 (4 VPs)	36 hours per VP
Winter 2023/2024 (4 VPs)	36 hours per VP
Breeding 2024 (4 VPs)	Minimum 36 hours per VP (30 hours for VP2)
Winter 2024/2025 (4 VPs)	36 hours per VP
Breeding 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 at the outset of surveys.

Bands were split into 0-15m, 15-25m, 25-200m and >200m. All flight activity within a height band 25-200m is considered to be within the Potential Collision Height (PCH) with regard to the turbine swept area. In addition, the presence of any non-target species was recorded to inform the evaluation of supporting habitat.

7.2.3.2.2 Winter Walkover Surveys

Winter walkover surveys were undertaken to record the presence of bird species within the Study Area and to a 500m radius of these, including areas between vantage point locations. The methodology was adapted from the breeding walkover methodology outlined in Brown and Shepherd (1993) and Calladine *et al.* (2009), combined with Common Bird Census methods (British Trust for Ornithology, 2021). Winter walkover surveys were conducted in daylight hours over four visits between October and March (i.e., four visits in winter 2020/2021, four visits in winter 2021/2022, four visits in Winter Season 2022/2023, four visits in Winter Season 2023/2024, and four visits in Winter Season 2024/2025).

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

7.2.3.2.3 Breeding Walkover Surveys

Breeding walkover surveys were undertaken to determine possible, probable or confirmed breeding bird activity within the Study Area and to a 500m radius of these. The methodology was based on Brown and Shepherd (1993) and Calladine *et al.* (2009), combined with Common Bird Census methods (British Trust for Ornithology, 2021) for dense habitat. Breeding walkover surveys were conducted in daylight hours over four visits during the core breeding season months April to July in years 2021, 2022, 2023, 2024, and 2025.

Transect routes were walked across different habitat complexes within the survey area where access allowed. Using binoculars, the surveyor regularly scanned the surroundings of each transect for target species. All target species were mapped and breeding status was assigned following British Trust for Ornithology (BTO) breeding status codes (<https://www.bto.org/our-science/projects/birdatlas/methods/breeding-evidence>). In addition, the presence of any non-target species was recorded to inform the evaluation of supporting habitat.

7.2.3.2.4 Hen Harrier Roost Surveys

Hen harrier roost surveys were undertaken within 2km of the Study Area. These surveys aimed to identify active winter hen harrier roosts near or within the Proposed Wind Farm Site. Survey methodology followed Gilbert *et al.* (1998) and O'Donoghue (2019). Each hen harrier vantage point was surveyed once per month during the winter season between October and March inclusive (in winter 2020/2021, 2021/2022, 2022/2023, 2023/2024, and 2024/2025).

Roost watches of 2-3 hours were conducted at seven hen harrier vantage point locations (HHVP1, HHVP1a, HHVP2, HHVP3, HHVP4, HHVP5, and HHVP7) from dusk until last visible light. All hen harrier observations were recorded and mapped.

7.2.3.2.5 Breeding Raptor Surveys

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

Breeding raptor watches of 3 hours (supplemented by transects if necessary) were conducted during daylight at six breeding raptor locations (BR1, BR2, BR3, BR4, BR5, and BR6). 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.

7.2.3.2.6 Breeding Woodcock Surveys

Breeding woodcock surveys were undertaken within the Study Area. The aim of the survey was to identify breeding woodcock territories within the Study Area by locating roding (breeding display) males. Survey methodology followed Gilbert *et al.* (1998): the surveyor walked transects within the Study Area for 2 hours from dusk until last visible light during which all woodcock observations were mapped, with particular reference to roding observations. Each transect was surveyed three times during the core breeding season of May and June in years 2021, 2022, 2023, 2024, and 2025.

7.2.3.2.7 Breeding Red Grouse Surveys

Breeding red grouse surveys were undertaken within the Proposed Wind Farm Site. The aim of the survey was to identify breeding red grouse territories within the Study Area by using an auditory lure of a recording of a 'rival' red grouse male to elicit a response from the territory holder within the survey area. Survey methodology followed Cummins *et al.* (2010). The survey was conducted in March 2021, 2022, 2023, 2024, and 2025 and all surveys were conducted under National Parks and Wildlife Service license (license numbers 09/2021, 03/2022, 012/2023, 028/2024, and 011/2025).

The surveyor walked transects ~150m apart through suitable bog and heath habitat, where access allowed, stopping every ~100m to broadcast lure calls for 30 seconds and listening for responses. Call-back and flying by the territory holder in response to the lure were recorded and mapped.

7.2.3.2.8 Multidisciplinary Walkover Survey

The Proposed Grid Connection Site was surveyed in April and July 2025, and the Proposed Enhancement Site were surveyed in February 2026, through a multidisciplinary walkover survey. The site was systematically walked, while the surveyor recorded a range of protected species, including birds. Further details on these surveys are available in Chapter 6 of this EIAR.

7.2.4 Receptor Evaluation and Impact Assessment

7.2.4.1 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.

7.2.4.2 Identification of Key Ornithological Receptors

Following the analysis of field survey data, a precautionary screening approach was followed to identify Key Ornithological Receptors (KOR). A KOR is defined as a species occurring within the Proposed Wind Farm Site upon which potential impacts are anticipated and assessed. All target species recorded during surveys are listed in Appendix 7-2. The list of target species was refined to KORs, excluding those for which pathways for a significant effect could not be identified.

7.2.4.3 Potential Impacts Associated with 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.

For each of these risks, the detailed knowledge of bird distribution and activity within and surrounding the Proposed Wind Farm Site has been used to predict potential impacts of the Proposed Project on birds.

7.2.4.4 Collision Risk Assessment

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

7.2.4.5 Description of Impacts

The sensitivity, magnitude and significance of impacts on bird populations resulting from the Proposed Project was quantified according to 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 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.

7.2.4.5.1 Percival (2003) criteria

The Percival (2003) methodology quantifies the sensitivity of a given species to the development type, the magnitude of the effect and the significance of the potential impact. Table 7-3, 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)

Sensitivity	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

7.2.4.5.2 EPA (2022) Criteria

EPA criteria use the following terms to describe the quality of the effect:

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

The significance of the effect is quantified as:

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

The duration of effects can be:

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

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

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

The probability of the effect may be:

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

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

7.2.4.6 Cumulative Assessment

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

NatureScot guidance (SNH, 2018; NatureScot, 2025b) was consulted while undertaking a cumulative impact assessment. This guidance emphasises that its priority is to “*maintain the conservation status of the species population at the national 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 this, the cumulative assessment has been carried out at the geographical scale of the importance rating of the KOR. For the purposes of this cumulative assessment, the regional/county scale is considered to be a 25km radius of the Proposed Turbines and the local scale is considered to be a 5km radius.

Assessment material was compiled for other plans and projects within 25km of the Proposed Wind Farm Site, as described in Chapter 2 of this EIAR. The material was gathered through a search of relevant online Planning Registers, reviews of relevant EIS/EIAR documents, planning application details and planning drawings. These are then considered for in-combination or cumulative effects with the Proposed Wind Farm Site.

7.2.5 Assessment Justification

7.2.5.1 Survey Data

A comprehensive suite of bird surveys was undertaken at the Site between October 2020 and September 2025. Results derived from a continuous five years of surveying at the Proposed Wind Farm Site and hinterland, undertaken in line with NatureScot guidance, are analysed to inform this assessment. As such, the surveys undertaken provide the information necessary to allow a complete, comprehensive and robust assessment of the potential impacts of the Proposed Project on avian receptors.

7.2.5.2 Mitigation

The development 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, or offsetting measures have been proposed to offset 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 offsetting measures, mitigation measures and best practices (refer to Section 7.6 for further details).

7.2.5.3 Limitations

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

7.3 Baseline Ornithological Conditions

7.3.1 Designated Sites

A screening assessment and 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. For a detailed assessment of any potential impacts on SPAs, refer to the Appropriate Assessment and NIS associated with Chapter 6 of this EIAR.

No potential for likely significant effects were identified for any SPAs.

7.3.2 Bird Atlas Records

‘Bird Atlas 2007-11: The breeding and wintering birds of Britain and Ireland’ (Balmer *et al.*, 2013) is the most recent comprehensive work on wintering and breeding birds in Ireland. 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), and the new atlas of breeding birds in Britain and Ireland: 1988-1991 (Gibbons *et al.*, 1993).

The Site lies within hectads² R07, R17 and R18. 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

Species	R07	R17	R18
Curlew	-	Probable	-
Grey Wagtail	Confirmed	Confirmed	Possible
Hen Harrier	-	Confirmed	Possible
Kestrel	Confirmed	Confirmed	Possible
Long-eared Owl	Confirmed	-	-
Meadow Pipit	Confirmed	Confirmed	Confirmed
Red Grouse	-	Confirmed	-

² A hectad is a 10km x 10km grid square

Species	R07	R17	R18
Snipe	Possible	Probable	-
Sparrowhawk		Confirmed	Possible

Table 7-7 Wintering Bird Atlas data

Species	R07	R17	R18
Barn Owl	-	Present	-
Barnacle Goose	Present	-	-
Bar-tailed Godwit	Present	-	-
Chough	Present	-	-
Common Scooter	-	-	Present
Curlew	Present	-	Present
Dunlin	Present	-	-
Golden Plover	Present	-	
Great Northern Diver	Present	-	Present
Grey Plover	Present	-	-
Grey Wagtail	Present	Present	Present
Hen Harrier	Present	Present	Present
Kestrel	Present	Present	Present
Knot	Present	-	-
Lapwing	Present	-	Present
Little Egret	-	-	Present
Little Gull	Present	-	-
Meadow Pipit	Present	Present	Present
Oystercatcher	Present	-	-
Purple Sandpiper	Present	-	-
Razorbill	Present	-	-
Red Grouse	-	Present	-
Redshank	Present	-	-
Redwing	Present	Present	Present
Short-eared Owl	-	Present	-
Snipe	Present	Present	Present
Sparrowhawk	-	-	Present
Velvet Scooter	-	-	Present
Whooper Swan	Present	Present	Present
Woodcock	-	Present	Present

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 (McGuinness *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 Site is located within an area of **low** bird sensitivity to wind energy developments. The Proposed Wind Farm Site is approximately 18.5km from the nearest area of high

sensitivity. The Proposed Grid Connection Site is also within areas of medium sensitivity and is 19km from the nearest area of high sensitivity.

7.3.4

National Biodiversity Data Centre Records

The National Biodiversity Data Centre (NBDC) Biodiversity Maps provide records of flora and fauna within 10km hectads across Ireland. Data is available from the map viewer on the NBDC website (<https://maps.biodiversityireland.ie/Map>). The Site lies within hectads R07, R17, and R18. Table 7-8 lists species of conservation interest that have been recorded in these hectads.

Table 7-8 National Biodiversity Data Centre records

Species	Hectad	NBDC Dataset
Arctic Tern	R07	eBIRD Bird Records for Ireland
Barn Owl	R07, R17, R18	eBIRD Bird Records for Ireland, Bird Atlas 2007 - 2011, Birds of Ireland
Barnacle Goose	R07	eBIRD Bird Records for Ireland
Bar-tailed Godwit	R07	eBIRD Bird Records for Ireland
Black-tailed Godwit	R07, R17	eBIRD Bird Records for Ireland
Buzzard	R07, R17, R18	eBIRD Bird Records for Ireland, Birds of Ireland
Chough	R07	eBIRD Bird Records for Ireland
Common Scoter	R07, R18	Irish Wetland Birds Survey (I-WeBS) 1994-2001., Bird Atlas 2007 - 2011
Common Tern	R07	eBIRD Bird Records for Ireland
Corncrake	R07, R17, R18	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991, The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.
Curlew	R07, R17, R18	eBIRD Bird Records for Ireland, Birds of Ireland
Curlew Sandpiper	R07	eBIRD Bird Records for Ireland
Dunlin	R07	eBIRD Bird Records for Ireland
Eider	R07	eBIRD Bird Records for Ireland
Golden Plover	R07, R17	eBIRD Bird Records for Ireland, Birds of Ireland
Great Northern Diver	R07, R18	eBIRD Bird Records for Ireland, Bird Atlas 2007 - 2011
Great White Egret	R18	eBIRD Bird Records for Ireland
Grey Plover	R07	eBIRD Bird Records for Ireland
Grey Wagtail	R07, R17, R18	eBIRD Bird Records for Ireland
Hen Harrier	R07, R17, R18	eBIRD Bird Records for Ireland, Birds of Ireland
Kestrel	R07, R17, R18	eBIRD Bird Records for Ireland, Birds of Ireland
Kingfisher	R07, R17, R18	eBIRD Bird Records for Ireland, The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.
Kittiwake	R07, R17	eBIRD Bird Records for Ireland
Knot	R07	eBIRD Bird Records for Ireland
Lapwing	R07, R17, R18	eBIRD Bird Records for Ireland, The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991, Birds of Ireland
Little Egret	R07, R18	eBIRD Bird Records for Ireland, Birds of Ireland
Little Gull	R07	Bird Atlas 2007 - 2011
Long-eared Owl	R07, R17, R18	Bird Atlas 2007 - 2011, The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972., eBIRD Bird Records for Ireland

Species	Hectad	NBDC Dataset
Marsh Harrier	R07	Clare Biological Records Centre Dataset 2004-2007
Meadow Pipit	R07, R17, R18	eBIRD Bird Records for Ireland
Mediterranean Gull	R07	eBIRD Bird Records for Ireland
Merlin	R07, R17, R18	eBIRD Bird Records for Ireland, Birds of Ireland, The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.
Oystercatcher	R07, R17, R18	eBIRD Bird Records for Ireland, Birds of Ireland
Pochard	R07, R17, R18	Irish Wetland Birds Survey (I-WeBS) 1994-2001.
Puffin	R07, R17	Birds of Ireland, eBIRD Bird Records for Ireland
Purple Sandpiper	R07	eBIRD Bird Records for Ireland
Razorbill	R07, R17	eBIRD Bird Records for Ireland
Red Grouse	R07, R17, R18	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972., eBIRD Bird Records for Ireland, The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991
Red Kite	R07	Rare birds of Ireland
Redshank	R07, R17, R18	eBIRD Bird Records for Ireland, The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991
Red-throated Diver	R07	eBIRD Bird Records for Ireland
Redwing	R07, R17, R18	eBIRD Bird Records for Ireland, Bird Atlas 2007 - 2011
Ruff	R07	Clare Biological Records Centre Dataset 2004-2007
Sandwich Tern	R07	eBIRD Bird Records for Ireland
Short-eared Owl	R17	Bird Atlas 2007 - 2011
Shoveler	R07, R17	Irish Wetland Birds Survey (I-WeBS) 1994-2001, eBIRD Bird Records for Ireland
Snipe	R07, R17, R18	eBIRD Bird Records for Ireland, Birds of Ireland
Sparrowhawk	R07, R17, R18	eBIRD Bird Records for Ireland
Stock Dove	R07	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991
Storm Petrel	R18	eBIRD Bird Records for Ireland
Swift	R07, R17, R18	Birds of Ireland, eBIRD Bird Records for Ireland, The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991
Twite	R17	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.
Velvet Scoter	R18	Bird Atlas 2007 - 2011
Whinchat	R17, R18	eBIRD Bird Records for Ireland, The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.
Whooper Swan	R07, R17, R18	eBIRD Bird Records for Ireland, Bird Atlas 2007 - 2011, Birds of Ireland
Woodcock	R17, R18	Bird Atlas 2007 - 2011, eBIRD Bird Records for Ireland
Yellowhammer	R07, R18	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.

7.3.5 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/>. Datasets for the following sites were sourced from www.birdwatchireland.ie and reviewed:

- > Ballyallia Lake
- > Ballycar Lough
- > Carran Polje
- > Castlough
- > 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)

7.3.6 Rare and Protected Species Dataset

An information request was sent to NPWS requesting records from the Rare and Protected Species Database. The following records were obtained from the NPWS on the 9th of July 2025:

Hen Harrier

Records from National Surveys in 2015 and 2010 in Hectad R17

- > Possible breeding, two in 2010, one in 2015.
- > Confirmed breeding, seven in 2010, two in 2015.

