Environmental Impact Assessment Report (EIAR)

Killoshulan Wind Farm, Co. Kilkenny

Chapter 7 – Ornithology

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GLOSSARY OF TERMS

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

GLOSSARY OF ACRONYMS

Acronym	Meaning
AA	Appropriate Assessment
BESS	Battery Energy Storage System
BoCCI	Birds of Conservation Concern in Ireland
BR	Breeding Raptor (survey-location identifier)
BTO	British Trust for Ornithology
CEMP	Construction and Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
CRA	Collision Risk Assessment
DTM	Digital Terrain Model
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EPA	Environmental Protection Agency
EU	European Union
HHVP	Hen Harrier Vantage Point
I-WeBS	Irish Wetland Bird Survey
KOR	Key Ornithological Receptor
NBDC	National Biodiversity Data Centre
NHA	Natural Heritage Area
NIS	Natura Impact Statement
NPWS	National Parks and Wildlife Service
NRA	National Roads Authority
PCH	Potential Collision Height
SAC	Special Area of Conservation
SCI	Special Conservation Interest
SNH	Scottish Natural Heritage
SPA	Special Protection Area
VP	Vantage Point

7. ORNITHOLOGY

7.1 Introduction

This chapter assesses the likely significant impacts of the Killoshulan Wind Farm development on ornithological receptors. Particular attention has been paid to bird species with national and international protection under the Irish Wildlife Acts 1976-2022 and the European Union (EU) Birds Directive (2009/147/EC). Where potential impacts on ornithological receptors are identified, mitigation is described and the residual effects are assessed. As detailed in Section 1.1.1 in Chapter 1, for the purposes of this EIAR, the various project components are described and assessed using the following references:

- 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 'Proposed Wind Farm' is referred to, this refers to turbines (Proposed Turbines) and associated foundations and hardstanding areas, including entrances and access roads, underground cabling, permanent meteorological mast, temporary construction compounds, turbine delivery accommodation works, spoil management areas, borrow pit, tree felling, site drainage, operational stage signage, battery energy storage system (BESS), biodiversity enhancement areas and all ancillary works and apparatus. The Proposed Wind Farm is described in detail in Chapter 4 of this EIAR.
- Where the 'Proposed Grid Connection' is referred to, this refers to the on-site 110kV Substation, all ancillary works and underground 110kV grid connection cabling connecting to the existing Ballyragget 110kV Substation, Co. Kilkenny, and all ancillary works and apparatus. The Proposed Grid Connection is described in detail in Chapter 4 of this EIAR.
    - The 'Proposed 110kV Substation' refers to the new proposed onsite electricity infrastructure proposed within Frankford or Ballykeiran townland, Co. Kilkenny comprising 2 no. control buildings and the electrical substation components necessary to consolidate the electrical energy generated by each wind turbine and export that electricity from the onsite 110kV substation to the national grid.
    - The 'Proposed 110kV Underground Cabling' refers to new proposed 110kV underground electrical cabling connection from the 'Proposed 110kV Substation' to the existing 110kV Ballyragget substation, in the townland of Moatpark, approximately 1km north of Ballyragget, Co. Kilkenny. The underground electrical cabling route measures approximately 12.6km in length, the majority of which is located within the curtilage of the public road network.
- 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 796 hectares. Where the 'Proposed Wind Farm site' is referred to, this relates the EIAR Site Boundary without the corridor that encompasses the Proposed 110kV underground cabling route.

The following other definitions are used in this chapter:

- 'Ornithology Study Area' refers to the focal area during field surveys. This was defined as a 500m radius of the viable area for the siting of turbines at the outset of field surveys. This is the minimum area covered during field surveys.
- 'Ornithology Cumulative Study Area' defines the area of interest for use in the cumulative assessment.

The chapter is structured as follows:

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

- Appendix 7-1 contains the survey effort.
- Appendix 7-2 contains the species list.
- Appendix 7-3 contains the summary data.
- Appendix 7-4 contains the survey data.
- Appendix 7-5 contains the confidential survey data.
- Appendix 7-6 contains the collision risk assessment.
- Appendix 7-7 contains the bird monitoring programme.

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 planning permission for a project consisting of 10 turbines and the associated works. The turbines will be 103.5m at hub height, with 3 blades and a rotor diameter of 163m, giving a maximum rotor height of 185m and minimum rotor height of 22m. The Proposed Wind Farm will have an operation 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. 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)

- 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:

- SNH (2009). Monitoring the impact of onshore wind farms on birds. Scottish Natural Heritage, Inverness, Scotland. Available at: https://www.nature.scot/sites/default/files/2025-05/guidance-note-monitoring-the-impact-of-onshore-windfarms-on-birds.pdf
- SNH (2016). Assessing connectivity with Special Protection Areas (SPAs). Scottish Natural Heritage, Inverness, Scotland. Available at: https://www.nature.scot/sites/default/files/2022-12/Assessing%20connectivity%20with%20special%20protection%20areas.pdf
- NatureScot (2024). Guidance on using an updated collision risk model to assess bird collision risk at onshore wind farms. NatureScot, Inverness, Scotland. Available at: https://www.nature.scot/doc/guidance-using-updated-collision-risk-model-assess-bird-collision-risk-onshore-wind-farms
- NatureScot (2025). Recommended bird survey methods to inform impact assessment of onshore wind farms. Scottish Natural Heritage, Inverness, Scotland. Available at: https://www.nature.scot/doc/recommended-bird-survey-methods-inform-impact-assessment-onshore-windfarms
- NatureScot (2025a). Assessing the cumulative impacts of onshore wind farms on birds. NatureScot, Inverness, Scotland. Available at: https://www.nature.scot/doc/guidance-assessing-cumulative-impacts-onshore-wind-farms-birds
- NatureScot (2025b). Assessing the significance of impacts on bird populations from onshore wind farms that do not affect protected areas. NatureScot, Inverness, Scotland. Available at: https://www.nature.scot/doc/guidance-note-assessing-significance-impacts-bird-populations-onshore-wind-farms-do-not-affect

The following Irish guidance documents were also consulted:

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

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

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

7.1.3 Statement of Authority

This ornithology chapter has been prepared by Ciarán McKenna (BSc.), Project Ornithologist of MKO, with assistance from John Downes (BSc.), Joss Glenn (BSc.), and Shawn Dowdall (BSc.) and reviewed by Susan Doyle (PhD.), Senior Ornithologist. Ciarán and Susan 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 surveys and survey methodology was devised by Padraig Cregg (MSc.) and is fully compliant with NatureScot guidance (SNH, 2017; revised in NatureScot, 2025). Field surveys were undertaken by Andre Robinson (BSc.), Conor Berney (BSc.), Donnacha Woods (MSc.), Eric Dempsey, Jade Van Deventer (BSc.), James Corcoran Hodgins (BSc.), Ken Westman (Diploma – Field Ecology), Roisín Towe (BSc.), Shauna McCarthy (BSc.), Susan Doyle (PhD.), Seán O'Brien (BSc.), Tony Kenneally (BSc.), Zuzanna Erosova (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 within the likely Zone of Influence of the Proposed Wind Farm site. The Zone of Influence is defined in the Natura Impact Statement (NIS) of this EIAR.
- 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 (NPWS) Rare and Protected Species Database.

7.2.2 Scoping and Consultation

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

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

Table 7-1 Consultation responses

	Consultee	Response
01	Kilkenny County Council	The EIAR should address the existing environment with regard to existing habitats/communities etc. An ecological survey is required to survey the habitats, flora and fauna. Sensitive ecological features will be identified as key ecological receptors through a desktop study, consultation, and field surveys. Such surveys shall be carried out at an appropriates time of the year depending on species surveyed for. The Environmental Impact Statement (EIS) shall include the results of the surveys. The impact of the development on habitats important for birds shall be included, particularly the potential impacts on Spahill and Clomantagh Hall SAC, Cullahill SAC, The Loughans SAC and River Barrow and River Nore SAC/NHA. The sensitivity and significance of all fauna present on site shall be indicated and mitigation measures required to avoid, reduce or remedy any and all significant impacts. Both construction and operational, temporary and permanent impacts shall be considered in full.
02	Department of Agriculture, Food and the Marine	Response received on 14/05/2026. No information pertaining to birds.
03	BirdWatch Ireland	No response at time of writing.
05	Irish Peatland Conservation Council	No response at time of writing.
07	Irish Red Grouse Association	No response at time of writing.
08	Irish Wildlife Trust	No response at time of writing.
09	National Parks and Wildlife Service	Meeting held, details in Section 7.2.2.1

7.2.2.1 Meeting with the National Parks and Wildlife Service

A consultation meeting between the NPWS and MKO was held at 11:00 on the 9th of June 2026. During this meeting MKO presented the Proposed Project to the NPWS, including the dimensions of Proposed Turbines and other infrastructure, as well as the Proposed Grid Connection to the Ballyragget 110kV Substation.

The NPWS provided feedback on the ornithological baseline, ecological surveys, designated sites, habitat assessments and the planning application process. For the ornithological assessment, the following items were mentioned:

- The available ornithological data did not currently meet the NatureScot 2025 best practice guidance requiring two years of survey data less than five years old.
- It was stated that the two separate survey periods would not change the Proposed Project's risk profile.

- The conservation objectives of the River Nore SPA in relation to Kingfisher were highlighted. It was advised that sufficient survey effort should be undertaken to address these conservation objectives.

In response:

- MKO explained that, by the time of the planning application, two years of data would fall within the five-year period (October 2021–September 2022 and October 2025–September 2026).
- MKO also outlined plans to compare the older and newer datasets to demonstrate the stability of the ornithological baseline.

To address these concerns the following was undertaken:

- A comparison of the original data and the most recent data is provided in Section 7.3.8 to demonstrate that the data greater than 2 years old is still representative of the Ornithology Study Area.
- A dedicated kingfisher survey was carried out where the Proposed 110kV Underground Cabling crosses the River Nore.

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 Ornithology Study Area and hinterland, and the likely importance of the Ornithology Study Area for these species was ascertained. A list of 'target species' likely to occur at the Ornithology Study Area and hinterland was compiled. The list was drawn from:

- Species listed on Annex I of the EU Birds Directive.
- Special Conservation Interests (SCI) of Special Protection Areas (SPA) within 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 field surveys was devised. These were specifically designed to survey for the target species.

7.2.3.2 Survey Methodology

Field surveys were undertaken during the survey period October 2020 – September 2022, and October 2025 to August 2026, consisting of three breeding seasons (April – September) and three winter seasons (October – March). Note that the period October 2020 – September 2021 is surpassing five years, while October 2021 – September 2022 and October 2025 to August 2026 remain within the five-year period of relevance. 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 ornithological receptors identified. In the absence of specific national bird survey guidelines, the ornithological surveys were designed and undertaken in full accordance with the guidance document *'Recommended bird survey methods to inform impact assessment of onshore wind farms'* from NatureScot (formerly Scottish Natural Heritage [SNH]) outlined in SNH (2017), which was revised in NatureScot (2025). The surveys undertaken between October 2020 and September 2022, and those undertaken in October 2025 and September 2026 remain consistent with the relevant recommendations of the updated guidance. Accordingly, the revision of the guidance does not affect the validity or adequacy of the survey dataset used in this assessment.

The various field surveys undertaken are described in detail below including a description of the area surveyed and its radius from the Ornithology Study Area, which depended on the methodology and focal species. All survey effort and location maps are presented in Appendix 7-1.

7.2.3.2.1 *Vantage Point Surveys*

Vantage point surveys were undertaken in accordance with SNH (2017; revised in NatureScot, 2025) to monitor flight activity. The area surveyed was the Ornithology Study Area. Surveys were conducted from five fixed vantage points during October 2020 to September 2022 inclusive and October 2025 to March 2026 (VP1, VP2, VP3, VP4, and VP5). For the breeding season 2026, the viable area of the Site was reduced and VP3 was removed, therefore there were four fixed vantage points during April 2026 to August 2026 inclusive (VP1, VP2, VP4, and VP5). The vantage point locations were evaluated by undertaking a viewshed analysis (described below) and confirmed by a reconnaissance visit and initial field surveys to ensure that the proposed turbine layout was 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. To do this, surveyors initially visited the Ornithology Study Area and created a map of landscape features (such as forestry blocks) as polygons in QGIS. Each polygon was assigned a height in metres and merged with the DTM using the rasterise tool in QGIS before analysing the viewshed using the Visibility Analysis tool. 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 proposed turbine model was confirmed to have a lowest swept height of 22m, the viewsheds were recalculated using a notational layer suspended at 22m. 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, 2025). The surveyor collected data on bird observations and flight activity from the scanning arc of 180° to a 2km radius at the fixed vantage point locations for two 3-hour watches separated by a minimum 30-minute break (i.e., 6 hours total) per month. Surveys were conducted from October 2020 to September 2022 and October 2025 to August 2026 inclusive and were scheduled to provide a minimum of 36 hours per winter or breeding season and spread over the full daylight period, including dawn and dusk watches, to coincide with the highest periods of bird activity (Table 7-2).

Table 7-2 Vantage point survey duration

Survey Season and Number of Vantage Points	Effort per Vantage Point
Winter Season 2020/2021 (5 vantage points)	36 hours per vantage point
Breeding Season 2021 (5 vantage points)	36 hours per vantage point; 36 hours 10 minutes at VP4
Winter Season 2021/2022 (5 vantage points)	36 hours per vantage point
Breeding Season 2022 (5 vantage points)	36 hours per vantage point

Survey Season and Number of Vantage Points	Effort per Vantage Point
Winter Season 2025/2026 (5 vantage points)	36 hours per vantage point
Breeding Season 2026 (4 vantage points)	36 hours per vantage point

Flight activity of target species was mapped and recorded as per defined flight bands which were chosen in relation to the dimensions of potential turbine models at the outset of surveys. Bands were split into 0-10m, 10-25m, 25-200m and >200m. All flight activity within height bands 10-25m and 25-200m are 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 or in proximity to the Ornithology Study Area. The area surveyed extended to 500m from the Ornithology Study Area, 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 and four visits in winter 2025/2026).

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 or in proximity to the Ornithology Study Area. The area surveyed extended 500m from the Ornithology Study Area. 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 over four visits during the core breeding season months April to July.

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 Waterbird Distribution and Abundance Surveys

Waterbirds include swans, geese and ducks; cormorant, shag, divers and grebes; auks and seabirds; gulls, terns and skuas; herons, egrets and crane; rails and crakes; waders; and kingfisher. Due to their strong association with aquatic habitats, the species chough, grey wagtail and dipper were also treated as waterbirds for the purposes of these surveys. Significant wetlands and waterbodies within 8km of the Ornithology Study Area were surveyed for waterbirds during the 2020/2021 and 2021/2022 winter and passage seasons (August/September to May inclusive during 2021/2022) to provide information on their distribution in relation to the Ornithology Study Area. As no Greenland white-fronted goose was recorded in the surveys, the radius was reduced to 5km, in line with foraging distance for whooper swan during the 2025/2026 winter to provide information on their distribution in relation to the

Ornithology Study Area. The survey included the turlough within The Loughans Special Area of Conservation (SAC), located to the west of the Ornithology Study Area.

The area surveyed exceeds the 500m for foraging waterbirds and 1km for roosting waterbirds requirements of SNH (2017; revised in NatureScot, 2025) and follows the recommendations of SNH (2016). Survey methodology follows Gilbert *et al.* (1998) and the Irish Wetland Bird Survey (BirdWatch Ireland, 2021). Surveys were undertaken during daylight hours from suitable vantage points or transects overlooking wetlands and waterbodies. All target waterbird species were recorded and mapped.

7.2.3.2.5 Hen Harrier Roost Surveys

Hen harrier roost surveys were undertaken within 2km of the Ornithology Study Area. These surveys aimed to identify active winter hen harrier roosts near or within the Ornithology Study Area. 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 winters 2020/2021, 2021/2022 and 2025/2026).

Roost watches of 2-3 hours were conducted at four hen harrier vantage point locations from dusk until last visible light. Surveys were initially conducted at four locations (HHVP1, HHVP2, HHVP3a and HHVP4). Due to low suitability of roosting habitat at HHVP3a, this survey location was moved to HHVP3b in November 2020 and HHVP3 in December 2020, where it remained for the rest of the surveys. All hen harrier observations were recorded and mapped.

7.2.3.2.6 Breeding Raptor Surveys

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

Breeding raptor watches of 3 hours (supplemented by transects if necessary) were conducted during daylight at eight breeding raptor locations (BR1, BR2, BR2a, BR3, BR3b, BR4, BR5, and BR6b). 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.

7.2.3.2.7 Breeding Woodcock Surveys

Breeding woodcock surveys were undertaken to identify breeding woodcock territories within or in proximity to the Ornithology Study Area by locating roding (breeding display) males. The area surveyed extended 500m from the Ornithology Study Area. Survey methodology followed Gilbert *et al.* (1998): the surveyor walked transects within the survey area for 2 hours from dusk until last visible light during which all woodcock observations were mapped, with particular reference to roding observations. Each of the four transects were surveyed three times during the core breeding season of May and June.

7.2.3.2.8 Breeding Kingfisher Survey

Breeding kingfisher surveys were undertaken to identify breeding kingfisher territories within the survey area by locating kingfishers or signs of nesting along river courses. The area surveyed extended 500m from the Proposed 110kV Underground Cabling at the River Nore crossing near Ballyragget. Survey methodology followed Cummins *et al.* (2010): the surveyor walked along the river course with suitable breeding habitat searching for kingfisher, nest holes or suitable nesting banks during daylight hours. All such observations were recorded and mapped. This section of the river course was surveyed once per month during the breeding season in June and July 2026.

7.2.3.2.9 *Multidisciplinary Walkover Survey*

The Proposed Grid Connection and the turbine delivery route (TDR) were surveyed in July and August 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 this survey are available in Chapter 6 of this EIAR.

7.2.4 Receptor Evaluation and Impact Assessment

7.2.4.1 Geographical Context

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

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

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

7.2.4.2 Identification of Key Ornithological Receptors

Following the analysis of field survey data, a precautionary screening approach was followed to identify Key Ornithological Receptors (KOR). A KOR is defined as a species occurring within the Proposed Wind Farm site or hinterland upon which potential impacts are anticipated and assessed. All target species recorded during surveys are described in Section 7.3.7, below, and listed in Appendix 7-2. The list of target species was refined to KORs, excluding those for which pathways for a significant effect could not be identified.

7.2.4.3 Potential Impacts Associated with Proposed Project

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

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

For each of these risks, the detailed knowledge of bird distribution and activity within and surrounding the 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, 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 rate modelling method.

7.2.4.5 Description of Impacts

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

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 (Sensitivity), Table 7-4 (Magnitude of effect) and Table 7-5 (Determination of significance) 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.

Sensitivity	Description
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, 2025a), 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 (2025a; SNH, 2012; 2018) guidance was consulted while undertaking a cumulative impact assessment. This guidance emphasises that its priority is to 'maintain the conservation status of the species' population at the national scale.' However, it is acknowledged that consideration should also be allowed for impacts at the regional level 'where regional impacts have national implications (for example where a specific region holds the majority of the national population).' Following this, the cumulative assessment has been carried out at the geographical scale of the importance rating of the KOR. For the purposes of this cumulative assessment, the regional/county scale is considered to be a 25km radius of the proposed turbine locations and the local scale is considered to be a 5km radius.

The Ornithology Cumulative Study Area should be defined by environmental features that are relevant to the specific bird species using the area, such as contiguous habitat blocks (e.g., a mountain range). However, the Proposed Wind Farm site is not located within a discrete environmental feature that can be used to delineate a cumulative assessment study area. A 25km distance from the Proposed Turbines was considered sufficient based on this being approximately the average size of a county in Ireland and because it exceeds the core foraging range for most terrestrial bird species. This allowed for the key suitable habitats for all KORs at a regional scale to be included.

Assessment material was compiled for other plans and projects within 25km of the Proposed Turbines, 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 or other ecological reports. These are then considered for in-combination or cumulative effects with the Proposed Wind Farm.

7.2.5 Assessment Justification

7.2.5.1 Survey Data

A comprehensive suite of bird surveys was undertaken between October 2020 and September 2022, and between October 2025 and August 2026. Results derived from three 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 ornithological receptors. The first year of data collected, October 2020 – September 2021, is greater than five years old. NatureScot (2025) advises that the relevance of data this old may be reduced. To address this, a comparison of the October 2020 to September 2022data and the most recent data will be carried out to ensure that the data greater than five years old is still representative of the Ornithology Study Area. In addition, two full years of data less than five years old is used in this assessment, which is compliant with Nature Scot (2025) guidance.

7.2.5.2 Mitigation

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

Access during the breeding walkover surveys was constrained in some areas due to the presence of mature forestry and the inability to obtain access to certain private lands. Despite these limitations the Ornithology Study Area was covered sufficiently to allow adequate assessment.

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 this EIAR.

In advance of field surveys, the potential for SCI populations to use the Proposed Wind Farm site was considered. The River Nore SPA is approximately 7.3km from the Proposed Wind Farm site, however the Proposed Grid Connection route crosses through the River Nore SPA. Kingfisher is listed as an SCI of this SPA, and it is considered that there is potential for this population to occur within proximity to the Proposed 110kV Underground Cabling.