Greenland White-fronted Goose

Records of Greenland white-fronted goose from 1982 to 1996 in Hectad R17 and R18.

7.3.7 Previous Surveys at the Proposed Wind Farm Site

A summary of the previous survey data is provided to give an overview of the longer-term bird distribution and abundance trends within the Proposed Wind Farm Site. The Proposed Wind Farm Site was previously surveyed from April 2016 to March 2018 and between October 2020 and September 2021. 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 (PL03.312728). The following species were observed during surveys and discussed within the EIAR for the previous application: golden plover, hen harrier, merlin, peregrine, osprey, herring gull, kestrel, meadow pipit, red grouse, snipe,

woodcock, wigeon, buzzard, and sparrowhawk. The species which were assessed to be Key Ornithological Receptors were: hen harrier, golden plover, merlin, peregrine, osprey, common snipe, kestrel and sparrowhawk. Other target species observed were curlew, red grouse, woodcock and buzzard. Summaries of the observations for each of these species is outlined below.

Golden Plover

Golden plover were recorded on 16 occasions during the surveys conducted, with flocks of up to 44 birds observed travelling or landing.

Hen Harrier

Hen harrier were observed on 33 occasions during the on-site surveys conducted and on an additional 20 occasions within the hinterland. The majority of observations were of birds flying or hunting. There was a nest located at the known nest site to the south of the Proposed Wind Farm Site in 2021.

Merlin

Merlin were observed on one occasion during the surveys conducted. A male bird was observed hunting over upland blanket bog.

Peregrine

Peregrin were observed on one occasion during the surveys conducted. A bird was observed hunting over upland blanket bog and agricultural grassland.

Osprey

Osprey were observed on one occasion during the surveys conducted. A bird was observed travelling over upland blanket bog and conifer plantation.

Snipe

Snipe were observed on 111 occasions during the surveys conducted. The majority of observations were of up to six birds commuting, calling or flushed by the observer.

Kestrel

Kestrel were observed on 115 occasions during the on-site surveys conducted and an additional 21 occasions within the hinterland. The majority of observations were of birds hunting or commuting. There was confirmed breeding within the area in 2021 and a possible breeding territory in 2016.

Red Grouse

Red grouse were observed on 12 occasions during the surveys conducted. The observations indicated that red grouse held breeding territories in this area during the 2017, 2018 and 2021 breeding seasons.

Woodcock

Woodcock were observed on one occasion during the surveys conducted. A bird was flushed by an approaching surveyor.

Buzzard

Buzzard were observed on one occasion during the surveys conducted. A bird was observed soaring high over the area.

Sparrowhawk

Sparrowhawk were observed on 15 occasions during the on-site surveys conducted and an five occasions within the hinterland. The majority of observations were of single birds flying or hunting. There was confirmed breeding within the area in 2021.

7.3.8 Field Survey Results

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

The target species recorded within 500m of the Proposed Wind Farm Site during field surveys are listed in Table 7-9, along with a summary of key findings. Detailed species accounts are then provided under individual headings. Target species only recorded greater than 500m from the Proposed Wind Farm Site are summarised in Table 7-10.

Table 7-9 Target species recorded within 500m of the Proposed Wind Farm Site

Species	Key findings
Golden Plover	Golden plover were occasionally observed commuting over and landing within the bog habitats of the Proposed Wind Farm Site during the winter and passage season. Golden plover were occasionally observed roosting within the Proposed Wind Farm Site.
Goshawk	Goshawk were only observed on two occasions during the survey period, one of which was within the Proposed Wind Farm Site.
Hen Harrier	Hen harrier are resident at the Proposed Wind Farm Site and are regularly observed commuting and hunting, primarily during the breeding season. There was a confirmed breeding territory identified 2km south of the Proposed Wind Farm Site in 2021, 2022, 2024 and 2025. Additionally, there was a probable breeding territory within the Proposed Wind Farm Site in 2021, however a nest was not located likely due to these birds not nesting or failing early in the season. There were no winter roost sites identified.
Little Egret	Little Egret were only observed on one occasion during the survey period.
Merlin	Merlin were observed infrequently during surveys. There was no evidence of breeding or roosting during surveys.
Peregrine	Peregrine were only observed on one occasion during the survey period.
Grey Wagtail	Grey wagtail were occasionally observed during surveys. there was no evidence of breeding or roosting during surveys.

Species	Key findings
Kestrel	Kestrel are resident at the Proposed Wind Farm Site and breeding territories were identified within the Proposed Wind Farm Site and surrounding area in 2021, 2022, 2023 and 2024.
Meadow Pipit	Meadow pipit are resident at the Proposed Wind Farm Site all year round and are breeding throughout the site in areas where suitable breeding habitat exists.
Red Grouse	Red grouse were present within the Proposed Wind Farm Site in 2021 and observations indicate probable breeding within the Proposed Wind Farm Site. However, there have been no observations of red grouse during surveys between 2022 and 2025.
Redwing	Redwing were occasionally observed during surveys, there were no roost sites identified during surveys. Redwing were not observed during the breeding season.
Snipe	Snipe are resident at the Proposed Wind Farm Site, with the majority of observations during the winter season. There are only small numbers of birds breeding within the Proposed Wind Farm Site. Snipe are regularly observed using the habitats within the Proposed Wind Farm Site for roosting during the winter.
Swift	Swift were only observed on two occasions during surveys. There was no evidence of breeding during surveys. Swift were not observed during the winter season.
Woodcock	Woodcock were only observed as incidental observations, there was no evidence of breeding or roosting identified during surveys.
Buzzard	Buzzard are resident at the Proposed Wind Farm Site, with confirmed breeding in 2023 and probable breeding identified in 2025.
Sparrowhawk	Sparrowhawk were recorded regularly within and in proximity to the Proposed Wind Farm Site. There were up to two confirmed and one probable breeding territories identified in each year, one of which was within the Proposed Wind Farm Site.

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

Species	Observations
White-tailed Eagle	There was a single observation of white-tailed eagle. A juvenile bird was observed flying low approximately 2.2km southeast of the site at its closest point. The bird was mobbed and then soared away over the top of Slievecallan hill out of sight.

7.3.8.1 Golden Plover

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

Vantage Point

Golden plover were recorded on 25 occasions during vantage point surveys, or on average once every 57 survey hours during breeding and winter surveys. Of these records, 17 were within 500m of Proposed Turbines. Between 2 and 220 individuals were observed, with an average flock size of 111 birds. The majority of observations were of birds commuting. There were five observations of birds landing, all of which were within the bog habitat within the Proposed Wind Farm Site.

There was a single record of golden plover during the breeding season across all the years of surveys. It was a flock of 15 birds flying and calling on the 2nd of May 2025, and likely a migrating flock given the time of year and number of birds.

Winter Walkover

Golden plover were recorded on eight occasions during winter walkover surveys, on 8 of 68 survey dates (12%). Records were of flocks between 1 and 230 individuals during the winter season. The average flock size was 116. The majority of observations were of birds commuting, with one observation of a flock of six birds roosting on the bog habitat within the Proposed Wind Farm Site. There were five observations clustered within the bog habitat within the Proposed Wind Farm Site, which shows a similar pattern of activity to those observed during the vantage point surveys.

Incidental Records

There were 15 incidental records of golden plover during breeding red grouse surveys, breeding raptor surveys, hen harrier roost surveys and vantage point surveys. Between 1 and 500 individuals were observed during the winter and passage seasons. Six of the records were within the Proposed Wind Farm Site. The majority of which were of birds commuting, there was one observation of two birds flushed from within the Proposed Wind Farm Site by the surveyor.

The largest flock (500 individuals) was observed circling Slievecallan hill approximately 1.8km southeast of the Proposed Wind Farm Site, the flock flew west and came within 700m of the Proposed Wind Farm Site at its closest point.

7.3.8.2 Goshawk

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

Vantage Point

Goshawk was recorded once during vantage point surveys, during winter surveys. This observation was of a single bird travelling within the Proposed Wind Farm Site and landing within commercial forestry.

Incidental Records

There were three incidental records of goshawk during hen harrier roost surveys. All of the observations were of a single bird flying and perching on the same date, approximately 2.5km south of the Proposed Wind Farm Site.

7.3.8.3 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 breeding behaviour are provided in Confidential Survey Data Appendix 7-5.

Vantage Point

Hen harrier were recorded on 44 occasions during vantage point surveys, or on average once every 32 hours surveys. Of these records, 29 were within 500m of the Proposed Turbines. Of the 44 records, 36 (82%) were during the breeding season. The majority of observations were of one or two birds commuting or hunting. There were two observations relating to breeding behaviour, one in 2021 and one in 2022. In September 2021, a ringtail hen harrier was observed interacting with two kestrel, circling above them, within the Proposed Wind Farm Site. This observation is in a similar location to the displaying bird discussed below (territory HH-a), however given the time of year and that this may be associated with territory HH-b, this observation does not necessarily indicate an occupied territory at HH-a given there were no other observations in the area to suggest breeding in the mid to late breeding season. In 2022, a hen harrier was observed attacking another bird, 2km south of the Proposed Wind Farm Site, indicating probable breeding in this area (territory HH-b).

Winter Walkover

Hen harrier were recorded on nine occasions during winter walkover surveys, on 6 of 68 survey dates (9%). Records were of between one and three individuals commuting, hunting or soaring. Of these records, five were within the Proposed Wind Farm Site. The majority (six) of the observations were during 2022. There was one observation in each of the years 2023, 2024 and 2025.

Breeding Walkover

Hen harrier were recorded on 14 occasions during breeding walkover surveys, on 12 of 63 survey dates (19%). Records were of between one and three individuals. Of these records, seven were within the Proposed Wind Farm Site. The majority of observations were of individuals commuting or hunting. There were six observations relating to breeding behaviour. In 2021, there were two observations of a male displaying (sky dancing) within the Proposed Wind Farm Site. These observations are in a similar area to those outlined during vantage point surveys above and are also related to territory HH-a. In 2024, an adult with two chicks were observed within a nest, at territory HH-b discussed above. Additionally, in 2024, a bird was observed carrying prey within the Proposed Wind Farm Site, however it is assumed that this bird was carrying prey to the identified nest site (territory HH-b). In 2025, there was an observation of a bird mobbing a buzzard, indicating probable breeding again at territory HH-b.

Hen Harrier Roost

Hen harrier were recorded on 15 occasions during hen harrier roost surveys, on 9 of 176 survey dates (6%). Records were of either one or two birds commuting or hunting. Of these records, one was within the Proposed Wind Farm Site. There were two records in 2021, one in each 2022 and 2023, eight in 2024, and four in 2025, none of which observed any roosting behaviour.

Breeding Raptor

Hen harrier were recorded on 102 occasions during breeding raptor surveys, on 22 of 71 survey dates (31%). Records were of between one and three, of which none were within the Proposed Wind Farm Site. The majority of the observations (60) were related to breeding behaviour at the identified breeding territory (HH-b) in 2021, 2022, 2024 and 2025.

In 2021, there were eight observations relating to breeding behaviour, with up to two birds observed displaying, carrying prey and performing food passes. These observations confirmed breeding here (territory HH-b) in 2021. In 2022, there were three observations relating to breeding behaviour. There was one observation of a bird carrying prey, and two observations of food passes at the breeding territory (HH-b) in July, confirming breeding in 2022. In 2024, there were 39 observations relating to breeding behaviour, ranging from displaying flights early in the breeding season, to chicks calling from

a nest and fledged young, confirming breeding at breeding territory HH-b. In 2025, there were nine observations of breeding behaviour. These observations were of courtship displays and food passes between a male and female observed, confirming breeding at territory HH-b.

Incidental Records

There were six incidental records of hen harrier during breeding raptor surveys and vantage point surveys. Observations were of between one and two birds, two of which were within the Proposed Wind Farm Site. Observations were of birds travelling or hunting, with one observation of a bird being flushed by the surveyor.

Breeding Summary

In Summary, there was a nest site (HH-b) identified approximately 2km south of the Proposed Wind Farm Site which was occupied in 2021, 2022, 2024 and 2025. Additionally, there was a probable territory identified within the Proposed Wind Farm Site in 2021 (HH-a); however, a nest was not located likely due to this bird not nesting (e.g. due to not find a mate) or failing early in the season. Furthermore, there were no further observations of breeding at this location (HH-a) in subsequent breeding seasons surveyed from 2022 to 2025.

7.3.8.4 Little Egret

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

Incidental Records

There was a single incidental record of little egret during a hen harrier roost survey. In November 2024 a single bird was observed flying over the Proposed Wind Farm Site.

7.3.8.5 Merlin

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

Vantage Point

Merlin were recorded on five occasions during vantage point surveys, or on average once every 189 survey hours during winter and passage season surveys. Of these records, two were within 500m of Proposed Turbines. All observations were of individuals travelling.

Incidental Records

There were two incidental records of merlin during hen harrier roost surveys, of these, one was within the Proposed Wind Farm Site. Observations were of individuals travelling, with one observation of a bird landing.

7.3.8.6 Peregrine

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

Winter Walkover

Peregrine was recorded on one occasion during winter walkover surveys. A single bird was recorded in November 2024 flying within the Proposed Wind Farm Site.

7.3.8.7 Grey Wagtail

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

Vantage Point

Grey wagtail were recorded on 11 occasions during vantage point surveys, or on average once every 130 survey hours during breeding and winter surveys. Of these records, one was within 500m of Proposed Turbines. Observations were of individuals calling, travelling and foraging.

Winter Walkover

Grey wagtail were recorded on four occasions during winter walkover surveys, on 3 of 68 survey dates (4%). Records were of one or two birds calling, foraging or flitting, one of which was within the Proposed Wind Farm Site.

Breeding Walkover

Grey wagtail were recorded on 11 occasions during the breeding walkover surveys, on 10 of 63 survey dates (16%), of these observations, four were within the Proposed Wind Farm Site. Observations were of between one and three birds, foraging, travelling or calling.

Incidental Records

Grey wagtail were recorded as incidental observations on five occasions. Observations were of one or two birds travelling or calling.

7.3.8.8 Kestrel

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

Vantage Point

Kestrel were recorded on 314 occasions during vantage point surveys, or on average once every 5 hours of breeding and winter surveys. Of these records, 148 (47%) were within 500m of the Proposed Turbines. The majority of observations were of between one and four birds hunting, travelling, soaring or perched. There were two observations relating to breeding behaviour. In 2022, there were two observations of kestrel mobbing other birds adjacent to the Proposed Wind Farm Site, indicating probable breeding in this area (territory K-a). In 2021 and 2023, there were observations of juveniles or family groups, indicating successful breeding in the wider area surrounding the site, however there was no evidence to indicate where these birds originated during these surveys.

Winter Walkover

Kestrel were recorded on 45 occasions during the winter walkover surveys, on 24 of 68 survey dates (35%), of these observations, 21 were within the Proposed Wind Farm Site. The majority of observations

(42 of 46) were of a single bird hunting or commuting. There were four observations of two birds hunting or travelling

Breeding Walkover

Kestrel were recorded on 56 occasions during the breeding walkover surveys, on 25 of 63 survey dates (40%), of these observations, 21 were within the Proposed Wind Farm Site. The majority of observations were of one or two birds travelling or hunting. there were three observations relating to breeding behaviour. In 2021, there was an observation of an adult carrying prey, which confirms breeding within, or adjacent to the Proposed Wind Farm Site, however an exact nest location was not located (territory K-b). In 2023, a pair were observed chasing a cuckoo adjacent to the Proposed Wind Farm Site. Later in the season an adult and a juvenile were hunting together, indicating successful breeding in this area (territory K-c). In 2024, a pair of birds were observed chasing each other, indicating probable breeding at the same location as the territory in 2022 (territory K-a).

Breeding Raptor

Kestrel were recorded on 55 occasions during the breeding raptor surveys, on 32 of 71 survey dates (45%), of these observations, 2 were within the Proposed Wind Farm Site. The majority of observations were of between one and three birds travelling or hunting. There were three observations relating to breeding behaviour. In 2021, there was an observation of a provisioning flight, in the direction of the regularly used nest site at K-a, given the flight trajectory it is assumed this bird was flying towards this breeding territory. In 2023, there was an observation of a pair mobbing a buzzard approximately 3km south of the Proposed Wind Farm Site (territory K-d), indicating probable breeding in this location. In 2024, there was an observation of a bird mobbing a hen harrier while carrying prey, close to the regularly used breeding territory (K-a), this confirms breeding at this territory in 2024.