7.3.2 Bird Atlas Records

'Bird Atlas 2007-11: The breeding and wintering birds of Britain and Ireland' (Balmer *et al.*, 2013) is the most recent comprehensive work on wintering and breeding birds in Ireland. The Proposed Wind Farm site lies within hectad S36, while the Proposed 110kV Underground Cabling also extends into hectad S37 and S47. 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	Breeding Atlas 2007-2011		
	S36	S37	S47
Buzzard	-	Probable	-
Coot	Confirmed	-	-
Grey Heron	Possible	Possible	Probable
Grey Wagtail	Confirmed	-	Confirmed
Kestrel	Probable	Probable	Possible
Kingfisher	Possible	-	Confirmed
Lapwing	Confirmed	-	-
Little Egret	-	-	Possible
Little Grebe	Probable	-	Confirmed
Long-eared Owl	Confirmed	-	Possible
Mallard	Confirmed	-	Confirmed
Meadow Pipit	Confirmed	-	Confirmed
Moorhen	Confirmed	-	Confirmed
Mute Swan	Confirmed	Probable	Confirmed

Species	Breeding Atlas 2007-2011		
	S36	S37	S47
Peregrine Falcon	-	Confirmed	-
Snipe	Probable	-	Probable
Sparrowhawk	-	Possible	Probable
Stock Dove	Possible	-	-
Swift	Possible	Confirmed	Confirmed
Woodcock	-	Probable	-
Yellowhammer	Probable	Confirmed	Possible

Table 7-7 Wintering Bird Atlas data

Species	Wintering Atlas 2007-2011		
	S36	S37	S47
Barn Owl	-	Present	-
Bar-tailed Godwit	Present	-	-
Black-headed Gull	Present	Present	-
Buzzard	-	Present	Present
Coot	Present	-	-
Cormorant	-	Present	-
Curlew	Present	Present	Present
Gadwall	Present	Present	-
Golden Plover	-	Present	Present
Greater White-fronted Goose	-	Present	-
Greenland White-fronted Goose	-	Present	-
Grey Heron	-	Present	Present
Grey Wagtail	Present	-	Present

Species	Wintering Atlas 2007-2011		
	S36	S37	S47
Herring Gull	Present	-	Present
Kestrel	Present	Present	Present
Kingfisher	-	Present	Present
Lapwing	Present	Present	Present
Lesser Black-backed Gull	Present	Present	-
Little Egret	Present	Present	-
Mallard	-	Present	Present
Meadow Pipit	Present	Present	Present
Moorhen	Present	-	Present
Mute Swan	Present	Present	-
Peregrine Falcon	Present	Present	-
Redwing	Present	Present	Present
Snipe	Present	Present	Present
Sparrowhawk	-	-	Present
Teal	Present	Present	-
Whooper Swan	-	Present	-
Wigeon	Present	Present	-
Yellowhammer	Present	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 (NBDC) website (www.biodiversityireland.ie) and is accompanied by a guidance document (McGuiness *et al.*, 2015). The criteria for estimating a zone of sensitivity (i.e. 'low', 'medium', 'high' and 'highest') is based on a review of the behavioural, ecological and distributional data available for each species.

The Proposed Wind Farm site is not located within an area of bird sensitivity to wind energy developments. The Proposed Wind Farm site boundary is 60km from the nearest area of high sensitivity. The Proposed 110kV Underground Cabling is also not within an area of sensitivity and is 65km from the nearest area of high sensitivity.

7.3.4 National Biodiversity Data Centre Records

The 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 Proposed Wind Farm site lies within hectad S36, while the Proposed 110kV Underground Cabling also extends into hectad S37 and S47. Table 7-8 lists species of conservation interest that have been recorded in these 10km Grids.

Table 7-8 National Biodiversity Data Centre records

Species	Hectad	NBDC Dataset
Barn Owl	S36, S37, S47	Birds of Ireland, Heritage Council's Traditional Farm Buildings Scheme Fauna Records from 2016 to 2023
Bar-tailed Godwit	S36, S47	Irish Wetland Birds Survey (I-WeBS) 1994-2001, Bird Atlas 2007 - 2011
Bewick's Swan	S37	Irish Wetland Birds Survey (I-WeBS) 1994-2001.
Black-headed Gull	S36, S37, S47	Birds of Ireland, eBIRD Bird Records for Ireland
Common Gull	S36, S37	Birds of Ireland
Common Sandpiper	S37, S47	Kingfisher Survey 2010
Coot	S36, S37, S47	Irish Wetland Birds Survey (I-WeBS) 1994-2001, Bird Atlas 2007 – 2011, Birds of Ireland
Cormorant	S37, S47	Birds of Ireland
Corncrake	S36, S37, S47	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.
Curlew	S36, S37, S47	Bird Atlas 2007 – 2011, Birds of Ireland
Dunlin	S37	Birds of Ireland
Gadwall	S36, S37	Bird Atlas 2007 – 2011, Birds of Ireland
Golden Plover	S36, S37, S47	Birds of Ireland
Great Spotted Woodpecker	S37, S47	Birds of Ireland, eBIRD Bird Records for Ireland
Greenland White-fronted Goose	S37	Bird Atlas 2007 - 2011
Grey Partridge	S36, S37, S47	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.
Grey Wagtail	S36, S37, S47	Birds of Ireland
Greylag Goose	S37	Birds of Ireland

Species	Hectad	NBDC Dataset
Hen Harrier	S37, S47	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972, Birds of Ireland
Herring Gull	S36, S37, S47	Birds of Ireland, eBIRD Bird Records for Ireland
Jack Snipe	S37	Birds of Ireland
Kestrel	S36, S37, S47	Birds of Ireland, eBIRD Bird Records for Ireland
Kingfisher	S36, S37, S47	Birds of Ireland, The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.
Lapwing	S36, S37, S47	Birds of Ireland
Lesser Black-backed Gull	S36, S37, S47	eBIRD Bird Records for Ireland, Birds of Ireland
Little Egret	S36, S37, S47	Birds of Ireland, Bird Atlas 2007 - 2011
Little Grebe	S36, S37	Bird Atlas 2007 – 2011, Birds of Ireland
Mallard	S36, S37, S47	Birds of Ireland
Meadow Pipit	S36, S37, S47	eBIRD Bird Records for Ireland, Bird Atlas 2007 – 2011, Birds of Ireland
Merlin	S37	Birds of Ireland
Mute Swan	S36, S37, S47	Birds of Ireland
Peregrine Falcon	S36, S37, S47	eBIRD Bird Records for Ireland, Bird Atlas 2007 – 2011, Birds of Ireland
Pink-footed Goose	S37	Birds of Ireland
Pintail	S37	Birds of Ireland
Pochard	S37	Birds of Ireland
Quail	S37, S47	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972, The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991
Red Kite	S47	eBIRD Bird Records for Ireland
Redshank	S37	Birds of Ireland
Redwing	S36, S37, S47	eBIRD Bird Records for Ireland, Bird Atlas 2007 – 2011, Birds of Ireland
Rock Dove	S36, S37, S47	eBIRD Bird Records for Ireland, Birds of Ireland
Ruff	S37	Birds of Ireland
Sand Martin	S36, S37, S47	eBIRD Bird Records for Ireland, Bird Atlas 2007 – 2011, Birds of Ireland
Shelduck	S37	Birds of Ireland

Species	Hectad	NBDC Dataset
Shoveler	S36, S37	Birds of Ireland
Snipe	S36, S37, S47	Birds of Ireland
Sparrowhawk	S36, S37, S47	Birds of Ireland, The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.
Stock Dove	S36, S37, S47	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991, Bird Atlas 2007 - 2011
Swift	S36, S37, S47	Birds of Ireland, Swifts of Ireland
Teal	S36, S37, S47	Birds of Ireland
Tufted Duck	S37	Birds of Ireland
White-fronted Goose	S37	Birds of Ireland
White-tailed Eagle	S47	Rare birds of Ireland
Whooper Swan	S37, S47	Birds of Ireland
Wigeon	S36, S37, S47	Birds of Ireland, Irish Wetland Birds Survey (I-WeBS) 1994-2001
Woodcock	S36, S37, S47	Birds of Ireland, The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972
Yellowhammer	S36, S37, S47	Birds of Ireland

7.3.5 Irish Wetland Bird Survey Records

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

- Baun
- Bishop's Lough Tullaherin
- Goresbridge
- The Loughans (nr. Urlingford)

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 15th of May 2026. No records pertaining to birds were received.

7.3.7 Field Survey Results

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

The target species recorded within the Ornithology Study Area are presented in Table 7-9, which also includes species recorded within 500m of the Proposed 110kV Underground Cabling where it crosses

the River Nore. For the purposes of these results, the River Nore crossing area refers to the area within a 100m radius of the Proposed 110kV Underground Cabling at this location. See Appendix 7-1 for a map of the survey area. Table 7-9 summarises the key field survey findings, while detailed species accounts are provided under individual headings and include incidental records of species that were either not target species for a given survey or were observed outside scheduled survey times.

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 (Annex I)	**Non-breeding.** There was no evidence of breeding during surveys. **No regularly used roosts identified.** There was no evidence of regular roosting during surveys.
Hen Harrier (Annex I)	**Non-breeding.** There was no evidence of breeding during surveys. **No regularly used roosts identified.** Hen harriers were recorded twice during roost surveys within the Proposed Wind Farm site, but neither bird was observed going to roost.
Kingfisher (Annex I & SCI of River Nore SPA)	**Likely breeding.** Kingfisher were recorded carrying food and alarm calling within the Proposed 110kV Underground Cabling at the River Nore crossing. **No regularly used roosts identified.** There was no evidence of regular roosting during surveys.
Little Egret (Annex I)	**No confirmed breeding.** There was no evidence of breeding during surveys. **No regularly used roosts identified.** On one occasion two birds were recorded roosting in a flooded field approximately 7.5km from the Proposed Wind Farm site. There was no evidence of regular roosting during surveys.
Peregrine Falcon (Annex I)	**Confirmed breeding.** Breeding was confirmed at one territory in 2021, 2022, and 2026 approximately 1.5km from the Proposed Wind Farm site. There was possible breeding at a second territory in 2022 approximately 1.6km from the Proposed Wind Farm site. **No regularly used roosts identified.** There was no evidence of regular roosting during surveys.
Grey Wagtail (Red-listed)	**No confirmed breeding.** There was no evidence of breeding during surveys. **No regularly used roosts identified.** There was no evidence of regular roosting during surveys.
Kestrel (Red-listed)	**Confirmed breeding.** Breeding was confirmed at two territories in 2021, one partially within the Proposed Wind Farm site, and again at two partially within the Proposed Wind Farm site in 2022. Possible breeding

Species	Key findings
	was recorded at one territory in 2023, partially within the Proposed Wind Farm site. In 2026, breeding was confirmed through observations of hunting juveniles, although the territory location was not confirmed. **No regularly used roosts identified.** There was no evidence of regular roosting during surveys.
Lapwing (Red List)	**Probable breeding.** On one occasion a flock of six birds were recorded displaying approximately 3km away from the Proposed Wind Farm site. There was no other evidence of breeding during surveys. **No regularly used roosts identified.** On one occasion two birds were recorded roosting in a flooded field approximately 7.5km from the Proposed Wind Farm site. There was no other evidence of regular roosting during surveys.
Meadow Pipit (Red-listed)	**Confirmed breeding.** Breeding was confirmed in 2021 and 2026 by birds displaying and fledged young. There was probable breeding in 2022 as birds were observed displaying. **No regularly used roosts identified.** There was no evidence of regular roosting during surveys.
Redwing (Red-listed)	**Does not breed in Ireland** **No regularly used roosts identified.** There was no evidence of regular roosting during surveys.
Snipe (Red-listed)	**No confirmed breeding.** There was no evidence of breeding during surveys. **No regularly used roosts identified.** Snipe were recorded roosting during surveys but there was no evidence of a specific regularly used roost.
Stock Dove (Red-listed)	**No confirmed breeding.** There was no evidence of breeding during surveys. **No regularly used roosts identified.** There was no evidence of regular roosting during surveys.
Swift (Red-listed)	**No confirmed breeding.** There was no evidence of breeding during surveys. **No regularly used roosts identified.** There was no evidence of regular roosting during surveys.
Woodcock (Red-listed)	**Confirmed Breeding**. Breeding was identified in each year surveyed. There was evidence of breeding throughout the Proposed Wind Farm site in areas of suitable habitat, indicated by displaying males. **No regularly used roosts identified.** There was no evidence of regular roosting during surveys.