Incidental Records

There were 55 incidental records of kestrel during breeding raptor surveys, breeding red grouse surveys, breeding woodcock surveys, hen harrier roost surveys, vantage point surveys and winter walkover surveys. Of these, 20 were within the Proposed Wind Farm Site. The majority of the observations (52 of 55) were of a single bird, while the remaining observations were of two individuals flying or hunting during the winter seasons of 2021 and 2024. All of the incidental records were of birds flying or hunting.

Breeding Summary

There were four breeding territories identified during the survey period:

- K-a Confirmed breeding in 2021 and 2024, and probable breeding in 2022.
- K-b Confirmed breeding in 2021
- K-c Confirmed breeding in 2023
- K-d Probable breeding in 2023

7.3.8.9 Meadow Pipit

Meadow pipit were observed in the breeding and winter seasons. Raw survey data and maps are provided in Appendix 7-4. It should be noted that records of this small passerine are concentrated close to surveyor locations as they are difficult to locate at distance.

Vantage Point

Meadow pipit were recorded on 138 occasions during vantage point surveys, or on average once every 10 survey hours during breeding and winter surveys. Of these records, 67 were within 500m of Proposed Turbines. Between 1 and 39 individuals were observed during the breeding and winter seasons. The average flock size was 20 birds. The majority of observations were of birds travelling, flitting or foraging. There were 18 observations relating to breeding behaviour, indicating probable breeding throughout the site in areas of suitable breeding habitat.

Winter Walkover

Meadow pipit were recorded on 56 occasions during winter walkover surveys, on 22 of 68 survey dates (32%). Records were of between 1 and 14 birds, with an average flock size of eight. There were 27 observations within the Proposed Wind Farm Site. The majority of observations were of birds calling or travelling.

Breeding Walkover

Meadow pipit were recorded on 155 occasions during breeding walkover surveys, on 29 of 63 survey dates (46%). Records were of between 1 and 24 birds, with an average flock size of 13. There were 88 observations within the Proposed Wind Farm Site. The majority of observations were of birds calling or travelling. There were 65 observations relating to breeding behaviour, indicating probable breeding throughout the site in areas of suitable breeding habitat.

Incidental Records

There were 55 incidental records of meadow pipit during breeding raptor surveys, breeding red grouse surveys, breeding woodcock surveys and hen harrier roost surveys. Records were of between 1 and 45 birds during the breeding and winter seasons, with an average flock size of 23. There were 14 observations within the Proposed Wind Farm Site. The majority of observations were of birds calling or travelling, with five observations relating to breeding behaviour.

7.3.8.10 Red Grouse

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

Vantage Point

Red grouse were recorded on a single occasion during vantage point surveys, a male bird was heard calling followed by a display flight in April 2021, indicating probable breeding within the Proposed Wind Farm Site.

Breeding Red Grouse

Red grouse were recorded on one occasion during breeding red grouse surveys. In 2021, a single bird flew away from the surveyor without calling, the observation was within the Proposed Wind Farm Site.

Incidental Records

There was a single incidental record of red grouse during vantage point surveys. In July 2021 two individuals were flushed approximately 850m from the Proposed Wind Farm Site.

7.3.8.11 Redwing

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

Vantage Point

Redwing were recorded on six occasions during vantage point surveys, or on average once every 118 survey hours during winter surveys. Of these records, two were within 500m of Proposed Turbines. Between 1 and 25 birds, with an average flock size of 13 birds. All observations were of birds travelling.

Winter Walkover

Redwing were recorded on five occasions during winter walkover surveys, on 5 of 68 survey dates (7%). Records were of between 1 and 15 individuals, with an average flock size of eight birds. There were two observations within the Proposed Wind Farm Site. Observations were of birds travelling or calling.

7.3.8.12 Snipe

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

Vantage Point

Snipe were recorded on 39 occasions during vantage point surveys, or on average once every 37 survey hours during breeding and winter surveys. Of these records, 22 were within 500m of Proposed Turbines. Observations were of between 1 and 15 birds, with an average flock size of eight birds. The majority of observations were of birds calling, travelling, landing or being flushed. There was one observation of a bird chipping, indicating probable breeding within the Proposed Wind Farm Site in 2025. Additionally, there was one observation of five birds roosting approximately 700m south of the Proposed Wind Farm Site in 2023.

Winter Walkover

Snipe were recorded on 54 occasions during winter walkover surveys, on 22 of 68 survey dates (32%). Records were of between one and eight birds, with an average flock size of 1.5 birds. There were 35 observations within the Proposed Wind Farm Site. The majority of observations were of birds flying or being flushed by the surveyor. There were four observations of roosting birds, three of which were in March 2021, the closest of which was approximately 700m south of the Proposed Wind Farm Site.

Breeding Walkover

Snipe were recorded on three occasions during breeding walkover surveys, on 3 of 63 survey dates (5%). All observations were of birds being flushed by the surveyor within the Proposed Wind Farm Site.

Incidental Records

There were 74 incidental records of snipe during breeding raptor surveys, breeding red grouse surveys, breeding woodcock surveys, hen harrier roost surveys, and vantage point surveys. Records were of between 1 and 14 individuals with an average flock size of eight birds. There were 42 observations within the Proposed Wind Farm Site. The majority of observations were of birds calling, travelling or being flushed by the surveyor. There was one observation of an individual drumming in June 2025 within the Proposed Wind Farm Site, indicating probable breeding in this area.

7.3.8.13 Swift

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

Vantage Point

Swift were recorded on one occasion during vantage point surveys, during the breeding season. This record was greater than 500m from the Proposed Turbines and was of two birds feeding in June 2023.

Breeding Walkover

Swift were recorded on one occasion during breeding walkover surveys. This record was within the Proposed Wind Farm Site and was of two birds foraging and calling in July 2024.

7.3.8.14 Woodcock

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

Incidental Records

There were four incidental records of woodcock during vantage point surveys. All of the observations were of a single bird being flushed during the winter season. There was one record in 2023 and 2024. Furthermore, there were two observations on the same day in 2025 when two individuals were flushed within two minutes of each other while the surveyor was driving to site.

7.3.8.15 Buzzard

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

Vantage Point

Buzzard were recorded on 21 occasions during vantage point surveys, or on average once every 68 survey hours during breeding and winter surveys. Of these records, 8 were within 500m of the Proposed Turbines. All observations were of individuals soaring, travelling, hunting or being mobbed by kestrels. There was no evidence of breeding or roosting behaviour during vantage point surveys.

Winter Walkover

Buzzard were recorded on two occasions during winter walkover surveys, on 2 of 68 survey dates (3%). Records were of one or two birds hunting during the 2024 winter season, neither of these records were within the Proposed Wind Farm Site.

Breeding Walkover

Buzzard were recorded on six occasions during breeding walkover surveys, on 4 of 63 survey dates (6%). Of these records one was within the Proposed Wind Farm Site. The majority of observations were of individuals travelling. There was one observation of breeding activity. In 2023, a bird was observed carrying prey, confirming breeding in the area, potentially within the Proposed Wind Farm Site (territory BZ-a).

Breeding Raptor

Buzzard were recorded on 10 occasions during breeding raptor surveys, on 7 of 71 survey dates (10%). There were no observations within the Proposed Wind Farm Site. The majority of the observations were of individuals travelling, perched or being mobbed. There was one observation relating to breeding behaviour. In 2025, there was an observation of a bird mobbing a hen harrier, indicating probable breeding approximately 2km south of the Proposed Wind Farm Site (territory BZ-b).

Incidental Records

There were two incidental records of buzzard during vantage point surveys. The observations were of an individual hunting and two birds soaring. There was one observation within the Proposed Wind Farm Site.

7.3.8.16 Sparrowhawk

Sparrowhawk 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 nest/roosts are provided in Confidential Survey Data Appendix 7-5.

Vantage Point

Sparrowhawk were recorded on 30 occasions during vantage point surveys, or on average once every 48 survey hours during breeding and winter surveys. Of these records, 12 were within 500m of the Proposed Turbines. The majority of observations were of individuals travelling, hunting or perched. There were three observations relating to breeding activity.

In 2021, a female sparrowhawk was observed in territorial fighting with a kestrel, indicating probable breeding in this area (territory SH-e). This observation was adjacent to the Proposed Wind Farm Site. In 2023, an adult was observed carrying prey within the Proposed Wind Farm Site, the bird flew towards a patch of forestry to the southeast of the Proposed Wind Farm Site, indicating probable breeding in this area (territory SH-d). In 2025 a male and a female sparrowhawk were observed mobbing a raven, this was within the Proposed Wind Farm Site, indicating probable breeding in this area (territory SH-e).

Winter Walkover

Sparrowhawk were recorded on one occasion during winter walkover surveys, on 1 of 68 survey dates (1%). This record was of an individual flying during the 2024 winter season, within the Proposed Wind Farm Site.

Breeding Walkover

Sparrowhawk were recorded on five occasions during breeding walkover surveys, on 5 of 63 survey dates (8%). Records were of individuals, of these records two were within the Proposed Wind Farm Site. There were three observations of birds travelling and one observation of a bird flushed by the surveyor. The remaining observation was of an adult male carrying prey into a patch of forestry in 2025, confirming breeding in this area (territory SH-a).

Breeding Raptor

Sparrowhawk were recorded on 12 occasions during breeding raptor surveys, on 8 of 71 survey dates (11%). The majority of observations were of individuals travelling or soaring. Of these records, one was within the Proposed Wind Farm Site. There were three observations of breeding behaviour.

In April 2021 a female bird was observed carrying a prey item into an area of forestry, confirming breeding in this area, to the north of the Proposed Wind Farm Site (territory SH-c). In this same area (SH-c) in April 2023, a bird was observed in a display flight, indicating probable breeding. In June 2025, an individual was observed carrying prey into an area of forestry, confirming breeding in this area, to the south of the Proposed Wind Farm Site (territory SH-b). There were three other observations of sparrowhawk around this area (SH-b), on the same day in June 2025.

Incidental Records

There were six incidental records of sparrowhawk during hen harrier surveys and vantage point surveys. The observations were of individuals travelling or hunting, three of these were within the Proposed Wind Farm Site. In June 2025 a sparrowhawk was heard calling from an area of forestry (SH-a) within the Proposed Wind Farm Site, which was previously confirmed as a breeding territory (territory SH-a).

Breeding Summary

There were five breeding territories identified during the survey period:

- SH-a Confirmed breeding in 2025.
- SH-b Confirmed breeding in 2025.
- SH-c Confirmed breeding in 2021, probable in 2023.
- SH-d Probable breeding in 2023.
- SH-e Probable breeding in 2021 and 2025.

7.4 Receptor Evaluation

7.4.1 Determination of Population Importance

A determination of population importance for birds within the Study Area is provided below, following criteria described in Section 7.2.4. Estimates of national population sizes were obtained from the most recent national surveys or Ireland's Article 12 Reporting 2013-2018 (EU, 2022), depending on what literature was available. Estimates for mean county population sizes were obtained from species-specific surveys, a review of I-WeBS sites within County Clare³ 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

Wintering

The estimated national wintering population of golden plover is 82,190 for the Republic of Ireland (Burke *et al.*, 2025). 1% of the national wintering population of golden plover is 807 birds. As per NRA guidelines (2009), a regularly occurring population of 821 golden plover is required for classification as

³ Please note that these figures are estimates based on the best available information but should be interpreted with a degree of caution.

nationally important. The maximum number of birds recorded from the winter season was 500 birds. This maximum number does not correspond with the classification criteria for national or international importance.

To estimate the county population, a review of County Clare I-WeBS sites was conducted. It should be noted that the County Clare I-WeBS sites are mainly coastal in nature and the population estimate provided based on I-WeBS figures below is likely to be an underestimate of the county population. The following mean count values have been recorded for County Clare I-WeBS sites⁴ over the most recent 5-season period, i.e. for the period 2018/19 – 2022/23:

- > Ballyallia Lake (mean 1.4)
- > Liscannor Bay (Liscannor – Rinanoughter) (mean 231)
- > Shannon & Fergus Estuary (mean 406.2)
- > Shannon & Fergus Estuary Aerial (mean 2,600)

Based on the above, the wintering population for golden plover in County Clare is 3,239 birds. Therefore, a regularly occurring population of 32 birds (1% of the county population) is considered of county importance in the context of the Site.

During the surveys, a maximum number of 500 birds were observed in flight. The species was observed on 49 occasions, of which 28 were recorded within/partially within the Proposed Wind Farm Site. The average flock size across all surveys was 45. Flocks of county importance were recorded on 13 occasions over the five years of comprehensive surveys. Flocks of county importance are therefore not considered to have regularly occurred within the Proposed Wind Farm Site. Most observations of county importance were of birds in flight/travelling over, or adjacent to the Site. There were no observations of golden plover in flocks of county importance utilising habitats within the Proposed Wind Farm Site.

The population within the Proposed Wind Farm Site was therefore assigned **Local Importance (Higher Level)** on the basis of a resident/regularly occurring wintering population assessed to be important to the local level.

Breeding

The breeding distribution of this species is restricted to the western side of the country north of Galway Bay. This species was only observed twice during the breeding season, however given that both observations were of flocks of birds in April and early May, it is assumed that this was a flock on migration. There was no observations of golden plover breeding on, or adjacent to the Site. Therefore, the species is not dependent on the Proposed Wind Farm Site for breeding.

7.4.1.2 Goshawk

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

7.4.1.3 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

⁴ I-Webs sites which reported no golden plover have been omitted from this list.

wintering population is 3-4 birds. A regularly occurring wintering population of 3-4 hen harrier is required for classification as nationally/internationally importance. This species was recorded regularly during the breeding season, with a confirmed nest located in 2021, 2022, 2024 and 2025 approximately 2km from the Proposed Wind Farm Site. Additionally, Hen harrier were observed occasionally throughout the winter seasons surveyed. There were no hen harrier roosts identified during surveys.

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

7.4.1.4 Little Egret

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

7.4.1.5 Merlin

As per the latest NPWS Article 12 reporting document, the estimated population of merlin is between 200 – 400 pairs. Merlin populations are widespread but have a patchy distribution in Ireland therefore the merlin recorded during these surveys requires further consideration. The species was only recorded on two occasions within 500m of the Proposed Turbines, once in 2022 and once in 2024 when individual birds were observed commuting.

Taking a highly precautionary approach, the population recorded at the Proposed Wind Farm Site was assigned **Local Importance (Higher Value)** on the basis that the populations recorded are likely associated with a population in the wider area that is importance in the local context.

7.4.1.6 Peregrine

Peregrine were recorded within the Proposed Wind Farm Site on only one occasion over the five years of surveying. However, this is a species that is declining in Ireland and can be sensitive to wind farm developments.

Taking a highly precautionary approach, the population recorded at the Proposed Wind Farm Site was assigned **Local Importance (Higher Value)** on the basis that the populations recorded are likely associated with a population in the wider area that is importance in the local context.

7.4.1.7 Osprey

Osprey were not recorded within the core dataset being presented within this EIAR, however, there is a historic record of osprey at the Proposed Wind Farm Site from the previous planning application (see Section 7.3.7). Taking a highly precautionary approach, given that this species has recently begun to recolonise Ireland and that this species was assessed in the previous planning application at this site, osprey will be considered within the impact assessment.

7.4.1.8 Grey Wagtail

Grey wagtail is a BOCCI Red Listed species for breeding populations only in Ireland. Grey wagtail were observed in the breeding season, and on eight occasions during the core winter months. The estimated national resident population is 50,768 birds (Lewis *et al.*, 2019). However, this species is abundant and widespread across Ireland (as per NBDC Biodiversity Maps). As such, the population recorded at the Proposed Wind Farm Site is considered to be of **Local Importance (Lower Value)**.

7.4.1.9 Kestrel

Kestrel is a BoCCI Red Listed species for breeding populations only in Ireland. Kestrel was recorded during the breeding and winter seasons. The estimated national population is 13,500 birds (Article 12 Reporting). Therefore, a regularly occurring population of 135 birds is required for classification as of National Importance. Using the distribution of kestrel across Ireland from the breeding bird atlas⁵ (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.