Species	Key findings
Yellowhammer (Red-listed)	**Confirmed breeding.** Breeding was confirmed in 2021 and 2026 by birds mating and fledged young. **No regularly used roosts identified.** There was no evidence of regular roosting during surveys.
Barn Owl (Raptor)	**Confirmed breeding.** Breeding was confirmed in 2021 approximately 2.2km from the Proposed Wind Farm site. **No regularly used roosts identified.** There was no evidence of regular roosting during surveys.
Buzzard (Raptor)	**Confirmed breeding.** Breeding was confirmed at two territories in 2021, one within the Proposed Wind Farm site, one approximately 1.2km from the Proposed Wind Farm site. In 2022 breeding was confirmed in one territory and there was a display flight at another. In 2026 there was confirmed breeding at three territories, one of which was within the Proposed Wind Farm site, and there were display flights at two more territories. **No regularly used roosts identified.** There was no evidence of regular roosting during surveys.
Hobby (Raptor)	**No confirmed breeding.** There was no evidence of breeding during surveys. **No regularly used roosts identified.** There was no evidence of regular roosting during surveys.
Long-eared Owl (Raptor)	**No confirmed breeding.** There was no evidence of breeding during surveys. **No regularly used roosts identified.** There was no evidence of regular roosting during surveys.
Sparrowhawk (Raptor)	**Confirmed breeding.** Breeding was confirmed at the same territory within the Proposed Wind Farm site in 2021, 2022, and 2026. There was a possible second territory in 2026 when a bird was observed carrying prey approximately 2km away from the confirmed territory. **No regularly used roosts identified.** There was no evidence of regular roosting during surveys.

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

Species	Observations
Dunlin (Annex I)	Dunlin were observed on seven occasions, during waterbird distribution and abundance surveys. Observations ranged from 10 to 51 birds, with the majority of observations comprising of birds foraging or flying. On one occasion 42 birds approximately 5.8km from the Proposed Wind Farm site were observed roosting. This was also the closest observation to the Proposed Wind Farm site.

Species	Observations
Great White Egret (Annex I)	Great white egret were observed on a single occasion, during waterbird distribution and abundance surveys. The observation was of a single bird foraging approximately 7.5km from the Proposed Wind Farm site.
Merlin (Annex I)	Merlin were observed on three occasions, during vantage point surveys. Observations were all of single birds hunting or flying. The closest observation to the Proposed Wind Farm site was approximately 2.7km away.
White-tailed Eagle (Annex I)	White-tailed eagle were observed on five occasions, three times during vantage point surveys, and twice incidentally. Observations ranged from one to two birds soaring, circling, or feeding. The closest observation to the Proposed Wind Farm site was approximately 1.4km away, and approximately 1.7km from the nearest Proposed Turbine location.
Whooper Swan (Annex I)	Whooper swan were observed on 35 occasions, during waterbird distribution and abundance surveys. Observations ranged from 1 to 50 birds, with the majority of observations comprising of birds foraging or flying. On five occasions flocks comprised of 8 to 23 birds were observed roosting, the closest of these observations was approximately 3km from the Proposed Wind Farm site, this was also the closest observation to the Proposed Wind Farm site.
Curlew (Red List)	Curlew were observed on 34 occasions, during waterbird distribution and abundance surveys. Observations ranged from 1 to 84 birds, with the majority of observations comprising of birds foraging. The closest observation was approximately 2.8km from the Proposed Wind Farm site.
Shoveler (Red List)	Shoveler were observed on 29 occasions, during waterbird distribution and abundance surveys. Observations ranged from 1 to 51 birds, with the majority of observations comprising of birds foraging or roosting. On one occasion three male birds approximately 5.9km from the Proposed Wind Farm site were observed fighting, indicating possible breeding. The closest observation to the Proposed Wind Farm site was over 500m away and approximately 850m from the nearest Proposed Turbine location.
Whinchat (Red List)	Whinchat were observed on one occasion, during vantage point surveys. The observation was of a single bird, flying. This observation was not mapped, however the survey location was approximately 600m from the Proposed Wind Farm site, and approximately 960m from the nearest Proposed Turbine location.

7.3.7.1 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 Surveys

Golden plover were observed on 72 occasions during vantage point surveys, comprising of 68 flight observations and 4 non-flight observations. Golden plover were observed on average once every 10 hours of the vantage point surveys over the months when present (i.e. September to April). Observations ranged from individuals to 300 birds, most of which were of birds calling or travelling. There was one observation of a flock of 80 birds feeding within the Proposed Wind Farm site. There were flights of numbers ranging from individuals to 120 birds in various locations throughout the Proposed Wind Farm site. Birds were observed flying at the potential collision height on 63 occasions. Of the 72 observations of golden plover, 38 were within the Proposed Wind Farm site and 26 were within 500m of the Proposed Turbines.

Winter Walkover Surveys

Golden plover were observed on six occasions during winter walkover surveys (on 5 out of 29 or 17% of survey dates). Observations ranged from 50 to 120 birds, with the majority of observations comprising of birds flying or circling, on one occasion a flock of 120 birds was foraging. Of the six observations, three were within the Proposed Wind Farm site, the rest were within 500m of the Proposed Wind Farm site.

Breeding Walkover Surveys

Golden plover were observed on two occasions during breeding walkover surveys in April (on 2 out of 46 or 4% of survey dates). Observations were of flocks of 17 and 38 birds, with the observations comprising of birds flying or circling. Of the two observations, the flock of 17 birds was within the Proposed Wind Farm site, the other was within 500m of the Proposed Wind Farm site.

Waterbird Distribution and Abundance Surveys

Golden plover were observed on 23 occasions during winter walkover surveys (on 5 out of 29 or 17% of survey dates). Observations ranged from 50 to 120 birds, with the majority of observations comprising of birds flying or circling, on one occasion a flock of 120 birds was foraging. Of the 23 observations, none were within the Proposed Wind Farm site, however two were within 500m of the v and the River Nore crossing.

Incidental Observations

Golden plover were recorded on five occasions as incidental observations. Observations ranged from 14 to 150 birds and the observations comprised of birds travelling or circling. Of the five observations, one was within/partially within the Proposed Wind Farm site and a further two were within/partially within 500m of the Proposed Wind Farm site.

7.3.7.2 Hen Harrier

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

Vantage Point Surveys

Hen harrier were observed on a single occasion during vantage point surveys, on average once every 1,044 hours of the vantage point surveys. The observation was of an individual flying within/partially within the Proposed Wind Farm site, within 500m of a Proposed Turbine, at the potential collision height.

Winter Walkover Surveys

Hen harrier were observed on a single occasion during winter walkover surveys (on 1 out of 29 or 3% of survey dates). The observation was of single bird, flying low across fields. This observation was 1.4km from the Proposed Wind Farm site.

Breeding Raptor Surveys

Hen harrier were observed on a single occasion during breeding raptor surveys (on 1 out of 50 or 2% of survey dates). The observation was of a single bird flying, approximately 2.1km away from the Proposed Wind Farm site.

Hen Harrier Roost Surveys

Hen harrier were observed on two occasions during hen harrier roost surveys (on 2 out of 71 or 3% of survey dates). Observations were of single birds flying; neither were seen going to roost. Both of the observations were within the Proposed Wind Farm site.

7.3.7.3 Kingfisher

Kingfisher were observed in the breeding season. Raw survey data and maps are provided in Appendix 7-4. Survey data and maps relating to potential nest locations are provided in Confidential Survey Data Appendix 7-5.

Breeding Kingfisher Surveys

Kingfisher were observed on seven occasions during breeding kingfisher surveys (on 2 out of 2 or 100% of survey dates). Observations were of single birds, with the majority of observations comprising of birds flying or calling. On one occasion an individual was observed carrying food, and on another occasion an individual was alarm calling at the presence of the surveyor. Both of these observations were in July and within 50m of the Proposed 110kV Underground Cabling. Food carrying and alarm calling suggest that kingfisher were likely breeding nearby, however no nest was located. It should be noted that the typical length of river for a kingfisher territory is estimated to be 1.5km to 4km (O'Clery and Lusby, 2015). The individual carrying food was observed flying south downstream. There was another observation of an individual approximately 1km downstream of the Proposed 110kV Underground Cabling flying north upstream. The surveyor noted a small section of suitable nesting habitat at this downstream location in June, though there was no evidence of a nest at that time. Of the seven observations, none were within the Proposed Wind Farm site, however five were within the River Nore crossing area of the Proposed 110kV Underground Cabling.

7.3.7.4 Little Egret

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

Waterbird Distribution and Abundance Surveys

Little egret were observed on 40 occasions during waterbird distribution and abundance surveys (on 30 out of 48 or 63% of survey dates). Observations ranged from individuals to eight birds, with the majority of observations comprising of birds foraging along the River Nore. On one occasion two birds were recorded roosting in a flooded field approximately 7.5km from the Proposed Wind Farm site. Of the 40 observations, none were within/partially within the Proposed Wind Farm site. The closest observation to the Proposed Wind Farm site was 2.5km away, and the closest observation to the River Nore Crossing area of the Proposed 110kV Underground Cabling was 1.2km away.

Incidental Observations

Little egret were recorded on two occasions as incidental observations. Observations were of individual birds and the observations comprised of birds travelling. Of the two observations, one was within/partially within the Proposed Wind Farm site and the other was approximately 2km away from the Proposed Wind Farm site.

7.3.7.5 Barn Owl

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

Incidentals

Barn owl were recorded on nine occasions as incidental observations. Observations were of individual birds and the observations comprised of birds flying or nesting. Of the nine observations, none were within/partially within the Proposed Wind Farm site, and one was within/partially within 500m of the Proposed Wind Farm site.

During 2022 birds were observed entering and exiting a barn, and on one occasion a second adult barn owl was seen entering the barn confirming two birds were present. On one occasion, before the second owl entered, there were sounds of regurgitation heard coming from the barn suggesting that an adult was provisioning a nest, confirming breeding in the vicinity of BO-1 approximately 1.8km from the Proposed Wind Farm site, and approximately 2.5km from the nearest Proposed Turbine.