Kestrel was resident at the Proposed Wind Farm Site, with up to two territories identified during surveys. 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.

7.4.1.10 Meadow Pipit

Meadow pipit was recorded in the breeding and winter seasons. Birds were resident within the Proposed Wind Farm Site and wider area. However, this species is a habitat generalist and is abundant (the national population is estimated to be 1,351,995 birds [Lewis *et al.*, 2019]) and widespread across Ireland (as per NBDC Biodiversity Maps). As such, the population recorded at the Proposed Wind Farm Site is considered to be of **Local Importance (Lower Value)**.

7.4.1.11 Red Grouse

Red grouse is BoCCI Red-listed during the breeding season in Ireland. As per the latest NPWS Article 12 reporting document, the estimated population of red grouse in the Republic of Ireland is 1,898 breeding pairs. Therefore 1% of the national breeding population is 19 breeding pairs. As per NRA 2009, a regularly occurring breeding population of 19 red grouse pairs is required for classification as Nationally Important.

Red grouse were only recorded on three occasions, all of which were in 2021. There have been no further observations of red grouse during surveys in 2022, 2023, 2024 or 2025. Taking a highly precautionary approach, the population recorded at the Proposed Wind Farm Site was assigned **Local Importance (Higher Value)** on the basis that Proposed Wind Farm Site has held breeding red grouse in previous survey years and the habitats remain suitable for this species were the species to return to the area.

7.4.1.12 Redwing

Redwing was recorded on 11 occasions during the winter seasons surveyed. This species is a habitat generalist and is abundant (while estimates for the national wintering population are not available, the estimate for Europe is 26,300,000 - 40,300,000 birds, a proportion of which visit Ireland in winter) and widespread across Ireland (as per NBDC Biodiversity Maps) As such, the population recorded at the Proposed Wind Farm Site is considered to be of **Local Importance (Lower Value)**.

7.4.1.13 Snipe

Snipe was recorded during the breeding and winter seasons. The estimated national population for the Republic of Ireland is 4,275 pairs (as per Article 12 Reporting). Therefore, a regularly occurring population of 43 pairs is required for classification as national importance. There are no published figures for the County Clare population. However, using the distribution of snipe across Ireland from

⁵ 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.

the breeding bird atlas⁶ (2007-2011) the Clare population is estimated to be 200 pairs. Therefore, a regularly occurring population of two pairs is required for classification of County Importance.

Snipe were regularly observed within the Proposed Wind Farm Site, however there are low numbers of breeding birds present within the Proposed Wind Farm Site (up to one pair identified). Therefore, the population recorded was assigned **Local Importance (Higher Value)** on the basis of a regularly occurring population assessed to be important at the local level.

7.4.1.14 Swift

There were only two observations of swift during the five years of surveys within the Study Area. As such, the Proposed Wind Farm Site is of **No Ecological Importance** to this species, given how infrequently the Proposed Wind Farm Site is utilised by this species.

7.4.1.15 Woodcock

Woodcock is a BoCCI Red Listed species for the breeding season only in Ireland. Woodcock were observed incidentally during the winter seasons (in November and January), and no evidence of breeding was observed. The Irish population is bolstered by migrants from Eastern Europe and Russia during the winter season, and the woodcock recorded during surveys are likely to be overwintering birds. The Proposed Wind Farm Site is considered to be of **No Ecological Importance** to the resident Irish population of woodcock.

7.4.1.16 Buzzard

Buzzard was recorded during the breeding and winter seasons. The estimated national population for the Republic of Ireland is 1,938 pairs (Article 12 Reporting). Buzzard has recently undergone range expansion westwards in Ireland and it is likely that the population has increased considerably since this estimate was made. However, there are no updated figures available, therefore the value presented in Article 12 Reporting will be used. Based on this, a regularly occurring population of 19 pairs is required for classification as national importance. In the absence of more detailed county-level information, the county population is estimated to be 75 breeding pairs, assuming an even spatial distribution across the 26 counties of Ireland covered by these data.

Buzzard was recorded on 41 occasions across all survey types over five years, with up to one breeding territory identified. Buzzard is on the BoCCI Green List, indicating it is of lower conservation priority. It is a habitat generalist and is widespread across Ireland (as per NBDC Biodiversity Maps). As such, the population recorded is considered to be of **Local Importance (Higher Value)** on the basis of a resident population assessed to be important at the local level.

7.4.1.17 Sparrowhawk

Sparrowhawk was recorded during the breeding and wintering seasons. The estimated national population for the Republic of Ireland is 11,859 individuals (Article 12 Reporting). In the absence of more detailed county-level information, the county population is estimated to be 456 birds, assuming an even spatial distribution across the 26 counties of Ireland covered by these data.

Sparrowhawk are resident at the Proposed Wind Farm Site and breeding was confirmed during surveys. However, sparrowhawk is on the BoCCI Green List, indicating it is of lower conservation priority. It is a habitat generalist and is widespread across Ireland (as per NBDC Biodiversity Maps). As

⁶ 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.

such, the population recorded is considered to be of **Local Importance (Higher Value)** on the basis of a resident population assessed to be important at the local level.

7.4.2 Identification of Key Ornithological Receptors

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

Table 7-11 Receptor evaluation and selection criteria rational

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
Golden Plover	Annex I & Red List	<u>Wintering</u> Local Importance (Higher Level)	Golden Plover were recorded using the Proposed Wind Farm Site, the potential for direct habitat loss cannot be excluded. Golden plover were recorded in the vicinity of the Proposed Wind Farm Site, the potential for disturbance/displacement cannot be excluded. Golden plover were recorded flying at the potential collision height during the vantage point surveys, potential for collision risk cannot be excluded. As such, an assessment of direct habitat loss, disturbance/displacement, and collision risk is required for golden plover.	Yes
Goshawk	Annex I & Raptor	<u>All Seasons</u> No population of ecological significance recorded	Goshawk were only recorded on four occasions and there was no evidence of breeding. No population of ecological significance was recorded utilising the Proposed Wind Farm Site during the extensive suite of surveys conducted. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Site is of significance to this species.	No
Hen Harrier	Annex I & Raptor	<u>Breeding</u> National Importance	Hen harrier were using the Proposed Wind Farm Site, the potential for direct habitat loss cannot be excluded.	Yes

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
		<u>Wintering</u> National Importance	Hen harrier were breeding in the vicinity of the Proposed Wind Farm Site, potential for disturbance/displacement cannot be excluded. Hen harrier were recorded flying at potential collision height during the vantage point surveys, potential for collision risk cannot be excluded. As such, an assessment of direct habitat loss, disturbance/displacement, and collision risk is required for hen harrier.	
Little Egret	Annex I	<u>All Seasons</u> No population of ecological significance recorded	Little egret was only recorded once across all surveys. No population of ecological significance was recorded utilising the Proposed Wind Farm Site during the extensive suite of surveys conducted. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Site is of significance to this species.	No
Merlin	Annex I & Raptor	<u>All Seasons</u> Local Importance (Higher Value).	There is suitable habitat for foraging and breeding merlin within the Proposed Wind Farm Site, the potential for direct habitat loss cannot be excluded. Merlin were recorded in the vicinity of the Proposed Wind Farm Site, the potential for disturbance/displacement cannot be excluded. Merlin were not recorded flying at the potential collision height during the vantage point surveys, therefore the potential for collision risk is limited and a collision risk analysis is not required. As such, an assessment of direct habitat loss and disturbance/displacement is required for merlin.	Yes
Peregrine	Annex I & Raptor	<u>All Seasons</u>	There is suitable habitat for foraging peregrine within the Proposed Wind Farm Site, the potential for direct habitat loss cannot be excluded.	Yes

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
		Local Importance (Higher Value).	Peregrine were recorded in the vicinity of the Proposed Wind Farm Site, the potential for disturbance/displacement cannot be excluded. Peregrine were not recorded during the vantage point surveys, therefore the potential for collision risk is limited and a collision risk analysis is not required. As such, an assessment of direct habitat loss and disturbance/displacement is required for peregrine.	
Osprey	Annex I & Raptor	<u>All Seasons</u> Recolonising species	The Proposed Wind Farm Site is located within peatland habitat and a commercial forestry which does not provide optimal habitat for this species. The large waterbodies that osprey are reliant on for foraging are not present within the Site. The potential for direct habitat loss is therefore limited, and there is no evidence to suggest habitat loss will be a significant impact on this species. This species was observed commuting over the Proposed Wind Farm Site historically, the potential for disturbance/displacement cannot be excluded. Osprey were not recorded during the vantage point surveys, therefore the potential for collision risk is therefore limited and a collision risk analysis is not required. As such, an assessment of disturbance/displacement is required for osprey.	Yes
Grey Wagtail	Red List (breeding)	<u>All Seasons</u>	Grey wagtail was recorded using the Proposed Wind Farm Site for foraging. However, as per NatureScot guidance (2025a), it is generally considered that passerine bird species are not significantly impacted by wind farms due to their ecology. As such, the potential for direct habitat loss,	No

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
		No population of ecological significance recorded.	disturbance/displacement and collision risk are limited and there is no evidence to suggest that the development will significantly impact this species.	
Kestrel	Red List & Raptor	<u>All Seasons</u> Local Importance (Higher Value).	Kestrel were recorded using the Proposed Wind Farm Site, the potential for direct habitat loss cannot be excluded. Kestrel were recorded in the vicinity of the Proposed Wind Farm Site, potential for disturbance/displacement cannot be excluded. Kestrel were recorded flying at the potential collision height during the vantage point surveys, potential for collision risk cannot be excluded. As such, an assessment of direct habitat loss, disturbance/displacement, and collision risk is required for kestrel.	Yes
Meadow Pipit	Red List (breeding)	<u>All Seasons</u> Local Importance (Lower Value).	Meadow pipit was recorded using the Proposed Wind Farm Site for foraging and breeding. However, as per NatureScot guidance (2025a), it is generally considered that passerine bird species are not significantly impacted by wind farms due to their ecology. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Proposed Project will significantly impact this species.	No
Red Grouse	Red List (breeding)	<u>All Seasons</u> No population of ecological significance recorded.	Red grouse were recorded using the Proposed Wind Farm Site, the potential for direct habitat loss cannot be excluded. Red grouse were recorded in the vicinity of the Proposed Wind Farm Site, the potential for disturbance/displacement cannot be excluded.	Yes

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
			Red grouse were not recorded flying at the potential collision height during the vantage point surveys, therefore the potential for collision risk is limited and a collision risk analysis is not required. As such, an assessment of direct habitat loss and disturbance/displacement is required for red grouse.	
Redwing	Red List (wintering)	<u>All Seasons</u> No population of ecological significance recorded.	Redwing were only recorded flying through the Proposed Wind Farm Site. No population of ecological importance was recorded utilising the Proposed Wind Farm Site during the extensive suite of surveys conducted. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Proposed Project will significantly impact this species.	No
Snipe	Red List (breeding & wintering)	<u>Breeding</u> Local Importance (Higher Value).	Snipe were recorded using the Proposed Wind Farm Site, the potential for direct habitat loss cannot be excluded. Snipe were recorded in the vicinity of the Proposed Wind Farm Site, the potential for disturbance/displacement cannot be excluded. Snipe were recorded flying at the potential collision height during the vantage point surveys, potential for collision risk cannot be excluded. As such, an assessment of direct habitat loss, disturbance/displacement, and collision risk is required for snipe.	Yes
Swift	Red List (breeding)	<u>All Seasons</u>	Swift were only recorded on two occasions and only flying through. No population of ecological importance was recorded utilising the Proposed Wind Farm Site during the extensive suite of surveys conducted. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are	No

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
		No population of ecological significance recorded.	limited and there is no evidence to suggest that the Proposed Project will significantly impact this species.	
Woodcock	Red List (breeding)	<u>All Seasons</u> No population of ecological significance recorded.	No population of ecological importance was recorded utilising the Proposed Wind Farm Site during the extensive suite of surveys conducted. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Proposed Project will significantly impact this species.	No
Buzzard	Raptor	<u>All Seasons</u> Local Importance (Higher Value).	Buzzard were recorded using the Proposed Wind Farm Site, the potential for direct habitat loss cannot be excluded. Buzzard were recorded in the vicinity of the Proposed Wind Farm Site, the potential for disturbance/displacement cannot be excluded. Buzzard were recorded flying at the potential collision height during the vantage point surveys, potential for collision risk cannot be excluded. As such, an assessment of direct habitat loss, disturbance/displacement, and collision risk is required for buzzard.	Yes
Sparrowhawk	Raptor	<u>All Seasons</u> Local Importance (Higher Value).	Sparrowhawk were using the Proposed Wind Farm Site, the potential for direct habitat loss cannot be excluded. Sparrowhawk were potentially breeding within and in the vicinity of the Proposed Wind Farm Site, potential for disturbance/displacement cannot be excluded.	Yes

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
			Sparrowhawk were recorded flying at the potential collision height during the vantage point surveys, potential for collision risk cannot be excluded. As such, an assessment of direct habitat loss, disturbance/displacement, and collision risk is required for sparrowhawk.	

7.4.3 Sensitivity Determination

Criteria developed by Percival (2003) for assessing bird sensitivity within the Proposed Wind Farm Site is presented in Table 7-3 (Section 7.2.4.5.1). The sensitivity of the KORs, as per Percival (2003), are listed below, including the rationale for their respective sensitivity classification.

High Sensitivity KORs are:

- › Hen harrier (ecologically sensitive species, breeding population of National Importance)

Medium Sensitivity KORs are:

- › Golden plover (Annex I, population of County Importance)
- › Merlin (Annex I; EU Birds Directive)
- › Peregrine (Annex I; EU Birds Directive)
- › Osprey (Annex I; EU Birds Directive)
- › Kestrel (BoCCI Red Listed)
- › Snipe (BoCCI Red Listed, population of County Importance)
- › Red grouse (BoCCI Red Listed)

Low Sensitivity KORs are:

- › Buzzard (conservation interest)
- › Sparrowhawk (conservation interest)

7.5 Impact Assessment

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

- › Assessment of 'Do Nothing' scenario;
- › Assessment of the likely effects of the Proposed Wind Farm Site during construction, operation and decommissioning;
- › Assessment of the likely effects associated with the Proposed Grid Connection Site;
- › Assessment of the likely effects associated with the turbine delivery route;
- › Assessment of the likely effects associated with the Proposed Enhancement Site;
- › Assessment of the likely effects on designated sites.

7.5.1 'Do-Nothing' Scenario

If the Proposed Project were not to proceed, no changes would be made to the current land-use practice of livestock grazing and conifer forestry, and the Site would continue to be managed under the existing arrangements. The biodiversity on the Site would likely remain similar to its current state as activity levels and land use would not change significantly.

However, if the Proposed Project doesn't proceed, the opportunity to capture the available renewable energy resource within a highly suitable location would be lost, as would the opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions.

Furthermore, as this application includes a Biodiversity Management Enhancement Plan (BMEP) to be implemented during the development's operation, the opportunity to enhance the Site for biodiversity, at a local scale, would also be lost.

At a global scale, climate change has been proven to have negative impacts on biodiversity, either through reduced quality of habitat, displacement due to the changing baselines, and reduced or altered food sources. With Irelands climate action plans in mind and the potential contribution of this Proposed Development in reducing dependency of fossil fuels, should it not proceed, this would contribute to the inhibition of the national targets in reducing greenhouse gas emissions in Ireland.