During 2021 there was a single observation of barn owl hunting. This was within 500m of the Proposed Wind Farm site. This bird was recorded over 5km from the nest in 2022 and is unlikely to be associated with those breeding birds.

7.3.7.6 Peregrine Falcon

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

Vantage Point Surveys

Peregrine falcon were observed on 50 occasions during vantage point surveys and were observed on average once every 21 hours of the vantage point surveys. Observations ranged from individuals to two birds, most of which were of birds hunting or travelling. There were flights of individuals or two birds in various locations throughout the Proposed Wind Farm site. Birds were observed flying at potential collision height on 45 occasions. Of the 50 observations of peregrine falcon, 15 were within/partially within the Proposed Wind Farm site and 18 were within 500m of the Proposed Turbines. Of these 18 observations, five were of individual birds hunting.

During 2021 there were three observations indicating breeding within the vicinity the Proposed Wind Farm site. All three observations were within the vicinity of the area mapped as PE-2 in Appendix 7-5 (described further below). All of the observations involved an adult and begging juveniles or an adult showing a juvenile how to pluck a prey, of these, one observation was within/partially within the Proposed Wind Farm site and within 500m of a Proposed Turbine.

Winter Walkover Surveys

Peregrine falcon were observed on two occasions during winter walkover surveys (on 2 out of 29 or 7% of survey dates). Observations were of single birds flying. Of the two observations, one was within the Proposed Wind Farm site, the other was within 500m of the Proposed Wind Farm site.

Breeding Walkover Surveys

Peregrine falcon were observed on seven occasions during breeding walkover surveys (on 7 out of 46 or 15% of survey dates). Observations were of individual birds, with the observations comprising of birds flying or hunting, and on one occasion an individual carrying prey through the Proposed Wind Farm site towards the nest location at PE-1 (described below). Of the seven observations, four were within the Proposed Wind Farm site, the others were approximately 2.2km from the Proposed Wind Farm site.

Breeding Raptor Surveys

Peregrin falcon were observed on 37 occasions during breeding raptor surveys (on 12 out of 50 or 24% of survey dates). Observations ranged from one to five birds (including family parties), with the observations comprising of birds hunting, flying, engaged in breeding behaviour, or soaring. Of the 37 observations, three were within/partially within the Proposed Wind Farm site, the others were further than 500m from the Proposed Wind Farm site.

During 2021 there were 12 observations of breeding behaviour compromising of birds provisioning a nest, birds leaving and returning to a nest, chicks in a nest and fledged young, confirming breeding. This area was mapped as PE-1 and was approximately 1.5km from the Proposed Wind Farm site.

During 2022 there were two observations of breeding behaviour compromising of birds carrying prey. Observations were in April and July indicating they were possibly provisioning a nest. One of these was at the nest PE-1, described above. The second was mapped as PE-2 approximately 1.5km from the Proposed Wind Farm site.

During 2026 there were nine observations of breeding behaviour compromising of birds provisioning a nest, young in a nest, and juvenile birds confirming breeding. These observations were in the vicinity of PE-1 suggesting this nest site continues to be occupied by peregrine falcon.

Incidental Observations

Peregrine falcon were recorded on 13 occasions as incidental observations. Observations ranged from individuals to four birds and the observations comprised of birds feeding, hunting, perched or roosting. Of the 13 observations, one was within/partially within the Proposed Wind Farm site and a further one was within/partially within 500m of the Proposed Wind Farm site. During 2021 two fledglings were observed perched on a ruin, confirming breeding in the vicinity of PE-1. During 2022 four fledglings were observed perched on a ruin, again confirming breeding in the vicinity of PE-1.

Breeding Summary

- 2021: Breeding was confirmed at PE-1, approximately 1.5 km from the Proposed Wind Farm; observations also indicated probable breeding near PE-2.
- 2022: Four fledglings confirmed breeding at PE-1; prey-carrying suggested possible breeding near PE-2, approximately 1.6 km from the Proposed Wind Farm.
- 2026: Nest provisioning and observations of young and juveniles confirmed breeding at PE-1.

7.3.7.7 Grey Wagtail

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

Winter Walkover Surveys

Grey wagtail were observed on two occasions during winter walkover surveys (on 2 out of 29 or 7% of survey dates). These observations were of single birds and were not mapped.

Breeding Walkover Surveys

Grey wagtail were observed on five occasions during breeding walkover surveys (on 5 out of 46 or 11% of survey dates). Observations were of single birds. Only one of these observations was mapped and it was approximately 760m from the Proposed Wind Farm site.

Incidental Observations

Grey wagtail were recorded on five occasions as incidental observations. Observations ranged from individuals to two birds and the observations comprised of birds feeding or flying. Of the five observations, one was within/partially within the Proposed Wind Farm site, the next closest observation was approximately 3.5km away from the Proposed Wind Farm site.

7.3.7.8 Kestrel

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

Vantage Point Surveys

Kestrel were observed on 262 occasions during vantage point surveys, comprising of 257 flight observations and 5 non-flight observations. Kestrel were observed on average once every four hours of the vantage point surveys. Observations ranged from individuals to three birds. The majority of observations were of birds hunting or travelling. Birds were observed flying at the potential collision height on 202 occasions. Of the 262 observations of kestrel, 108 were within the Proposed Wind Farm site and 74 were within 500m of the Proposed Turbines.

During 2021 there were two observations of an adult hunting with juveniles approximately 1km from K-2 (described in detail below), which is partially within the Proposed Wind Farm site, which had confirmed breeding in the same year.

During 2022 there was an observation of kestrels mating, mapped as territory K-5, which is partially within the Proposed Wind Farm site, confirming breeding in this area. This was approximately 2km from K-2 which also had confirmed breeding in the same year.

Winter Walkover Surveys

Kestrel were observed on 14 occasions during winter walkover surveys (on 11 out of 29 or 38% of survey dates). Observations ranged from one to two birds, with the majority of observations comprising of birds flying or hunting. On one occasion a male and a female were observed exhibiting breeding behaviour (flying high, mock attacking, aerial chasing) partially within the Proposed Wind Farm site. Of

the 14 observations, three were within the Proposed Wind Farm site, a further eight were within 500m of the Proposed Wind Farm site.

Breeding Walkover Surveys

Kestrel were observed on 49 occasions during breeding walkover surveys (on 30 out of 46 or 65% of survey dates). Observations ranged from one to two birds, with the majority of observations comprising of birds perched, flying or hunting. Of the 49 observations, 22 were within the Proposed Wind Farm site, a further 21 were within 500m of the Proposed Wind Farm site.

During 2021 there were four breeding observations. Firstly, in April, a bird was observed alarm calling and aggressively chasing a hooded crow. The bird continued alarm calling for 20 minutes. This was in the area of the confirmed nest mapped as K-1, approximately 1.7km from the Proposed Wind Farm site. In May a male bird was observed carrying prey towards the confirmed nest site at K-1. The following July there were two separate observations of fledglings hunting within 500m of the Proposed Wind Farm site. It is possible that these fledglings originated from K-1 or from K-2.

During 2022 there was an adult male kestrel observed flying south from the direction of an abandoned house in July. Peeping calls were heard from the ruin later during the survey, indicating the presence of young birds. These are believed to be kestrel, therefore this area was mapped as K-2 and was partially within the Proposed Wind Farm site.

During July 2026 there were two juvenile kestrels recorded hunting within the Proposed Wind Farm site.

Breeding Raptor Surveys

Kestrel were observed on 63 occasions during breeding raptor surveys (on 23 out of 50 or 46% of survey dates). Observations ranged from one to four birds, with the observations comprising of birds hunting, circling, or soaring. Of the 63 observations, 11 were within the Proposed Wind Farm site, a further 17 were within 500m of the Proposed Wind Farm site.

During 2021, there were 12 observations confirming breeding in the area mapped as K-1, these included male and female birds flying in and out of the area, and chicks in a nest.

During 2022, there was a pair of kestrels flying and hunting together in the same area, though breeding was not confirmed.

During 2023 there were three observations of male and female kestrels around the same area, mapped as K-3, calling and landing, partially within the Proposed Wind Farm site. This was slightly north of K-2, it is possible that these are the same birds that were breeding at K-2 in 2022, however this cannot be known for certain.

Incidental Observations

Kestrel were recorded on 31 occasions as incidental observations. Observations ranged from individuals to three birds and the observations comprised of birds flying, hunting, perched or nesting. Of the 31 observations, four were within/partially within the Proposed Wind Farm site, a further 13 were within/partially within 500m of the Proposed Wind Farm site.

During 2021 a female was observed nesting, and fledglings were observed perched on a ruin, confirming breeding in the vicinity of K-1.

During 2026 a male was observed displaying in the area mapped as K-4, indicating possible breeding in this area.

Breeding Summary

- 2021: Breeding was confirmed at K-1, approximately 1.7 km from the Proposed Wind Farm site, and at K-2, which is partially within the Proposed Wind Farm site; fledglings were also recorded within 500m of the Proposed Wind Farm site and it is possible that they originated from either of these territories.
- 2022: Breeding was confirmed at K-2 and K-5, both partially within the Proposed Wind Farm site.
- 2023: A pair were interacting with each other at K-3, partially within the Proposed Wind Farm site, indicating possible breeding, it is possible that these were the same birds from K-2 the previous year, but this cannot be known for certain.
- 2026: Juveniles hunted within the Proposed Wind Farm site confirming breeding in proximity to the Proposed Wind Farm site (no territory identified), while male displaying near K-4 indicated possible breeding.

7.3.7.9 Lapwing

Lapwing were observed in the winter and breeding season. Raw survey data and maps are provided in Appendix 7-4. Survey data and maps relating to display flights are provided in Confidential Survey Data Appendix 7-5.

Vantage Point Surveys

Lapwing were observed on two occasions during vantage point surveys on average once every 270 hours of the winter vantage point surveys over the months when present (i.e. October to March). Observations ranged from individuals to nine birds travelling. The flock of nine birds were observed flying at the potential collision height. However, neither of the observations were within/partially within the Proposed Wind Farm site or within 500m of a Proposed Turbine, the closest observation to a Proposed Turbine was a single bird flying past approximately 900m away.

Waterbird Distribution and Abundance Surveys

Lapwing were observed on 91 occasions during waterbird distribution and abundance surveys (on 30 out of 48 or 63% of survey dates). Observations ranged from individuals to 400 birds, with the majority of observations comprising birds foraging or roosting, and on one occasion in May a flock of six birds were recorded displaying approximately 3km away from the Proposed Wind Farm site. Of the 91 observations, none were within the Proposed Wind Farm site, the closest observation was approximately 2.8km away. However, during winter 2025/2026 one observation was within the boundary of the Proposed 110kV Underground Cabling at the river crossing, and a further four were within 500m of the Proposed 110kV Underground Cabling at the river crossing. These observations were spread across four of the winter months.

7.3.7.10 Meadow Pipit

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

Vantage Point Surveys

Meadow pipit were observed on 52 occasions during vantage point surveys and were observed on average once every 20 hours of the vantage point surveys. Observations ranged from individuals to 42 birds, most of which were of birds foraging, displaying, or travelling. There were flights of meadow pipit in various locations throughout the Proposed Wind Farm site, however owing to the species' small-size and detectability observations tended to be concentrated around vantage point locations. Birds

were observed flying at the potential collision height on three occasions. Of the 52 observations of meadow pipit, 13 were within/partially within the Proposed Wind Farm site and 12 were within 500m of the Proposed Turbines.

Winter Walkover Surveys

Meadow pipit were observed on 20 occasions during winter walkover surveys (on 14 out of 29 or 48% of survey dates). Observations ranged from 1 to 21 birds, with the majority of observations comprising of birds flying, foraging, or calling. Of the 20 observations, one was within the Proposed Wind Farm site, a further 10 were within 500m of the Proposed Wind Farm site.

Breeding Walkover Surveys

Meadow pipit were observed on 78 occasions during breeding walkover surveys (on 28 out of 46 or 61% of survey dates). Observations ranged from 1 to 16 birds, with the majority of observations comprising of birds flying, displaying, foraging, or calling. Of the 78 observations, 33 were within the Proposed Wind Farm site, a further 29 were within 500m of the Proposed Wind Farm site.

During 2021 there were six observations comprising of birds displaying, or fledged young, confirming breeding. During 2022 there were three observations comprising of birds displaying, indicating probable breeding. Finally, during 2026 there were 36 observations comprising of birds displaying, or fledged young, confirming breeding.

Incidental Observations

Meadow pipit were recorded on nine occasions as incidental observations. Observations ranged from individuals to 18 birds and the observations comprised of birds displaying, calling, or mobbing. Of the nine observations, none were within/partially within the Proposed Wind Farm site, however they were all within 500m of the Proposed Wind Farm site.

7.3.7.11 Redwing

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

Vantage Point Surveys

Redwing were observed on 40 occasions during vantage point surveys and were observed on average once every 6 hours of the vantage point surveys during the winter season (October to March inclusive). Observations ranged from individuals to 120 birds, most of which were of birds foraging or travelling. There were flights of redwing in various locations throughout the Proposed Wind Farm site, however owing to the species' small-size and detectability, observations tended to be concentrated around vantage point locations. Birds were observed flying at the potential collision height on five occasions. Of the 40 observations of redwing, six were within/partially within the Proposed Wind Farm site and five were within 500m of the Proposed Turbines.

Winter Walkover Surveys

Redwing were observed on 33 occasions during winter walkover surveys (on 17 out of 29 or 59% of survey dates). Observations ranged from 1 to 120 birds, with the majority of observations comprising of birds flying or foraging. Of the 33 observations, four were within the Proposed Wind Farm site, a further eleven were within 500m of the Proposed Wind Farm site.

7.3.7.12 Snipe

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

Vantage Point Surveys

Snipe were observed on 18 occasions during vantage point surveys and were observed on average once every 41 hours of the vantage point surveys during the winter and passage season (September to April inclusive). Observations ranged from individuals to four birds, most of which were of birds flushed, calling, or travelling. Flights of snipe were concentrated in two locations, one within the Proposed Wind Farm site near VP4, and one within 500m of the Proposed Wind Farm site near VP2. These were areas of habitat preferred by this species; open, less intensively managed, upland agricultural grassland. Birds were observed flying at the potential collision height on 14 occasions. Of the 18 observations of snipe, nine were within/partially within the Proposed Wind Farm site, a further nine were within/partially within 500m of the Proposed Wind Farm site, and eight were within 500m of the Proposed Turbines.

Winter Walkover Surveys

Snipe were observed on eight occasions during winter walkover surveys (on 6 out of 29 or 21% of survey dates). Observations ranged from one to three birds, with the majority of observations comprising of birds flying, foraging, or calling. Of the eight observations, one was within/partially within the Proposed Wind Farm site and a further six were within/partially within 500m of the Proposed Wind Farm site.

Breeding Walkover Surveys

Snipe were observed on two occasions during breeding walkover surveys in April (on 1 out of 46 or 2% of survey dates). Observations were of one and two birds flushed. Of the two observations, one was within the Proposed Wind Farm site, the other was within 500m of the Proposed Wind Farm site.

Waterbird Distribution and Abundance Surveys

Snipe were observed on 13 occasions during waterbird distribution and abundance surveys (on 10 out of 48 or 21% of survey dates). Observations ranged from 1 to 18 birds, with the majority of observations comprising of birds flushed, foraging, or roosting. Of the 13 observations, none were within the Proposed Wind Farm site, or within the boundary of the Proposed 110kV Underground Cabling at the river crossing.

Incidental Observations

Snipe were recorded on three occasions as incidental observations. Observations were of individuals birds in February and March. Two of the observations comprised of birds flushed by a surveyor, and the final was a bird calling. Of the three observations, one was within/partially within the Proposed Wind Farm site, and the other two were within 500m of the Proposed Wind Farm site.

7.3.7.13 Stock Dove

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

Vantage Point Surveys

Stock dove were observed on two occasions during vantage point surveys and were observed on average once every 252 hours of the vantage point surveys during the breeding season (April to September inclusive). Observations were of an individual flying, and of three birds flying and landing. Of the two flights of stock dove, one was within/partially within the Proposed Wind Farm site, and the other was within 500m of the Proposed Wind Farm site. Birds were observed flying at potential collision height on a single occasion. Of the two observations of stock dove, one was within 500m of the Proposed Turbines.

Winter Walkover Surveys

Stock dove were observed on two occasions during winter walkover surveys (on 2 out of 29 or 7% of survey dates). Observations were of one and two birds, with the majority of observations comprising of birds flying, foraging, or calling. Of the two observations, none were within the Proposed Wind Farm site, one was within 500m of the Proposed Wind Farm site.

Breeding Walkover Surveys

Stock dove were observed on four occasions during breeding walkover surveys (on 3 out of 46 or 7% of survey dates). Observations ranged from one to four birds, with the observations comprising of birds flying. Of the four observations, two were within the Proposed Wind Farm site, the other two were within 500m of the Proposed Wind Farm site.

7.3.7.14 Swift

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

Vantage Point Surveys

Swift were observed on six occasions during vantage point surveys and were observed on average once every 84 hours of the vantage point surveys during the breeding season (April to September inclusive). Observations ranged from individuals to 15 birds, most of which were of birds feeding or travelling. Flights of swift were mainly in the Killoshulan area of the Proposed Wind Farm site. Birds were observed flying at the potential collision height on five occasions. Of the six observations of swift, five were within/partially within the Proposed Wind Farm site and three were within 500m of the Proposed Turbines.

Breeding Walkover Surveys

Swift were observed on two occasions during breeding walkover surveys (on 2 out of 46 or 4% of survey dates). Observations ranged from 14 to 40 birds, with the observations comprising of birds feeding. Of the two observations, none were within the Proposed Wind Farm site, however they were both within 500m of the Proposed Wind Farm site.

Incidental Observations

Swift were recorded on a single occasion as incidental observations. The observation was of two birds flying within/partially within the Proposed Wind Farm site.

7.3.7.15 Woodcock

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

Vantage Point Surveys

Woodcock were observed on two occasions during vantage point surveys and were observed on average once every 522 hours of the vantage point surveys during the winter and breeding season (September to April inclusive). The first observation was of a bird roding, the second was a bird flying. Birds were observed flying at the potential collision height on both occasions. Of the observations one was within/partially within the Proposed Wind Farm site, the other was within/partially within 500m of the Proposed Wind Farm site. Of the two observations of woodcock, one was within 500m of the Proposed Turbines.

Breeding Walkover Surveys

Woodcock were observed on one occasion during breeding walkover surveys (on 1 out of 46 or 2% of survey dates). The observations was of a single bird flushed while the surveyor was walking. This observation was within the Proposed Wind Farm site.

Breeding Woodcock Surveys

Woodcock were observed on 87 occasions during breeding woodcock surveys (on 18 out of 27 or 67% of survey dates). Observations ranged from one to three birds, with the majority of observations comprising of birds roding or calling. Of the 87 observations, 86 were within/partially within the Proposed Wind Farm site, and the other one was within 500m of the Proposed Wind Farm site.

Incidental Observations

Woodcock were recorded on four occasions as incidental observations. Observations ranged from individuals to two birds and comprised of birds flying in March and December. All of the four observations were within/partially within the Proposed Wind Farm site.

7.3.7.16 Yellowhammer

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

Winter Walkover Surveys

Yellowhammer was observed on one occasion during winter walkover surveys in January (on 1 out of 29 or 3% of survey dates). The observation was of a single bird perched within 500m of the Proposed Wind Farm site.

Breeding Walkover Surveys

Yellowhammer were observed on 25 occasions during breeding walkover surveys (on 14 out of 46 or 30% of survey dates). Observations ranged from one to five birds, with the observations comprising of birds feeding, flying, or singing. Of the 25 observations, two were within the Proposed Wind Farm site, a further 17 were within 500m of the Proposed Wind Farm site.

During 2021 a pair were observed mating, and in 2026 there was an observation of fledged young confirming breeding in both years.

Incidental Observations

Yellowhammer were recorded on a single occasion as incidental observations. The observation was of two birds calling, singing and perching within/partially within 500m of the Proposed Wind Farm site in July.

7.3.7.17 Buzzard

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

Vantage Point Surveys

Buzzard were observed on 377 occasions during vantage point surveys, comprising of 355 flight observations and 22 non-flight observations. Buzzard were observed on average once every three hours of the vantage point surveys. Observations ranged from individuals to five birds, most of which were of birds calling, hunting, or soaring. Birds were observed flying at the potential collision height on 307 occasions. Of the 377 observations of buzzard, 156 were within/partially within the Proposed Wind Farm site and 130 were within 500m of the Proposed Turbines.

During 2021 there were two observations of adults aerial chasing or displaying together, and later in the year there were adults observed with juvenile birds confirming breeding. The flights were dispersed, however the aerial chase, and display flights were in the vicinity of the area mapped as BZ-2 in Appendix 7-5.

During 2022 there were observations of buzzard juveniles begging and adults provisioning a nest, confirming breeding in the territory of BZ-2 this year.

During 2026 there were three display flights in the Proposed Wind Farm site, in the vicinity of an area mapped as BZ-1. Later in the year there were begging calls heard in the vicinity of BZ-2 confirming breeding at this territory again.

Winter Walkover Surveys

Buzzard were observed on 29 occasions during winter walkover surveys (on 19 out of 29 or 66% of survey dates). Observations ranged from one to two birds, with the majority of observations comprising of birds soaring, circling, hunting, or flying. Of the 29 observations, 13 were within/partially within the Proposed Wind Farm site, a further 12 were within/partially within 500m of the Proposed Wind Farm site.

Breeding Walkover Surveys

Buzzard were observed on 87 occasions during breeding walkover surveys (on 30 out of 46 or 65% of survey dates). Observations were of one or two birds, with the observations comprising of birds circling, flying, or soaring. Of the 87 observations, 32 were within/partially within the Proposed Wind Farm site, a further 32 were within/partially within 500m of the Proposed Wind Farm site.