7.5.2 Likely Effects of the Proposed Wind Farm Site

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

7.5.2.1 Golden Plover

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	Golden plover were occasionally recorded within and in proximity to the Proposed Wind Farm Site. The majority of the observations within the Proposed Wind Farm Site were on peatland habitat within 500m of the Proposed Turbines. The majority of the observation in proximity to the Proposed Wind Farm Site were in an area of peatland approximately 1.5km to the southeast. The majority of observations were of golden plover commuting or circling over the Proposed Wind Farm Site. There were only seven observations of golden plover utilizing habitats on the Proposed Wind Farm Site, including roosting in close proximity to the built infrastructure footprint. The land lost to the built infrastructure footprint is small (i.e., 8.9ha/0.7%) relative to the total area within the Site. The species was not dependent on the Proposed Wind Farm Site for foraging or roosting during the wintering period, given how infrequently the site was utilized by birds. Significant areas of suitable foraging habitat will continue to remain post construction (as there is limited infrastructure located within bog habitats onsite) and there is suitable habitat available in the surrounding area, including grassland and peatland habitats. 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

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
Disturbance	Golden plover were found to be using/passing through the Proposed Wind Farm Site occasionally (48 observations over 5 years). Pearce-Higgins <i>et al.</i> (2012) did not find any significant negative effect of construction works on breeding golden plover populations (though it must be taken into account that the number of sites studied was low). Although golden plover are not reliant on the Site during the breeding season, it is assumed that they show a similar response to construction works during the winter and passage seasons. Additionally, Goodship and Furness (2022) suggests a buffer zone of 200-500m for golden plover during the winter season. Golden plover were recorded utilising habitats and flying within the 200m of Proposed Turbines on 26 occasions over the five years of surveys, and they were recorded flying within 500m of the Proposed Turbines on an additionally 17 occasions. Significant areas of more suitable roosting and foraging habitat for the species occur in the wider landscape and will be retained. No significant effects of disturbance are anticipated at the county, national or international level.	The magnitude of the effect is assessed as Low. The cross tabulation of a Medium sensitivity species and Low impact corresponds to a Low effect significance.	Likely short-term slight negative effect, which is not significant .
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated, as no further infrastructure is proposed.	No Effect	No Effect
Displacement and Barrier Effect	Golden plover were occasionally recorded within and in proximity to the Proposed Wind Farm Site. The majority of the observations within the Proposed Wind Farm Site were on peatland habitat within 500m of Proposed Turbines. The majority of the observation in proximity to the Proposed Wind Farm Site were in an area of peatland approximately 1.5km to the southeast. A review of 22 studies suggests that golden plover will approach wind turbines to an average distance of 175m in the non-breeding season (Hötter <i>et al.</i>,	The magnitude of the effect is assessed as Low. The cross tabulation of a Medium sensitivity species and Low impact corresponds to a 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)
	2006), while Pearce-Higgins <i>et al.</i> (2009) found that this species exhibited reduced habitat usage within 200m of turbines. McGuinness <i>et al.</i> (2015) suggest a larger zone of sensitivity of 800m. Using the precautionary figure of 800m, golden plover were recorded within 800m of the Proposed Turbine locations on 28 occasions over 5 years. Golden plover are not dependent upon areas within disturbance distance of the Proposed Turbines for foraging or roosting during the winter period, given how infrequently birds were seen flying within or utilising these areas. Furthermore, areas of suitable foraging and roosting habitat are widespread in the wider environment, as supported by observations of golden plover during surveys outside the Proposed Wind Farm Site. There is no evidence to suggest that the Proposed Wind Farm Site lies on a migratory/ regular commuting route for the species therefore barrier effect is not anticipated. No significant displacement and barrier effects are anticipated at the county, national or international level.		
Collision Risk	The species was recorded flying within the potential collision height during vantage point surveys. A 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 3.2 collisions per year. Annual mortality of adult golden plover has been calculated at 27% per annum (Sandercock, 2003). If 3.2 collisions were to occur per year, it would mean that the losses at the Proposed Wind Farm Site would increase the annual mortality of the county population (c. 3,239) by 0.37%. The predicted collision risk is negligible. No significant effects are anticipated.	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
Decommissioning Phase			

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
Direct Habitat Loss	Direct or indirect effects are not anticipated, as no further infrastructure is proposed.	No Effect	No Effect
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.2 Hen Harrier

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 to the north of 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 was a breeding site located outside the Site, approximately 2km southeast to the Proposed Wind Farm Site in 2021, 2022, 2024 and 2025. Additionally, there was a probable territory identified within the Proposed Wind Farm Site in 2021, however a nest was not located likely due to these birds not nesting or failing early in the season. No nest sites were identified within the Proposed Wind Farm Site. The Proposed Wind Farm Site is a mosaic of conifer plantation, upland blanket bog and agricultural grassland around its margins. The area surrounding the Proposed Wind Farm Site is predominately agricultural grassland. This mosaic of habitats includes suitable breeding, roosting and foraging habitat for hen harrier. There was no roosting location identified during the course of the comprehensive suite of surveys.	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

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
	The confirmed breeding location is over 950m from the built infrastructure footprint, which is greater than the disturbance distance of 500-750m for hen harrier breeding or resting locations (Ruddock and Whitfield, 2007). Therefore, no significant physical loss of nesting habitat is predicted. The built infrastructure footprint does not overlap with any winter roost sites, therefore, no significant physical loss of roosting habitat is predicted. Hen harrier were recorded commuting and hunting within the Proposed Wind Farm Site. The majority of foraging flights were within the open habitats within the Proposed Wind Farm Site, and to the south of the Proposed Wind Farm Site. The amount of open habitat (e.g., peatland/wet grassland) that will be lost to the built infrastructure 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 built infrastructure footprint is not predicted to be significant given the overall land lost to the built infrastructure footprint is small (i.e., 8.9ha/0.7%) relative to the total area within the Site and abundance of similar habitats 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, a confirmed hen harrier breeding site was identified approximately 2km from the Proposed Wind Farm Site. Foraging and commuting hen harrier were frequently recorded within, and adjacent to, the Proposed Wind Farm Site. The literature identifies the potential for disturbance impacts (associated with construction works) to occur between 500m and 1000m (NatureScot (2022),	Key (nesting & roosting) Habitats The magnitude of the effect is assessed as Low. The cross tabulation of High sensitivity species and Low	Key (nesting & roosting) Habitats Likely short-term slight negative effect, which is Not Significant Foraging Habitats

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
	Fernández-Bellon <i>et al.</i> (2017) and Wilson <i>et al.</i> (2016)). Such disturbance is dependent on factors including topography and lines of sight. The nearest nest site to the Proposed Wind Farm Site is located approximately 2km from the Proposed Wind Farm Site. Furthermore, there is forestry between the nest site and the Proposed Wind Farm Site, which limits lines of sight. Given the distance from the Proposed Wind Farm Site, significant disturbance to nesting hen harrier is not anticipated. Additionally, there was a probable breeding territory identified within the Proposed Wind Farm Site in 2021, however this territory was not confirmed and is likely of a bird that did not nest or failed early in the season. There was no evidence of breeding within the Proposed Wind Farm Site in subsequent breeding seasons. No significant impacts on nesting hen harrier are anticipated given that hen harrier are not reliant on the Proposed Wind Farm Site for breeding. There were no roost sites identified during the comprehensive suite of surveys conducted, therefore, significant disturbance of roosting hen harrier are not anticipated given hen harrier are not dependant on the Proposed Wind Farm Site for roosting. Hen harrier were regularly foraging within the Proposed Wind Farm Site. Without mitigation, there is the potential for significant but short-term disturbance of foraging hen harrier which breed in the wider area during the construction phase. In summary, there will be no significant impact on nest or roost locations. However, before mitigation significant disturbance effects are predicted for foraging hen harrier within the Proposed Wind Farm Site. Please see the BMEP, Appendix 6-4 for a detailed offsetting strategy.	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 impact corresponds to a High effect significance	Likely short-term Significant negative effect
Operational Phase			

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
Direct Habitat Loss	Direct habitat loss effects are not anticipated, as no further infrastructure is proposed.	No Effect	No Effect
Displacement and Barrier Effect	As previously discussed, there was a confirmed hen harrier breeding site identified 2km from the Proposed Wind Farm Site, and foraging and commuting hen harrier were frequently recorded within the Proposed Wind Farm Site. Impacts on these activities were considered for the operational phase. As outlined in Section 7.3.8.3, there were up to two breeding territories (one probable (only present in one breeding season and was not occupied for the duration of the season, i.e. nesting was not successful or did not occur) and one confirmed (regularly used)) for hen harrier identified during surveys. The confirmed breeding territory was approximately 2km from the Proposed Wind Farm Site. 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 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 birds in these key habitats. Given that the identified probable breeding territory was not confirmed and that there were no subsequent breeding activity observed during the proceeding four breeding seasons, hen harrier are not reliant on the Proposed Wind Farm Site for breeding. There were no roost sites identified during the comprehensive suite of surveys conducted, therefore, significant displacement of roosting hen harrier are not anticipated given hen harrier are not dependant on the Proposed Wind Farm Site for roosting.	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 impact corresponds to a High effect significance	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 within the Proposed Wind Farm Site. Research has identified a reduction of 52.5% activity within 500m of operating wind turbines and significant avoidance within 250m (Pearce-Higgins <i>et al.</i>, 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. 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 harrier⁷. It is assumed that there will be 100% displacement within 250m of turbines. Closed canopy forestry does not provide suitable habitat for hen harrier. As such, areas of this habitat within 250m of the existing turbines have not been included in the calculation of habitat loss. As the amount of closed canopy forestry within 250 metres of the existing turbines varies (over time) with the rotational cycle of forestry, calculations have been made using felling plans for the relevant folios taken from the Forestry Licence Viewer⁸ to determine the average amount of potentially available hen harrier habitat that will be unavailable on an annual basis throughout the proposed 35-year operational lifetime of the Proposed Project. The sum of the predicted loss of suitable⁹ foraging habitat (for all nine turbines) is predicted to total 131ha.		

⁷ 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.

⁸ <https://flv.apps.services.agriculture.gov.ie/>

⁹ 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)
	Step 2: Hen harrier spend the majority of their time foraging within a home range of 800ha (Arroyo <i>et al.</i>, 2014), i.e. a hen harrier pair require 800ha of suitable foraging habitat within the area around the nest site. Given that the breeding pair are likely to forage in an area of 800ha within the local area, the loss of 131ha represents, approximately a 16% reduction in the amount of available foraging habitat for this pair. The magnitude of this effect is likely to give rise to significant effects for foraging hen harrier without intervention. In summary, no significant displacement effects are predicted for nesting or roosting hen harrier. Owing to the importance of the onsite population and magnitude of the effect (a 15% loss of habitat), significant displacement effects on foraging hen harrier are predicted without intervention. Accordingly, a comprehensive plan is proposed, which offsets this indirect habitat loss, please see the BMEP, Appendix 6-4 for further details.		
Collision Risk	The species was recorded flying within the potential collision height 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 0.022 collisions per year, or one bird in every 45 years. Mortality of hen harriers may be disproportionately lower than other raptors (Drewitt and Langston, 2008). This is likely due to hen harrier's characteristic low altitude flight¹⁰, particularly when foraging (Madders, 2000; Whitfield and Madders, 2006; Band <i>et al.</i>, 2007). This low altitude flight limits the potential for a collision to occur. The WindHarrier research project¹¹ carried out by University College Cork (UCC) between 2012 and 2014, found the risk of collisions for hen harrier to be low.	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

¹⁰ The only exception to this is early in the breeding season, when display flights can overlap with the turbine rotor swept height.

¹¹ Wilson *et al.* (2015)

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
	The predicted collision risk is insignificant over the 35-year lifetime of the Proposed Project. The hen harrier habitat enhancement plan included in the BMEP is likely to further reduce the collision risk for hen harrier as birds will be attracted away from the Proposed Turbines, to lower risk areas.		
Decommissioning Phase			
Direct Habitat Loss	Direct or indirect effects are not anticipated, as no further infrastructure is proposed.	No Effect	No Effect
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.3 Merlin

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	Merlin were infrequently recorded commuting within the Proposed Wind Farm Site during the survey period. Additionally, no evidence of breeding or roosting was recorded. Significant effects are not anticipated particularly given the low levels of activity recorded. Extensive areas of suitable foraging habitat will remain post construction and there is an abundance of suitable habitat in the surrounding area. Furthermore, this species is unlikely to be dependent on the onsite habitats, given the wide-ranging nature of the species and the availability of similar suitable habitats in the surroundings (e.g., peatland). Significant effects are not predicted.	The magnitude of the effect is assessed as Low. The cross tabulation of a Medium sensitivity species and Low impact corresponds to a 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)
Disturbance	All observations were of birds commuting over the Proposed Wind Farm Site. There was no evidence of breeding activity recorded. Significant effects are not anticipated particularly given the low levels of activity recorded within the Proposed Wind Farm Site. Moreover, there is an abundance of suitable habitat in the surrounding area. Significant displacement effects are not predicted.	The magnitude of the effect is assessed as Negligible. The cross tabulation of a Medium sensitivity species and Negligible impact corresponds to a Very Low effect significance.	Likely short-term slight negative effect, which is Not Significant .
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated, as no further infrastructure is proposed.	No Effect	No Effect
Displacement and Barrier Effect	There was no evidence of breeding recorded. In total, this species was recorded on three occasions within 500m of the Proposed Turbines during the survey period. The onsite habitats (peatland and commercial forestry) are not unique to the Proposed Wind Farm Site and are abundant in the wider landscape. The availability of alternative suitable habitat in the surroundings limits the potential for significant displacement effects. Significant displacement effects are not predicted. There was no evidence to suggest the Proposed Wind Farm Site lies within any commuting corridors for this species, significant barrier effects are not anticipated.	The magnitude of the effect is assessed as Negligible. The cross tabulation of a Medium sensitivity species and Negligible impact corresponds to a Very Low effect significance.	Likely long-term slight negative effect, which is Not Significant .
Collision Risk	This species was not recorded flying at the potential collision height during the extensive vantage point survey work undertaken at the Proposed Wind Farm Site. Collision related mortality is not likely to significantly impact this species.	No Effect	No Effect
Decommissioning Phase			

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
Direct Habitat Loss	Direct or indirect effects are not anticipated, as no further infrastructure is proposed.	No Effect	No Effect
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.4 Peregrine

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	Peregrine were infrequently recorded commuting within the Proposed Wind Farm Site during the survey period. Additionally, no evidence of breeding or roosting was recorded. Significant effects are not anticipated particularly given the low levels of activity recorded. Extensive areas of suitable foraging habitat will remain post construction and there is an abundance of suitable habitat in the surrounding area. Furthermore, this species is unlikely to be dependent on the onsite habitats, given the wide-ranging nature of the species and the availability of similar suitable habitats in the surroundings (e.g., peatlands). Furthermore, the conifer plantations present within the Proposed Wind Farm Site offers limited suitability for peregrine. Significant effects are not predicted.	The magnitude of the effect is assessed as Low. The cross tabulation of a Medium sensitivity species and Low impact corresponds to a Low effect significance.	Likely long-term slight negative effect, which is Not Significant .
Disturbance	There was only one observation of peregrine commuting over the Proposed Wind Farm Site. There was no evidence of breeding activity recorded and there was no suitable breeding habitat (quarries or large ruins) identified within the Site.	The magnitude of the effect is assessed as Negligible. The cross tabulation of a Medium sensitivity species and Negligible 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)
	Disturbance during construction is unlikely to discourage flight activity or foraging in the vicinity of the Proposed Wind Farm Site, particularly given the low levels of activity recorded and given that peregrine has been documented to become accustomed to various sources of human disturbance (Ruddock <i>et al.</i>, 2007). Significant disturbance effects are not anticipated.		
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated, as no further infrastructure is proposed.	No Effect	No Effect
Displacement and Barrier Effect	There was no evidence of breeding recorded. In total, this species was recorded on only one occasion within 500m of the Proposed Turbines during the survey period. The onsite habitats (peatland and commercial forestry) are not unique to the Proposed Wind Farm Site and are abundant in the wider landscape. The availability of alternative suitable habitat in the surroundings, limits the potential for significant displacement effects. Furthermore, peregrine has been documented to become accustomed to various sources of human disturbance (Ruddock <i>et al.</i>, 2007). It is therefore reasonable to conclude that following a period of habituation, the population will become accustomed to the wind farm in the landscape. Significant displacement effects are not predicted. There was no evidence to suggest the Proposed Wind Farm Site lies within any commuting corridors for this species, significant barrier effects are not anticipated.	The magnitude of the effect is assessed as Negligible. The cross tabulation of a Medium sensitivity species and Negligible 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)
Collision Risk	This species was not recorded flying at the potential collision height during the extensive vantage point survey work undertaken at the Proposed Wind Farm Site. Collision related mortality is not likely to significantly impact this species.	No Effect	No Effect
Decommissioning Phase			
Direct Habitat Loss	Direct or indirect effects are not anticipated, as no further infrastructure is proposed.	No Effect	No Effect
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.5 Osprey