During 2021, a buzzard was observed carrying prey in the vicinity of the territory mapped as BZ-1, within the Proposed Wind Farm site. Also in 2021, there was an observation of a pair of buzzards: one

flew from an oak tree to join the other within the territory mapped as BZ-2, which was approximately 1.2km from the Proposed Wind Farm site.

During 2022, there were observations of territorial behaviour in two locations, BZ-1: which was partially within the Proposed Wind Farm site, and BZ-2, which was approximately 1.2km from the Proposed Wind Farm site.

During 2026, there was one breeding observation, begging calls were heard from the area mapped as BZ-3, confirming breeding. This territory is partially within the Proposed Wind Farm site.

Breeding Raptor Surveys

Buzzard were observed on 173 occasions during breeding raptor surveys (on 41 out of 50 or 82% of survey dates). Observations ranged from one to four birds, with the observations comprising of birds hunting, circling, or soaring. Of the 173 observations, 37 were within/partially within the Proposed Wind Farm site, a further 31 were within/partially within 500m of the Proposed Wind Farm site.

During 2021, there were three observations that were recorded as a permanent territory, this was just south of the area previously mapped as BZ-1 and was partially within the Proposed Wind Farm site. It cannot be known if these birds were part of BZ-1 or another territorial pair.

During 2022, there was an observation of birds in display flight around a forestry approximately 1.8km from the Proposed Wind Farm site, mapped as BZ-5. There was also a juvenile heard begging approximately 1.7km from the Proposed Wind Farm site, confirming breeding, this territory was mapped as BZ-4.

During 2026, there were three observations of birds carrying prey into a woodland, in the territory mapped as BZ-3, confirming breeding in this area. This area is partially within the Proposed Wind Farm site. There were two observations of birds begging, and once provisioning at the BZ-4 territory, confirming breeding at this location. Finally, there was one observation of birds displaying at the BZ-5 territory, however breeding was not confirmed here.

Incidental Observations

Buzzard were recorded on 43 occasions as incidental observations. Observations ranged from individuals to three birds and the observations comprised of birds flying, hunting, soaring, or perched. Of the 43 observations, 14 were within/partially within the Proposed Wind Farm site, a further 12 were within/partially within 500m of the Proposed Wind Farm site.

Breeding Summary

- 2021: Adults displaying and aerial chasing, and later in the season adults with juveniles, confirmed breeding at BZ-2, approximately 1.2km from the Proposed Wind Farm site. Prey-carrying was recorded at BZ-1, partially within the Proposed Wind Farm site.
- 2022: Juvenile begging and adults provisioning a nest confirmed breeding at BZ-2. A begging juvenile confirmed breeding at BZ-4, approximately 1.5km from the Proposed Wind Farm site, while display flights were recorded at BZ-5, also approximately 1.5km from the Proposed Wind Farm site.
- 2026: Begging calls confirmed breeding at BZ-2. Prey-carrying and begging confirmed breeding at BZ-3, partially within the Proposed Wind Farm site, while begging and provisioning confirmed breeding at BZ-4. Display flights were recorded at BZ-1 and BZ-5, but breeding was not confirmed.

7.3.7.18 Hobby

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

Breeding Raptor Surveys

Hobby were observed on one occasion during breeding raptor surveys in July 2026 (on 1 out of 50 or 2% of survey dates). The observation was of a single male bird hunting. This observation was within 500m of the Proposed Wind Farm site.

7.3.7.19 Long-eared Owl

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

Vantage Point Surveys

Long-eared owl were observed on a single occasion during vantage point surveys in December, on average once every 540 hours of the vantage point surveys during the winter season. The observation was as individual foraging within/partially within 500m of the Proposed Wind Farm site, and approximately 800m from the nearest Proposed Turbine. The bird was not observed flying at potential collision height.

Winter Walkover Surveys

Long-eared owl were observed on one occasion during winter walkover surveys in March (on 1 out of 29 or 3% of survey dates). The observation was of a single bird giving an alarm call after it was flushed from a tree by the surveyor within the Proposed Wind Farm site.

Incidental Observations

Long-eared owl were recorded on a single occasion as an incidental observation in November. The observation was an individual bird flying within/partially within 500m of the Proposed Wind Farm site.

7.3.7.20 Sparrowhawk

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

Vantage Point Surveys

Sparrowhawk were observed on 81 occasions during vantage point surveys, on average once every 13 hours of vantage point surveys. Observations ranged from individuals to three birds, most of which were of birds travelling or hunting. Birds were observed flying at potential collision height on 56 occasions. Of the 81 observations of sparrowhawk, 46 were within/partially within the Proposed Wind Farm site and 42 were within/partially within 500m of the Proposed Turbines.

During 2021 there were observations of sparrowhawks carrying prey, mobbing or attacking kestrels and juvenile peregrine falcons in the vicinity of the area mapped as SH-1 within/partially within the Proposed Wind Farm site, indicating that there was a sparrowhawk breeding territory in this area.

During 2022 there were display flights, and later in the year a family party of sparrowhawk were recorded in the vicinity of SH-1, confirming breeding.

During 2026 there was a display flight observed in the vicinity of SH-1, indicating that breeding was attempted, but it was not confirmed. However, the majority of the other sparrowhawk flights recorded in 2026 were also in this general area, and on two occasions there were two birds observed together.

Winter Walkover Surveys

Sparrowhawk were observed on four occasions during winter walkover surveys (on 4 out of 29 or 14% of survey dates). Observations were of single birds, with the majority of observations comprising of birds hunting, and on one occasion, flushed. Of the four observations, two were within the Proposed Wind Farm site, a further one was within 500m of the Proposed Wind Farm site.

Breeding Walkover Surveys

Sparrowhawk were observed on 11 occasions during breeding walkover surveys (on 10 out of 46 or 22% of survey dates). Observations were of single birds, with the observations comprising of birds hunting, calling, or soaring. Of the 11 observations, 10 were within the Proposed Wind Farm site, the last was within 500m of the Proposed Wind Farm site.

During 2021 there were two records of fledglings calling from different areas of the same forestry, (area mapped as SH-1) within the Proposed Wind Farm site.

During 2022 on two occasions adult birds were observed carrying prey into the forestry mapped as SH-1. One was a female bird, the other a male, both were within the Proposed Wind Farm site. This confirms breeding within SH-1.

Breeding Raptor Surveys

Sparrowhawk were observed on 14 occasions during breeding raptor surveys (on 12 out of 50 or 24% of survey dates). Observations were of single birds, with the observations comprising of birds hunting, circling, or soaring. Of the 14 observations, six were within the Proposed Wind Farm site, a further four were within 500m of the Proposed Wind Farm site.

During 2022 there was one observation of breeding behaviour compromising a bird carrying prey. This observation was in the vicinity of SH-1.

During 2026 there was one observation of breeding behaviour compromising a bird carrying prey. This observation approximately 2km west of SH-1 in an area of agricultural grassland. It is not known if the bird flew to SH-1 or to another territory in the wider area, however, given the distance from SH-1, it is more likely to have been to another territory.

Incidental Observations

Sparrowhawk were recorded on 15 occasions as incidental observations. Observations were of individual birds, and the majority of the observations comprised of birds flying or hunting. Of the 15 observations, 13 were within/partially within the Proposed Wind Farm site, a further one was within/partially within 500m of the Proposed Wind Farm site.

During 2026 there was one observation of a sparrowhawk displaying in the vicinity of SH-1.

Breeding Summary

- 2021: Prey-carrying, mobbing and attacks on kestrels and juvenile peregrines indicated a breeding territory in SH-1, within the Proposed Wind Farm site; calling fledglings confirmed breeding.
- 2022: Display flights and a family party confirmed breeding in SH-1. Male and female adults were also recorded carrying prey into the forestry.
- 2026: Display flights near SH-1 indicated a breeding attempt, but breeding was not confirmed. A bird carrying prey approximately 2 km west of SH-1 may have belonged to SH-1 or another territory.

7.3.8 Data Comparison

For the purposes of the data comparison the surveys in 2020 – 2022 are treated as a single period and the surveys from 2025 – 2026 are treated as a single period. A comparison was made of the 20 target species discussed in Section 7.3.7.

Target Species Richness

Table 7-11 Comparison of Target Species Richness Across Survey Types

Survey type	Target species recorded in Years 1–2	Target species recorded in Year 3	Similarities and differences
All survey types	16 of 20	16 of 20	• There were 13 shared target species in the two time periods • Years 1–2 only: hen harrier, grey wagtail, long-eared owl • Year 3 only: kingfisher, stock dove, hobby Remarks: • Hen harrier were infrequently observed in Years 1-2, with no further observations in Year 3. • Long-eared owl is a cryptic species with a low detection rate, and was only recorded in Years 1-2. • Dedicated breeding kingfisher surveys of the River Nore commenced in Year 3, therefore this species was only recorded in Year 3. • Hobby is a scarce visitor to Ireland and was only observed on one occasion over the entire survey period.
Vantage point	13 of 16	12 of 16	• There were 11 shared target species in the two time periods • Years 1–2 only: hen harrier, long-eared owl, whinchat, white-tailed eagle • Year 3 only: stock dove
Winter walkover	11 of 13	9 of 13	• There were 7 shared target species in the two time periods • Years 1–2 only: hen harrier, grey wagtail, yellowhammer, long-eared owl • Year 3 only: peregrine falcon, stock dove
Breeding walkover	8 of 12	10 of 12	• There were 6 shared target species in the two time periods • Years 1–2 only: grey wagtail, woodcock • Year 3 only: golden plover, snipe, stock dove, swift

Survey type	Target species recorded in Years 1–2	Target species recorded in Year 3	Similarities and differences
			Remarks: • As a nocturnal species, woodcock are less likely to be observed on daytime transects. • Golden plover observed during breeding walkover surveys were likely passage birds that had not yet departed Ireland after overwintering.
Waterbird distribution and abundance	7 of 9	9 of 9	• There were 7 shared target species in the two time periods • Year 3 only: dunlin, great white egret Remarks: • The nearest records of dunlin and great white egret were 5.8km and 7.5km from the Proposed Wind Farm site respectively • Great white egret was recorded on one occasion over the entire survey period
Hen harrier roost	1 of 1	0 of 1	Hen harrier were observed flying during dedicated roost surveys twice in Years 1-2, and were not recorded again in Year 3.
Breeding raptor	5 of 6	5 of 6	• There were 4 shared target species • Years 1–2 only: hen harrier • Year 3 only: hobby Remarks: • Hen harrier were infrequently observed in Years 1-2, with no further observations in Year 3. • Hobby is a scarce visitor to Ireland and was only observed on one occasion over the entire survey period.
Breeding woodcock	1 of 1	1 of 1	Woodcock were recorded on this survey during both time periods.
Breeding kingfisher	no survey	1 of 1	This survey type was only conducted in Year 3, and kingfisher were recorded.