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	There was only one historic record of osprey at the Proposed Wind Farm Site. Additionally, no evidence of breeding or roosting was recorded. Significant effects are not anticipated particularly given the low levels of activity recorded. Furthermore, this species is reliant on large waterbodies for foraging. The Proposed Wind Farm Site is located within terrestrial habitats (e.g. commercial forestry and peatland habitats) which do not provide optimal habitat for this species. This therefore limits the potential for ecologically significant effects to result. Significant effects are not predicted.	The magnitude of the effect is assessed as Negligible. The cross tabulation of a Medium sensitivity species and Negligible impact corresponds to a Very Low effect significance.	Likely long-term imperceptible negative effect, which is Not Significant .
Disturbance	As previously discussed, there was only one historic record of osprey at the Proposed Wind Farm Site. Significant effects are not anticipated particularly given the low levels of activity recorded within the Proposed Wind Farm Site.	The magnitude of the effect is assessed as Negligible. The cross tabulation of a Medium	Likely short-term imperceptible negative

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
	Moreover, osprey are reliant on large water bodies for foraging. The Proposed Wind Farm Site does not contain suitable habitat for osprey. Significant displacement effects are not predicted.	sensitivity species and Negligible impact corresponds to a Very Low effect significance.	effect, which is Not Significant .
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated, as no further infrastructure is proposed.	No Effect	No Effect
Displacement and Barrier Effect	The Proposed Wind Farm Site is located within peatland and commercial forestry habitats, which are of limited ecological value for this species. The large waterbodies that osprey are reliant on for foraging are not present within the Proposed Wind Farm Site. Significant displacement effects are not predicted. There was no evidence to suggest the Proposed Wind Farm Site lies within any commuting corridors for this species, significant barrier effects are not anticipated.	The magnitude of the effect is assessed as Negligible. The cross tabulation of a Medium sensitivity species and Negligible impact corresponds to a Very Low effect significance.	Likely long-term imperceptible negative effect, which is Not Significant .
Collision Risk	This species was not recorded flying at the potential collision height during the extensive vantage point survey work undertaken at the Proposed Wind Farm Site. Collision related mortality is not likely to significantly impact this species.	No Effect	No Effect
Decommissioning Phase			
Direct Habitat Loss	Direct or indirect effects are not anticipated, as no further infrastructure is proposed.	No Effect	No Effect
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.6 Kestrel

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	Kestrel are resident at the Proposed Wind Farm Site, and utilise this and the surrounding area for breeding and hunting. Kestrel were regularly recorded within and in proximity to the Proposed Wind Farm Site. There were two confirmed breeding territories identified within the Proposed Wind Farm Site. Furthermore, there were two probable breeding territories identified, one of which was partially within the Proposed Wind Farm Site. The construction of the Proposed Project will not result in the (physical) loss of a significant amount of suitable habitat given the built infrastructure footprint is small (i.e. 8.9ha/0.7%) relative to the total area within the Site. Significant areas of suitable foraging and nesting habitat will continue to remain post construction and these habitats are not unique to the Proposed Wind Farm Site. Furthermore, there are extensive areas of suitable habitat available in the surrounding area. 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	Kestrel are resident at the Proposed Wind Farm Site. The construction of the Proposed Project has the potential to give rise to disturbance impacts. However, while this species was frequently recorded within the Proposed Wind Farm Site during the breeding and winter seasons, the Proposed Wind Farm Site 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. No significant effects of disturbance are anticipated at the county, national or international level, given that extensive areas of suitable foraging and nesting habitat exists and will remain in the wider area.	The magnitude of the effect is assessed as Low. The cross tabulation of a Medium sensitivity species and Low impact corresponds to a Low effect significance.	Likely short-term slight negative effect, which is Not Significant .
Operational Phase			

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
Direct Habitat Loss	Direct habitat loss effects are not anticipated, as no further infrastructure is proposed.	No Effect	No Effect
Displacement and Barrier Effect	Raptor studies have generally found only low levels of turbine avoidance (Hötter <i>et al.</i>, 2006; Madders and Whitfield, 2006), with some species, such as kestrels, known to continue foraging activity close to turbines (Pearce-Higgins <i>et al.</i>, 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 Site. Significant displacement effects are not predicted.	The magnitude of the effect is assessed as Low. The cross tabulation of a 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 the potential collision height 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 1.5 collisions per year. Annual mortality of adult kestrel has been calculated at an average of 35% (range 30-40%) per annum (Orta <i>et al.</i>, 2020). If 1.5 collisions were to occur per year, it would mean that the losses at the Proposed Wind Farm Site would increase the annual mortality of the county population (c. 664 birds) by 0.65%. The predicted collision risk is not significant.	The magnitude of the effect is assessed as Negligible. The cross tabulation of a Low sensitivity species and Negligible impact corresponds to a Very Low effect significance.	Likely long-term imperceptible negative effect, which is Not Significant .
Decommissioning Phase			
Direct Habitat Loss	Direct or indirect effects are not anticipated, as no further infrastructure is proposed.	No Effect	No Effect
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.7 Snipe

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 within and in proximity to the Proposed Wind Farm Site. There was two probable breeding territories identified within the Proposed Wind Farm Site. The majority of the observations within the Proposed Wind Farm Site were on peatland habitat within 500m of the Proposed Turbines. The (physical) loss of breeding and foraging habitat will be minimal as the built infrastructure footprint is confined to a narrow corridor within the Site (i.e., 8.9ha/0.7% of the 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 suitable habitat available in the surrounding area, including grassland and upland bog habitats. 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 <i>et al.</i> (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 built infrastructure footprint on 92 occasions (54% of all snipe records). The majority of the optimal habitat (open peatland) for snipe within the Proposed Wind Farm Site is located within 400m from the built infrastructure footprint, therefore there is the potential for short-term disturbance of foraging snipe during the construction phase. However, the Proposed Wind Farm Site 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 snipe population.	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)
	There were two probable breeding territories identified within the Proposed Wind Farm Site, however they were not within 400m of the built infrastructure footprint, therefore significant avoidance by breeding snipe is not anticipated. Significant disturbance during the construction phase is not predicted at the county, national or international scale, given that extensive areas of suitable foraging and nesting habitat exists and will remain in the wider area.		
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated, as no further infrastructure is proposed.	No Effect	No Effect
Displacement and Barrier Effect	Snipe were regularly recorded during surveys, with probable breeding territories within the Proposed Wind Farm Site. The majority of the optimal habitat for snipe within the Proposed Wind Farm Site is located within 500m from the Proposed Turbines. The habitats within and adjacent to the Proposed Wind Farm Site are abundant in the wider area and are not unique to the Proposed Wind Farm Site. 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 Site lies on a migratory/ regular commuting route for the species therefore barrier effect is not anticipated. Significant displacement or barrier 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 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)
Collision Risk	The species was recorded flying at the potential collision height 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 100% of the night. Please see Appendix 7-6 for further discussion. The collision risk has been calculated at a rate of 0.06 collisions per year. The loss of 2 to 3 birds is insignificant over the 35-year lifetime of the Proposed Project from the local population. 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	Unlikely long-term imperceptible negative effect, which is Not Significant
Decommissioning Phase			
Direct Habitat Loss	Direct or indirect effects are not anticipated, as no further infrastructure is proposed.	No Effect	No Effect
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.8 Red Grouse

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	Red grouse were infrequently recorded at the Proposed Wind Farm Site. There was a breeding territory identified in 2021, however there were no observations in the subsequent breeding seasons surveyed (2022 to 2025). Significant effects are not anticipated particularly given the low levels of activity	The magnitude of the effect is assessed as Low. The cross tabulation of a Medium sensitivity species and Low	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)
	recorded and that red grouse are no longer reliant on the Proposed Wind Farm Site for breeding. The construction of the Proposed Project will not result in the (physical) loss of a significant amount of suitable habitat given the built infrastructure footprint is small (i.e. 8.9ha/0.7%) relative to the total area within the Site. Extensive areas of suitable habitat will remain post construction and there is an abundance of suitable habitat in the surrounding area. Significant effects are not predicted.	impact corresponds to a Low effect significance.	
Disturbance	There was a breeding territory identified within 500m of the built infrastructure footprint of the Proposed Project in 2021. However, there were no breeding territories identified in subsequent breeding seasons (2022 to 2025). Disturbance during construction is unlikely to significantly discourage foraging or breeding attempts as the areas of suitable habitat are located outside the Proposed Wind Farm Site. The occurrence of red grouse near wind energy access routes in a Scottish case study was found to be higher than in the surrounding moor (Pearce-Higgins <i>et al.</i>, 2009). Additionally, populations of red grouse were found to recover within one year after disturbance caused by construction of wind farms (Pearce-Higgins <i>et al.</i>, 2012). Significant disturbance effects are not anticipated.	The magnitude of the effect is assessed as Low. The cross tabulation of a Medium sensitivity species and Low impact corresponds to a Low effect significance.	Likely short-term slight negative effect, which is Not Significant .
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated, as no further infrastructure is proposed.	No Effect	No Effect
Displacement and Barrier Effect	As previously discussed, red grouse were observed at the Proposed Wind Farm Site in 2021, but not in subsequent years (2022 to 2025). Operational turbines are unlikely to discourage foraging or breeding attempts within the Proposed Wind Farm Site or surrounding area.	The magnitude of the effect is assessed as Low. The cross tabulation of a Medium sensitivity species and Low	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)
	A study by Douglas <i>et al.</i> (2011) found no significant change in the relationships between grouse occurrence and either turbine or track proximity and found, no evidence for re-distribution in red grouse in response to wind farm operation. Significant effects are not anticipated. There was no evidence to suggest the Proposed Wind Farm Site lies within any commuting corridors for this species, significant barrier effects are not anticipated.	impact corresponds to a Low effect significance.	
Collision Risk	This species was not recorded flying at the potential collision height during the extensive vantage point survey work undertaken at the Proposed Wind Farm Site. Collision related mortality is not likely to significantly impact this species.	No Effect	No Effect
Decommissioning Phase			
Direct Habitat Loss	Direct or indirect effects are not anticipated, as no further infrastructure is proposed.	No Effect	No Effect
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.9 Buzzard

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 Site 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 built infrastructure footprint is small (i.e. 8.9ha/0.7%) relative to the total area within the Site. There was up to one breeding territory identified during the comprehensive suite of surveys. Buzzard were observed foraging within the Proposed Wind Farm Site. However, the habitat types found within the Proposed Wind Farm Site are not unique to the Proposed Wind Farm Site 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 built infrastructure 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, while this species was occasionally recorded within the Proposed Wind Farm Site during the breeding and winter seasons, the Proposed Wind Farm Site 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 Site.	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, as no further infrastructure is proposed.	No Effect	No Effect
Displacement and Barrier Effect	This species was occasionally recorded within the Proposed Wind Farm Site during the breeding and winter seasons. As previously discussed, there was up to one breeding territory identified during the comprehensive suite of surveys. Pearce-Higgins <i>et al.</i> (2009) describes that buzzard show significant turbine avoidance extending to at least 500m. There were only eight observations of buzzard within 500m of the Proposed Turbines over five years of surveys. However, buzzard are a habitat generalist and the suitable onsite habitats are not considered unique to the Proposed Wind Farm Site. 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 Site 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 long-term slight negative effect, which is Not Significant
Collision Risk	The species was recorded flying within the potential collision height 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 0.078 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 2 to 3 birds	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

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
	over the lifetime of the Proposed Project from the local population of a green-listed species is considered not to be significant. No significant effects are anticipated.		
Decommissioning Phase			
Direct Habitat Loss	Direct or indirect effects are not anticipated, as no further infrastructure is proposed.	No Effect	No Effect
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.10 Sparrowhawk

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 resident at the Proposed Wind Farm Site. The construction of the Proposed Project will not result in the (physical) loss of a significant amount of suitable habitat given the built infrastructure footprint is small (i.e. 8.9ha/0.7%) relative to the total area within the Site. There were up to three breeding territories identified for sparrowhawk during the comprehensive suite of surveys. Sparrowhawk use the Proposed Wind Farm Site for foraging and nesting. However, the habitat types found within the Proposed Wind Farm Site are not unique to the Proposed Wind Farm Site 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 built infrastructure 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

Potential effects during the construction and operational phases of the Proposed Project		Significance (Percival, 2003)	Significance (EPA, 2022)
Disturbance	The construction of the Proposed Project has the potential to give rise to disturbance impacts. However, while this species is resident at the Proposed Wind Farm Site, the Proposed Wind Farm Site 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. 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 Site. No significant effects of disturbance 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
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated, as no further infrastructure is proposed.	No Effect	No Effect
Displacement and Barrier Effect	As previously discussed, the Proposed Wind Farm Site hosted breeding and foraging sparrowhawk. Sparrowhawk bred within the Proposed Wind Farm Site. 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 <i>et al.</i>, 2009). This species was occasionally recorded within the Proposed Wind Farm Site (on 19 occasions over five years), with 12 observations within 500m of the Proposed Turbines. However, none of the habitats found onsite are considered to be a scarce resource locally. Therefore, displacement effects are likely to be inconsequential.	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)
	Significant effects are not predicted particularly given that habitats within the Proposed Wind Farm Site are not unique to the area. Extensive areas of suitable foraging and breeding habitat will remain post construction. Significant displacement effects are not anticipated.		
Collision Risk	The species was recorded flying within the potential collision height 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 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.	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
Decommissioning Phase			
Direct Habitat Loss	Direct or indirect effects are not anticipated, as no further infrastructure is proposed.	No Effect	No Effect
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.3

Likely Effects Associated within the Proposed Grid Connection Site and Turbine Delivery Route

The Proposed Grid Connection Site is 33kV underground cabling that will continue from the wind farm road to the proposed extension to the existing 110kV Slievecallan substation and will run through forestry and a farm track before entering the public road corridor, finally exiting onto existing forestry/wind farm roads before reaching the proposed substation extension compound. 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 Port of Foynes and will travel along national, regional and local public roads before arriving at the Site. Temporary accommodation works are proposed at 3 no. locations along the turbine delivery route for the purposes of turbine components and abnormal load delivery.

Required works are minor and are all located within the existing road corridor (full details in Chapter 4 of this EIAR). On a precautionary basis, it is assumed that some temporary disturbance may occur during works. However, given the scale of the works and the extent of similar habitat in the wider surroundings, significant effects are not predicted. The effect significance for all KORs is assessed as no greater than Low (Percival, 2003) or a likely short-term slight negative effect (EPA, 2022), which is not significant.

7.5.4

Likely Effects Associated within the Proposed Enhancement Site

This section specifically addresses the potential for measures within the Proposed Enhancement Site to result in significant effects. In short, no significant effects are predicted for any KORs. This is based on the following rationale.

A full description of the proposed hen harrier habitat enhancement measures are provided in Appendix 6-4. In summary, it is proposed to create optimal hen harrier foraging habitat from 123ha of forestry and 20ha of farmland. The management prescriptions include the deforestation of forestry and restoration of its underlying habitat and similarly the restoration and management of the farmland.

Commercial forestry is a habitat type of generally low ecological value. This monoculture crop is typically also low in biodiversity. There is an abundance of commercial forestry within the uplands surrounding the Site. Relative to this abundance, a small area of forestry will be permanently felled as part of this BMEP. This deforestation will therefore not result in the loss of a scarce resource for the local avian community, including hen harrier.

The removal of closed canopy forestry, which would not otherwise have been felled until maturity and would then be replanted, increases the 'spatial utilisation' of the area, i.e. by opening up/creating habitats that would not otherwise be available. Another benefit of deforestation is that it reduces negative edge effects for the open habitat that was previously adjacent to forestry. Examples of edge effects include predation of nest sites. Thus, removing forestry to create hen harrier foraging habitat is a net positive. As detailed in Appendix 6-4, pre-felling surveys are proposed to be undertaken prior to the commencement of any deforestation works. The timing of deforestation works will be determined based on the results of these surveys, which limits the potential for any disturbance effects. Therefore, no significant negative effects are predicted to result from the deforestation of forestry within the Proposed Enhancement Site.

Furthermore, as all the offsetting measures within agricultural lands follow sound knowledge of restoration ecology from the Hen Harrier Project¹², no significant negative effects are predicted.

7.5.5 Likely Effects on Designated Sites

An Appropriate Assessment (AA) Screening Report and Natura Impact Statement (NIS) was prepared to provide the competent authority with the information necessary to complete an Appropriate Assessment for the Proposed Project, which accompanies this application. The screening did not identify any potential pathway for adverse effects on an SPA.

‘It can be objectively concluded, on the basis of the best available information, beyond reasonable scientific doubt, that the Proposed Project, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site’

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 measures that are in place to mitigate negative effects associated with the Proposed Project on avian receptors. Effects on avian receptors have been addressed through the design of the Proposed Project, a Construction and Environmental Management Plan (CEMP), targeted mitigation and enhancement measures and a Bird Monitoring Plan (see Section 7.8). These are discussed below.

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

7.6.2 Construction and Environmental Management Plan

A CEMP has been prepared and will be in place prior to the start of the construction phase. Full details are available in Appendix 4-5 of this EIAR. Note that the majority of these measures are proposed as industry best practice rather than to mitigate any identified significant effect and will be updated as required to address any conditions of a permission or findings of any pre-construction survey results. Measures specific to birds are detailed below:

¹² <http://www.henharrierproject.ie/>

- › 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.
- › A Biodiversity Management and Enhancement Plan (BMEP) will be implemented, which will offset potential loss of hen harrier foraging habitat. Please see Section 7.6.3 for further details.
- › The removal of woody vegetation will be undertaken in full compliance with Section 40 of the Wildlife Act 1976 – 2022. Where sections of woody vegetation are removed for the purposes of the junction and road upgrades, these will be replaced with suitable hedge/tree species which are common in the local context.
- › During the construction phase, noise limits, noise control measures, hours of operation (i.e. dusk and dawn is high faunal activity time) and selection of plant items will be considered in relation to disturbance of birds. 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.
- › Water protection measures will be implemented around existing watercourses as outlined in Chapter 9, to protect the use of watercourses by birds.
- › A pre-construction bird survey at the Proposed Wind Farm Site will be carried out to ensure that any sensitive roost or nest sites in the works area are identified and disturbance to these are avoided. Further details are provided in Appendix 7-7.
- › 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 birds are no longer dependent on the roost/nest.
- › Operational phase bird surveys will be conducted, please see Section 7.8.2 for further details.

7.6.3 Enhancement Measures

The Proposed Project includes plans for the establishment of hen harrier habitat, which will offset any indirect habitat loss resulting from the Proposed Project. Please refer to the Biodiversity Management and Enhancement Plan (BMEP) in Appendix 6-4 for full details. The offsetting 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 BMEP aims to provide an increase in the availability of passerine prey within the Proposed Enhancement Site to offset the loss of the foraging habitat due to the Proposed Project 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 Proposed Enhancement Site, 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). Ten parcels of currently forested land and two farmland parcels, totalling c.143ha, are proposed to mitigate the predicted (indirect) habitat loss (131ha). In quantitative terms, it is proposed to permanently deforest 123ha. In addition, it is proposed to enhance a further c. 20ha of farmland. Please see Appendix 6-4, Figure 4-4 for location details.

As outlined in Section 7.5.2.2, 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, with a predicted loss of 131ha of suitable foraging habitat. The BMEP 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 7.5.2.2) 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 the BMEP is the permanent deforestation of 123ha of commercial forestry and the planned restoration of the underlying habitats 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 rush 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 offsetting 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.

The likely effect of disturbance and displacement to foraging hen harrier will be no greater than a Low, as per Percival (2003) criteria, or likely long-term slight negative effect, as per EPA (2022) criteria, when the enhancement measures have been successfully implemented. Therefore, no significant effects on hen harrier are anticipated.

7.6.4 Residual Effects

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

7.7 Cumulative Impacts

The Proposed Project was considered in combination with other plans and projects in the surrounding area that could result in cumulative impacts on KORs. The plans and projects considered are listed in Chapter 2 of this EIAR. The full list of plans and projects has been considered and relevant ones from this list are considered in the cumulative assessment. These are outlined below.

7.7.1 Plans Considered in the Assessment

The following plans were considered in the cumulative impact assessment:

- › Clare County Development Plan 2023-2029
- › Regional Spatial and Economic Strategy 2020-2032
- › National Biodiversity Action Plan 2023-2030
- › Clare County Biodiversity Action Plan 2025-2031

7.7.2 Projects Considered in the Assessment

7.7.2.1 Developments/Landuses

A review of the relevant planning registers was undertaken to document relevant general development planning applications in the vicinity of the Proposed Wind Farm Site, as described in Chapter 2 of this

EIAR. The majority of these relate to the provision and/or alteration of one-off rural housing and agriculture-related structures. Owing to the scale and nature of these developments, significant cumulative impacts are not anticipated.

7.7.2.2 Forestry and Agricultural Practices

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

These land-uses have been taken into account in the landscape level cumulative assessment, see Section 7.7.3.1.

7.7.2.3 Other Wind Farm Developments

Wind farm projects within 25km of the Proposed Wind Farm Site are provided in Table 7-12, including details of their planning status, number of turbines and distance from the Proposed Turbines. Each wind farm is discussed individually in the following sections, with a summary of the information available on birds within the planning system outlined for each wind farm. The cumulative impact assessment with regards to the Proposed Project is then discussed in Section 7.7.3.

Table 7-12 Wind farm developments within 25km of the Proposed Wind Farm Site

Wind Farm	Planning Status	Number of Turbines	Separation Distance (turbine to turbine)
Illaunbaun	Proposed	6	1.5km
Slieve Callan	Existing	29	1.6km
Booltiagh Extension	Existing	6	8.5km
Booltiagh I	Existing	12	9.2km
Cahermurphy	Existing	3	9.5km
Cahermurphy II	Proposed	10	9.7km
Cahermurphy West	Proposed	8	10km
Letteragh	Existing	6	10.9km
Glenmore	Existing	12	11.1km
Kiltumper	Existing	2	11.6km
Boolynagleragh Extension	Existing	7	13.8km
Boolynagleragh	Existing	9	13km
Crossmore	Existing	7	18km
Cloonkett	Proposed	14	20.1km
Ballykett	Permitted	4	22.9km
Tullabrack	Existing	6	22km
Moanmore	Existing	7	23.1km

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 file¹³ was

¹³ <https://www.eplanning.ie/ClareCC/AppFileRefDetails/2560520/0>

reviewed on the Clare County Council website and the EIAR was reviewed, a summary of which is outlined here. 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 were 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.

A second application for a single turbine within the site was also considered. The planning file¹⁴ for this single turbine was reviewed on the Clare County Council website and the EIAR was reviewed, a summary of which is outlined here. The potential for collision risk effects were assessed for kestrel, herring gull, lesser black-backed gull, golden plover and snipe. A significant negative effect was anticipated for raptors with regards to disturbance and displacement. Disturbance and displacement effects on waders, waterfowl and gulls were all assessed to be not significant. Similarly, collision risk was assessed to be not significant for all species, with the exception of kestrel which was assessed to be a significant effect at a local level. A cumulative impact assessment was conducted for wind farms within a 20km radius of the Illaunbaun turbine. Significant cumulative impacts on birds were not predicted, with the exception of a significant cumulative effect of disturbance and displacement of hen harrier. However, to offset the impacts of disturbance/displacement on hen harrier and kestrel, and collision fatalities for kestrel, habitat creation and enhancement measures are proposed, 13.6ha of land will be managed for the benefit of these species. Following the mitigation and enhancement measures outlined, no residual effects on any bird species were anticipated. The Illaunbaun EIAR concluded that *‘with mitigation measures in place, the Proposed Development and anticipated grid connection route, will not give rise to significant residual effects on biodiversity or ornithology.’*

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 file¹⁵ was reviewed on the An Coimisiún Pleanála website and the EIS was reviewed, a summary of which is outlined here. 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 for the benefit of hen harrier. 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 within 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).

Booltiagh Extension Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Bootliagh I Wind Farm was considered. The planning file¹⁶ was reviewed on the Clare County Council website and the Environmental Statement was reviewed, a summary of which is outlined here. 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 Bootliagh, Glenmore, High Street and Cahermurphy wind farms. No cumulative

¹⁴ <https://www.eplanning.ie/ClareCC/AppFileRefDetails/2660207/0>

¹⁵ <https://archive.pleanala.ie/en-ie/case/237524>

¹⁶ <https://www.eplanning.ie/ClareCC/AppFileRefDetails/072900/0>

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.

Booltiagh I Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Bootiagh I Wind Farm was considered. The planning file¹⁷ 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 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.’*

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 file¹⁸ was reviewed on the An Coimisiún Pleanála website and the EIS was reviewed, a summary of which is outlined here. 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.

Cahermurphy II Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the proposed Cahermurphy II Wind Farm was considered. The planning file¹⁹ was reviewed on the An Coimisiún Pleanála website and the EIAR was reviewed, a summary of which is outlined here. Impacts on hen harrier were assessed and no significant impacts were identified in relation to displacement of foraging breeding birds, displacement of wintering birds or collision risk. Golden plover, peregrine, merlin, common tern, herring gull, black-headed gull, buzzard, sparrowhawk, kestrel, and snipe were also assessed. There were no significant impacts identified in relation to displacement or collision risk. The EIAR concluded that *‘No significant effects are predicted on birds due to direct habitat loss or displacement during the construction, operational phases of the Proposed Development. Collision risk calculations do not indicate that the development will have significant effects on any KOR recorded either in isolation or cumulatively with other wind farms.’* In addition to this, the EIAR included a hen harrier and peatland habitat enhancement plan which *“will safeguard a significant resource for biodiversity for the 30-year lifespan of the proposed wind farm site.”*

Cahermurphy West Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the proposed Cahermurphy West Wind Farm was considered. The planning file²⁰

¹⁷ <https://archive.pleanala.ie/en-ie/case/120616>

¹⁸ <https://www.pleanala.ie/en-ie/case/245189>

¹⁹ <https://www.pleanala.ie/en-ie/case/311044>

²⁰ <https://www.pleanala.ie/en-ie/case/324155>

was reviewed on the An Coimisiún Pleanála website and the EIAR was reviewed, a summary of which is outlined here. Impacts on hen harrier, kestrel, snipe, buzzard and sparrowhawk were assessed for habitat loss, displacement, disturbance and collision risk. No significant impacts were anticipated for kestrel, snipe, buzzard and sparrowhawk. Significant disturbance/displacement impacts on foraging hen harrier were predicted before mitigation. As such, a comprehensive hen harrier enhancement plan was proposed which was predominantly a deforestation plan, with the removal of 56.3ha of commercial forestry and the restoration of the underlying peatland for the benefit of hen harrier, with an additional 67.4ha of farmland being management for the benefit of hen harrier. Post-mitigation, the residual effect of the Cahermurphy West Wind Farm was no greater than Low, as per Percival criteria or Slight, as per EPA (2022) criteria, was identified for any KOR. Cumulative impacts were assessed for wind farms within 25km of the Cahermurphy West Wind Farm. No significant impacts were anticipated for any species, particularly for hen harrier were a net gain of foraging habitat is proposed as part of the wind farm due to the enhancement plan. The EIAR concluded that *“the Proposed Project will not result in any significant effects on any of the identified KOR.”*

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 file²¹ was reviewed on the An Coimisiún Pleanála website and the EIS was reviewed, a summary of which is outlined here. 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.

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 file²² was reviewed on the An Coimisiún Pleanála website and the EIS was reviewed, a summary of which is outlined here. 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.

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 file²³ was reviewed on the An Coimisiún Pleanála website and the EIS was reviewed, a summary of which is outlined here. 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).

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

²¹ <https://archive.pleanala.ie/en-ie/case/239933>

²² <https://www.pleanala.ie/en-ie/case/245392>

²³ <https://archive.pleanala.ie/en-ie/case/234010>

file²⁴ was reviewed on the An Coimisiún Pleanála website and the EIS was reviewed, a summary of which is outlined here. 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.*”

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 file²⁵ was reviewed on the Clare County Council website and the EIS was reviewed, a summary of which is outlined here. 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.*”

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 file²⁶ for the original application was reviewed on the Clare County Council website and the EIS was reviewed, a summary of which is outlined here. 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.

Cloonkett Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the proposed Cloonkett Wind Farm was considered. The planning file²⁷ was reviewed on the An Coimisiún Pleanála website and the EIAR was reviewed, a summary of which is outlined here. 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 Cloonkett Wind Farm. No significant cumulative impacts with regards to habitat loss, barrier effect, displacement or collision risk were anticipated.

²⁴ <https://archive.pleanala.ie/en-ie/case/244095>

²⁵ <https://www.eplanning.ie/ClareCC/AppFileRefDetails/09479/0>

²⁶ <https://www.eplanning.ie/ClareCC/AppFileRefDetails/20824/0>

²⁷ <https://www.pleanala.ie/en-ie/case/323783>

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 file²⁸ was reviewed on the An Coimisiún Pleanála website and the EIAR was reviewed, a summary of which is outlined here. The impact of displacement was assessed for sparrowhawk, buzzard, merlin, kestrel, hen harrier and snipe. No significant impacts were identified. Collision 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.'

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 file²⁹ for the original application was reviewed on the Clare County Council website and the EIS was reviewed, a summary of which is outlined here. 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.*"

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 file³⁰ was reviewed on the An Coimisiún Pleanála website and the inspectors report was reviewed, a summary of which is outlined here. The inspector outlined that the whooper swan population of a nearby lake was the only population of protected species that was likely to be affected. However, the inspector was satisfied that it was unlikely to be a significant impact. The inspector concluded that the proposed development will not have a significant impact on local flora and fauna.

7.7.3 Cumulative Impact Assessment

There were ten KORs identified at the Proposed Wind Farm Site: golden plover, hen harrier, merlin, peregrine, osprey, kestrel, snipe, red grouse, 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 Site. There are 29 existing turbines within 5km of the Proposed Wind Farm (Slieve Callan Wind Farm), and a further 6 Proposed Turbines from Illaunbaun Wind Farm. The remaining wind farms are between 5-25km of the Proposed Wind Farm Site.

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 (golden plover, merlin, peregrine, red grouse, buzzard, and sparrowhawk). A population of importance was not identified for osprey, given that there was only one observation of this rare visitor to Ireland, which is only recently recolonising the country. Therefore,

²⁸ <https://www.pleanala.ie/en-ie/case/319961>

²⁹ <https://www.eplanning.ie/ClareCC/AppFileRefDetails/1064/0>

³⁰ <https://archive.pleanala.ie/en-ie/case/123292>

there is limited potential for cumulative effects on this species given how infrequently it occurs in County Clare and that there are no significant waterbodies which would support an osprey population within 25km of the Proposed Wind Farm Site. Cumulative effects on osprey are not considered further, as no significant effects are anticipated. 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. Quantitative collision risk figures were not available for the majority of wind farms which are considered within this cumulative assessment, therefore cumulative impacts for collision risk were considered qualitatively based on the best available information. 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 during the construction phase are predicted to result, and they are not considered further.

7.7.3.1 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 Site lies) that is likely to be significantly impacted by the presence of turbines. Impacts were predicted to be restricted to the area near a 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. Furthermore, the area is largely one coherent ecological unit that contains a contiguous mosaic of similar habitats that likely contain similar species as were observed during the surveying of the Proposed Wind Farm Site and wider surrounding. Therefore, this area is a suitable area for a landscape-level assessment for all KORs. The GIS exercise provided the following results.

The total upland area is 19,147ha and of this, 4,128ha (21.5%) is within 500m of a turbine³¹ (excluding the proposed turbine layout). The 500m radius of the proposed turbine layout comprises 421ha, all of which is within this upland area of this 19,147ha total (2.1%). 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 5,126ha (or 67.5% of the forestry).
 - Forestry greater than 500m from turbines (incl. the proposed turbine layout) is 5,006ha (or 66% 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 9,892ha (or 85.6% of the open habitat).
 - Open area greater than 500m from turbines (incl. the proposed turbine layout) is 9,591ha (or 83% of the open habitat).

³¹ Cahermurphy West Wind Farm has been excluded from these calculation as it is on the same site as Cahermurphy II Wind Farm, which has more turbines and therefore would have a greater cumulative impact than Cahermurphy West Wind Farm.

- › The total area within 500m of turbines (incl. the proposed turbine layout) is 4,748ha (24.8% of the total upland area);
 - 2,583ha is within forestry (54.4% of the area within 500m of turbines); and
 - 2,165ha is within open habitats (45.6% of the area within 500m of turbines).

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 (55%).
- › 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 9 no turbines of the Proposed Project account for 2.1% of the upland area.
- › In the specific case of hen harrier, significant displacement effects occur at 250m (compared to the 500m used in this assessment), therefore, cumulative impacts on hen harrier would be much less than those calculated here at a landscape level.

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 Proposed Wind Farm 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.

Cumulative barrier effect within this upland region was assessed. The wind farms within this upland region are concentrated in two areas in terms of barrier effect (south and north of this upland area), with approximately 4km between each area. Given the separation distance, barrier effects in combination with the wind farms in the southern area is not anticipated, given the separation distance between the two concentrations of wind farms of greater than 4km. Barrier effect with assessed for the Proposed Project in combination with Slieve Callan Wind Farm and Illaunbaun Wind Farm as these are within the northern area of the uplands region. These three wind farms are aligned in a north-south direction, which is therefore most likely to cause a barrier effect for birds travelling in an easterly or westerly direction. However, significant barrier effect is not anticipated given that these wind farms are not adjoining and there are valleys between each wind farm, which, in general, are preferred by migrating/commuting birds when compared to travelling over the higher areas of land. Furthermore, there were no regularly used commuting corridors or migration paths identified during surveys. Therefore, significant cumulative barrier effect is not anticipated.

7.7.3.2 Golden Plover (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 Site contains open upland habitats (such as bogs) which are suitable for golden plover and commercial forestry, which is of little ecological value to this species. The disturbance associated with operational turbines will not significantly impact the local population of golden plover onsite. Similar displacement impacts are predicted on other wind farms locally. However, suitable habitat types for golden plover are not a rare habitat locally. Therefore, significant cumulative impacts are not predicted.

Collision risk effects of Very Low (as per Percival 2003 criteria) or Long-term Imperceptible (as per EPA, 2022) were predicted for the Proposed Project. The collision risk impacts are effectively zero and therefore, significant cumulative effects are unlikely to result.

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, displacement or collision risk.

Significant cumulative effects are not predicted.

7.7.3.3 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 hen harrier habitat enhancement plan to ensure the Proposed Wind Farm Site avoids any future contribution to a significant cumulative effect, particularly for the hen harrier of the North and West Clare 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 Clare 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 Clare 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 BMEP 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 (123ha) alone offsets the

majority of the total habitat loss figures of the Proposed Wind Farm Site (131ha). This is before the consideration of the benefits of enhancing a further 20ha of farmland for the benefit of hen harrier.

- 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 BMEP, Appendix 6-4 for further discussion on justifications.

A review of the relevant scientific literature on the collision risk of harriers with turbines indicates that the species is probably at low risk of collision generally, given the low altitude of the majority of its flight activity³² (NPWS, 2021), 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. Furthermore, the Windharrier research project (Wilson *et al.*, 2015) carried out by University College Cork (UCC) between 2012 and 2014, found the risk of collisions for hen harrier to be low. As outlined in Section 7.5.2.2 above, and reiterated herein, based on the annual rate of predicted collisions (no collisions predicted during the lifetime of the wind farm), significant collision risk effects are not predicted for this species either as a result of the Proposed Project alone or cumulatively.

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, displacement or collision risk.

Significant cumulative effects are not predicted.

7.7.3.4 **Merlin (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 Site contains open upland habitats (such as bogs) which are suitable for foraging merlin and commercial forestry, which is of some ecological value to nesting merlin. The disturbance associated with operational turbines will not significantly impact the local population of merlin 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.

Collision risk effects were not predicted for the Proposed Project given this species was not observed flying within the potential collision height. The collision risk impacts are effectively zero and therefore, significant cumulative effects are unlikely to result.

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, displacement or collision risk.

Significant cumulative effects are not predicted.

7.7.3.5 **Peregrine (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.

³² The only exception to this is early in the breeding season, when display flights can overlap with the turbine rotor swept height. However, in the present case, no confirmed nest was found locally. Thus, such flight activity is not predicted.

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 Site contains open upland habitats (such as bogs) which are suitable for foraging peregrine and commercial forestry, which is of little ecological value to this species. The disturbance associated with operational turbines will not significantly impact the local population of peregrine onsite. Similar displacement impacts are predicted on other wind farms locally. However, suitable habitat types for peregrine are not a rare habitat locally. Therefore, significant cumulative impacts are not predicted.

Collision risk effects were not predicted for the Proposed Project given this species was not observed flying within the potential collision height. The collision risk impacts are effectively zero and therefore, significant cumulative effects are unlikely to result.

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, displacement or collision risk.

Significant cumulative effects are not predicted.

7.7.3.6 Red Grouse (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 Site contains open upland habitats (such as bogs) which are suitable for red grouse and commercial forestry, which is of little ecological value to this species. The disturbance associated with operational turbines will not significantly impact the local population of red grouse onsite. Similar displacement impacts are predicted on other wind farms locally. However, suitable habitat types for red grouse are not a rare habitat locally. Therefore, significant cumulative impacts are not predicted.

Collision risk effects were not predicted for the Proposed Project given this species was not observed flying within the potential collision height. The collision risk impacts are effectively zero and therefore, significant cumulative effects are unlikely to result.

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, displacement or collision risk.

Significant cumulative effects are not predicted.

7.7.3.7 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 Site contains open upland habitats (such as bogs) which are suitable for foraging kestrel and commercial forestry, which is suitable for nesting kestrel. Cahermurphy, Cahermurphy II/West, Glenmore, Letteragh, Booltiagh I, Booltiagh Extension, Boolynagleragh Extension, Slieve Callan, Illaunbaun, and Moanmore wind farms are located within, or partially within, commercial forestry, which are of some ecological value to nesting kestrel. Cahermurphy, Slieve Callan and Moanmore

wind farms are located within, or partially within open farmland, which is suitable for foraging kestrel. Kiltumper, Glenmore, Booltiagh I, Cloonkett, Booltiagh Extension, Boolynagleragh, Slieve Callan, Illaunbaun, Crossmore, Tullabrack, and Moanmore are located within, or partially within, open upland habitat and bog habitat which is suitable for foraging kestrel. 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.

Collision risk effects of Very Low (as per Percival 2003 criteria) or Long-term Imperceptible (as per EPA, 2022) were predicted for the Proposed Project. The collision risk impacts are effectively zero and therefore, significant cumulative effects are unlikely to result.

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 Site. 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, displacement or collision risk.

Significant cumulative impacts are not predicted.

7.7.3.8 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 Site 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, and Moanmore, wind farms are located within, or partially within open farmland, which is suitable for snipe. Kiltumper, Glenmore, Booltiagh I, Cloonkett, Booltiagh Extension, Boolynagleragh, Slieve Callan, Illaunbaun Crossmore, Tullabrack, and Moanmore are located within, or partially within, open upland habitat and bog habitat which is suitable for snipe. Cahermurphy, Cahermurphy II/West Glenmore, Letteragh, Booltiagh I, Booltiagh Extension, Boolynagleragh Extension, Slieve Callan, and Moanmore 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.

Collision risk effects of Very Low (as per Percival 2003 criteria) or Long-term Imperceptible (as per EPA, 2022) were predicted for the Proposed Project. The collision risk impacts are effectively zero and therefore, significant cumulative effects are unlikely to result.

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 Site. 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, displacement or collision risk.

Significant cumulative impacts are not predicted.

7.7.3.9 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 Site contains 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.

Collision risk effects of Very Low (as per Percival 2003 criteria) or Long-term Imperceptible (as per EPA, 2022) were predicted for the Proposed Project. The collision risk impacts are effectively zero and therefore, significant cumulative effects are unlikely to result.

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, displacement or collision risk.

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

7.7.3.10 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 Site 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.

Collision risk effects of Very Low (as per Percival 2003 criteria) or Long-term Imperceptible (as per EPA, 2022) were predicted for the Proposed Project. The collision risk impacts are effectively zero and therefore, significant cumulative effects are unlikely to result.

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, displacement or collision risk.

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

7.8 Monitoring

7.8.1 Construction Phase

A Bird Monitoring Plan with the objective of monitoring the avian community at the Proposed Wind Farm Site during construction works has been prepared. This is presented fully in Appendix 7-7. It includes for pre-commencement and construction monitoring to identify sensitive nests or roosts in proximity to the works.

7.8.2 Operational Phase

A Bird Monitoring Plan with the objective of monitoring the response of the avian community at the Proposed Wind Farm Site to the operating turbines has been prepared. This is presented fully in Appendix 7-7. It includes for:

- › Monthly flight activity surveys: vantage point surveys.
- › Distribution and abundance surveys: breeding raptor 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.

7.8.3 Monitoring of the Proposed Enhancement Site

The Proposed Enhancement Site 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 6-4 for further details.

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

- › Hen harrier surveys of each of the Proposed Hen Harrier Habitat Enhancement Areas.
- › Passerine point counts at each of the Proposed Hen Harrier Habitat Enhancement Areas.
- › Habitat mapping and scoring at each of the Proposed Hen Harrier Habitat Enhancement Areas.
- › Vegetation sampling at each of the Proposed Hen Harrier Habitat Enhancement Areas.

7.8.4 Decommissioning Phase

A Bird Monitoring Plan with the objective of monitoring the avian community at the Proposed Wind Farm Site during decommissioning works has been prepared. This is presented fully in Appendix 7-7. It includes for pre-commencement and construction monitoring to identify sensitive nests or roosts in proximity to the works.

7.8.5 Data Sharing

As a measure to support conservation research and policy, it is proposed to submit the pre-planning survey data and information to the National Biodiversity Data Centre (NBDC) and to BirdWatch Ireland to contribute to the upcoming bird atlas (2027) on relevant ecological records, for example, information on the location of breeding territories and nest sites of bird species of conservation concern. The submission of the data will follow relevant standards and will be provided in the preferred NBDC excel template. This measure will be fulfilled within the first year of the construction phase in the event of a successful application. This commitment ensures the Proposed Project is contributing to the aims of Objective Four, Outcome 4B of Ireland's 4th National Biodiversity Action Plan: Data relevant to biodiversity and ecosystems, including conservation needs, is widely accessible and standardised.

7.9 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 KORs. 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, best practice mitigation and offsetting measures that are described within this application, significant individual or cumulative effects on the identified KORs are not anticipated.

7.10

EIA Classification Summary

The table below provides the impact assessment classification summary of all identified impacts for the Proposed Project relating to ornithology.

Table 7-13 Impact assessment classification summary

Species	Pre-Mitigation Effect	Mitigation Section Reference	Residual Effect	Significance
Construction Phase				
Golden Plover	Direct Habitat Loss: Long-term slight negative effect Disturbance: Short-term slight negative effect	Section 7.6.1 Section 7.6.2 Section 7.8.1	No effect greater than slight	Not Significant
Hen Harrier	Direct Habitat Loss: Long-term slight negative effect Disturbance: Short-term significant negative effect	Section 7.6.1 Section 7.6.2 Section 7.6.3 Section 7.8.1 Section 7.8.3	No effect greater than slight	Not Significant
Merlin	Direct Habitat Loss: Long-term slight negative effect Disturbance: Short-term slight negative effect	Section 7.6.1 Section 7.6.2 Section 7.8.1	No effect greater than slight	Not Significant
Peregrine	Direct Habitat Loss: Long-term slight negative effect Disturbance: Short-term slight negative effect	Section 7.6.1 Section 7.6.2 Section 7.8.1	No effect greater than slight	Not Significant
Osprey	Direct Habitat Loss: Long-term imperceptible negative effect Disturbance: Short-term imperceptible negative effect	Section 7.6.1 Section 7.6.2 Section 7.8.1	No effect greater than imperceptible	Not Significant
Kestrel	Direct Habitat Loss: Long-term slight negative effect Disturbance: Short-term slight negative effect	Section 7.6.1 Section 7.6.2 Section 7.8.1	No effect greater than slight	Not Significant
Snipe	Direct Habitat Loss: Long-term slight negative effect	Section 7.6.1 Section 7.6.2 Section 7.8.1	No effect greater than slight	Not Significant

Species	Pre-Mitigation Effect	Mitigation Section Reference	Residual Effect	Significance
	Disturbance: Short-term slight negative effect			
Red Grouse	Direct Habitat Loss: Long-term slight negative effect Disturbance: Short-term slight negative effect	Section 7.6.1 Section 7.6.2 Section 7.8.1	No effect greater than slight	Not Significant
Buzzard	Direct Habitat Loss: Long-term slight negative effect Disturbance: Short-term slight negative effect	Section 7.6.1 Section 7.6.2 Section 7.8.1	No effect greater than Imperceptible	Not Significant
Sparrowhawk	Direct Habitat Loss: Long-term slight negative effect Disturbance: Short-term slight negative effect	Section 7.6.1 Section 7.6.2 Section 7.8.1	No effect greater than Imperceptible	Not Significant
Operational Phase				
Golden Plover	Direct Habitat Loss: No effect Displacement and Barrier Effect: Long-term slight negative effect Collision Risk: Long-term imperceptible negative effect	Section 7.6.1 Section 7.8.2	No effect greater than slight	Not Significant
Hen Harrier	Direct Habitat Loss: No effect Displacement and Barrier Effect: Long-term significant negative effect Collision Risk: Long-term imperceptible negative effect	Section 7.6.1 Section 7.6.3 Section 7.8.2 Section 7.8.3	No effect greater than slight	Not Significant
Merlin	Direct Habitat Loss: No effect Displacement and Barrier Effect: Long-term slight negative effect Collision Risk: No effect	Section 7.6.1 Section 7.8.2	No effect greater than slight	Not Significant
Peregrine	Direct Habitat Loss: No effect	Section 7.6.1 Section 7.8.2	No effect greater than slight	Not Significant

Species	Pre-Mitigation Effect	Mitigation Section Reference	Residual Effect	Significance
	Displacement and Barrier Effect: Long-term slight negative effect Collision Risk: No effect			
Osprey	Direct Habitat Loss: No effect Displacement and Barrier Effect: Long-term imperceptible negative effect Collision Risk: No effect	Section 7.6.1 Section 7.8.2	No effect greater than imperceptible	Not Significant
Kestrel	Direct Habitat Loss: No effect Displacement and Barrier Effect: Long-term slight negative effect Collision Risk: Long-term imperceptible negative effect	Section 7.6.1 Section 7.8.2	No effect greater than slight	Not Significant
Snipe	Direct Habitat Loss: No effect Displacement and Barrier Effect: Long-term slight negative effect Collision Risk: Long-term imperceptible negative effect	Section 7.6.1 Section 7.8.2	No effect greater than slight	Not Significant
Red Grouse	Direct Habitat Loss: No effect Displacement and Barrier Effect: Long-term slight negative effect Collision Risk: No effect	Section 7.6.1 Section 7.8.2	No effect greater than Slight	Not Significant
Buzzard	Direct Habitat Loss: No effect Displacement and Barrier Effect: Long-term slight negative effect Collision Risk:	Section 7.6.1 Section 7.8.2	No effect greater than Imperceptible	Not Significant

Species	Pre-Mitigation Effect	Mitigation Section Reference	Residual Effect	Significance
	Long-term imperceptible negative effect			
Sparrowhawk	Direct Habitat Loss: No effect Displacement and Barrier Effect: Long-term slight negative effect Collision Risk: Long-term imperceptible negative effect	Section 7.6.1 Section 7.8.2	No effect greater than Slight	Not Significant
Decommissioning Phase				
Ornithological Receptors	Direct Habitat Loss: No effect Disturbance: As per construction phase	Section 7.8.4	No effect greater than slight	Not Significant