Survey Results Species Comparison

Table 7-12 below compares the occurrence of species found in years 1 and 2 with those found in year 3. The occurrence rate was calculated by dividing the number of completed survey occasions on which a species was recorded by the total completed survey occasions. For vantage point surveys, a survey occasion was defined as a unique survey date and vantage point location; multiple sightings during that occasion count once. For breeding raptor, breeding walkover, breeding woodcock and hen harrier roost surveys, occasions are defined as date and recorded survey location/transect. For winter walkover, waterbird distribution and breeding kingfisher surveys, each survey date is treated as one visit. Denominators are derived from the survey effort table (Appendix 7-1); numerators from the results tables (Appendix 7-4 and 7-5).

Table 7-12 Comparison of Species Results.

Species	Survey type	Mean count per record		Occurrence rate		Recorded activity	
		Years 1–2	Year 3	Years 1–2	Year 3	Years 1–2	Year 3
Golden Plover	Vantage point	29.7	37.6	15/129 (11.6%)	21/53 (39.6%)	Calling, flight/travel	Flight/travel
	Winter walkover	96.7	70.0	2/21 (9.5%)	3/8 (37.5%)	Flight/travel	Flight/travel
	Breeding walkover	Not recorded	27.5	0/34 (0.0%)	2/12 (16.7%)	Not recorded	Flight/travel
	Waterbird distribution and abundance	163.7	135.2	9/36 (25.0%)	6/12 (50.0%)	Roosting, flight/travel, flushed	Roosting, flight/travel
Hen Harrier	Vantage point	1.0	Not recorded	1/129 (0.8%)	0/53 (0.0%)	Flight/travel	Not recorded
	Winter walkover	1.0	Not recorded	1/21 (4.8%)	0/8 (0.0%)	Flight/travel	Not recorded
	Hen harrier roost	1.0	Not recorded	2/48 (4.2%)	0/24 (0.0%)	Flight/travel	Not recorded
	Breeding raptor	1.0	Not recorded	1/53 (1.9%)	0/24 (0.0%)	Flight/travel	Not recorded
Kingfisher	Breeding kingfisher	Not surveyed	1.0	Not surveyed	3/2 (150.0%)	Not surveyed	Provisioning, perching, calling, flight/travel
Little Egret	Waterbird distribution and abundance	1.9	1.7	21/36 (58.3%)	9/12 (75.0%)	Flight/travel, flushed	Flight/travel
Peregrine Falcon	Vantage point	1.1	1.1	22/129 (17.1%)	11/53 (20.8%)	calling, flight/travel, flushed	flight/travel
	Winter walkover	Not recorded	1.0	0/21 (0.0%)	2/8 (25.0%)	Not recorded	flight/travel
	Breeding walkover	2.0	1.0	3/34 (8.8%)	4/12 (33.3%)	nesting, perching, calling, flight/travel	calling, flight/travel
	Breeding raptor	1.2	2.2	8/53 (15.1%)	4/24 (16.7%)	Breeding, perching, calling, flight/travel	Breeding, perching, flight/travel, mobbing
Barn Owl	Incidental only	-	-	-	-	-	-
Grey Wagtail	Winter walkover	1.0	Not recorded	2/21 (9.5%)	0/8 (0.0%)	Activity not recorded	Not recorded

Species	Survey type	Mean count per record		Occurrence rate		Recorded activity	
		Years 1–2	Year 3	Years 1–2	Year 3	Years 1–2	Year 3
	Breeding walkover	1.0	Not recorded	5/34 (14.7%)	0/12 (0.0%)	Calling	Not recorded
Kestrel	Vantage point	1.1	1.0	72/129 (55.8%)	28/53 (52.8%)	Perching, calling, flight/travel	Perching, flight/travel, mobbing
	Winter walkover	1.2	1.0	7/21 (33.3%)	4/8 (50.0%)	Calling, flight/travel	Perching, flight/travel
	Breeding walkover	1.1	1.1	21/34 (61.8%)	9/12 (75.0%)	Perching, calling, flight/travel	Perching, flight/travel, flushed
	Breeding raptor	1.1	1.1	22/53 (41.5%)	7/24 (29.2%)	Nesting, perching, calling, flight/travel	Nesting, calling, flight/travel
Lapwing	Vantage point	9.0	1.0	1/129 (0.8%)	1/53 (1.9%)	Flight/travel	Flight/travel
	Waterbird distribution and abundance	59.3	95.9	20/36 (55.6%)	10/12 (83.3%)	Display/courtship, roosting, calling, flight/travel	Flight/travel
Meadow Pipit	Vantage point	3.5	12.3	37/129 (28.7%)	14/53 (26.4%)	Nesting, provisioning, display/courtship, calling, flight/travel	Display/courtship, perching, calling, flight/travel
	Winter walkover	3.8	9.4	9/21 (42.9%)	5/8 (62.5%)	Calling, flight/travel	Flight/travel, flushed
	Breeding walkover	3.9	2.4	16/34 (47.1%)	12/12 (100.0%)	Display/courtship, singing, perching, calling, flight/travel	Display/courtship, perching, calling, flight/travel
Redwing	Vantage point	13.3	38.1	23/129 (17.8%)	9/53 (17.0%)	Roosting, flight/travel	Flight/travel
	Winter walkover	12.5	60.4	13/21 (61.9%)	4/8 (50.0%)	Calling, flight/travel, flushed	Flight/travel
Snipe	Vantage point	1.0	1.8	6/129 (4.7%)	7/53 (13.2%)	Calling, flight/travel, flushed	Calling, flight/travel, flushed
	Winter walkover	1.0	2.3	2/21 (9.5%)	4/8 (50.0%)	Flushed	Flight/travel, flushed
	Breeding walkover	Not recorded	1.5	0/34 (0.0%)	1/12 (8.3%)	Not recorded	Flushed
	Waterbird distribution and abundance	8.4	6.2	7/36 (19.4%)	3/12 (25.0%)	Flushed	Roosting
Stock Dove	Vantage point	Not recorded	2.0	0/129 (0.0%)	2/53 (3.8%)	Not recorded	Flight/travel

Species	Survey type	Mean count per record		Occurrence rate		Recorded activity	
		Years 1–2	Year 3	Years 1–2	Year 3	Years 1–2	Year 3
	Winter walkover	Not recorded	1.5	0/21 (0.0%)	2/8 (25.0%)	Not recorded	Flight/travel
	Breeding walkover	Not recorded	2.2	0/34 (0.0%)	3/12 (25.0%)	Not recorded	Flight/travel
Swift	Vantage point	3.3	8.0	3/129 (2.3%)	2/53 (3.8%)	Flight/travel	Flight/travel
	Breeding walkover	Not recorded	27.0	0/34 (0.0%)	2/12 (16.7%)	Not recorded	Flight/travel
Woodcock	Vantage point	1.0	1.0	1/129 (0.8%)	1/53 (1.9%)	Roding	Flight/travel
	Breeding walkover	1.0	Not recorded	1/34 (2.9%)	0/12 (0.0%)	Flight/travel, flushed	Not recorded
	Breeding woodcock	1.0	1.1	12/22 (54.5%)	11/12 (91.7%)	Roding, flight/travel	Roding, calling, flight/travel
Yellowhammer	Winter walkover	1.0	Not recorded	1/21 (4.8%)	0/8 (0.0%)	Perching	Not recorded
	Breeding walkover	1.2	1.5	9/34 (26.5%)	5/12 (41.7%)	Singing, calling, flight/travel	Singing, perching, flushed
Buzzard	Vantage point	1.3	1.2	81/129 (62.8%)	46/53 (86.8%)	Provisioning, display/courtship, perching, calling, flight/travel	Display/courtship, roosting, perching, calling, flight/travel
	Winter walkover	1.2	1.2	11/21 (52.4%)	8/8 (100.0%)	Perching, calling, flight/travel	Perching, calling, flight/travel
	Breeding walkover	1.1	1.1	19/34 (55.9%)	11/12 (91.7%)	Nesting, provisioning, display/courtship, perching, calling, flight/travel	Calling, flight/travel, flushed
	Breeding raptor	1.2	1.3	42/53 (79.2%)	17/24 (70.8%)	Nesting, perching, calling, flight/travel	Nesting, calling, flight/travel, mobbing
Hobby	Breeding raptor	Not recorded	1.0	0/53 (0.0%)	1/24 (4.2%)	Not recorded	Flight/travel
Long-eared Owl	Vantage point	1.0	Not recorded	1/129 (0.8%)	0/53 (0.0%)	Flight/travel	Not recorded
	Winter walkover	1.0	Not recorded	1/21 (4.8%)	0/8 (0.0%)	Calling, flushed	Not recorded

Species	Survey type	Mean count per record		Occurrence rate		Recorded activity	
		Years 1–2	Year 3	Years 1–2	Year 3	Years 1–2	Year 3
Sparrowhawk	Vantage point	1.1	1.1	35/129 (27.1%)	17/53 (32.1%)	Display/courtship, flight/travel, mobbing	Display/courtship, flight/travel, mobbing
	Winter walkover	1.0	1.0	2/21 (9.5%)	2/8 (25.0%)	Flushed	Flight/travel
	Breeding walkover	1.0	1.0	7/34 (20.6%)	3/12 (25.0%)	Provisioning, perching, calling, flight/travel	Flight/travel
	Breeding raptor	1.0	1.0	8/53 (15.1%)	4/24 (16.7%)	Nesting, provisioning, flight/travel, mobbing	Nesting, flight/travel, mobbing

7.4 Receptor Evaluation

7.4.1 Determination of Population Importance

A determination of population importance for birds within the Proposed Wind Farm site 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 IWeBS sites within Kilkenny[1], 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

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

To estimate the regional population, a review of all I-WeBS sites within the county of the Ornithology Study Area was conducted. It should be noted that the population estimate based on I-WeBS figures below is likely to be an underestimate of the regional population[2]. This is due to the foraging ecology of wintering golden plover that will utilise agricultural grasslands and other habitats not typically surveyed during I-WeBS counts. To account (partly) for the birds that occur in habitats that would not have been counted by I-WeBS surveyors, the golden plover that occur at locations outside of any I-WeBS sites

[1] *Please note that these figures are estimates based on the best available information but should be interpreted with a degree of caution.*
[2] *As per Burke et al., (2025) in relation to the golden plover count, "these estimate must be treated as conservative on the bases that they are widely disturbed in a variety of wetland and non-wetland habitats that are under-sampled during I-WeBS.".*

within the 5km (2025-2026) or 8km (2020/21 - 2021/22) survey radius of the Ornithology Study Area which were surveyed during the waterbird distribution surveys were added to the county population estimate. The waterbird distribution and abundance survey locations can be found in Appendix 7-1 and show there is no overlap with the iWeBS sites. Habitats surveyed were terrestrial sites: The Loughans SAC and its surrounds, and a section of the River Nore along with the adjacent fields.

Below are the mean count values recorded for I-WeBS sites over the most recent 5-season periods available, i.e., for the period 2016/17 – 2017/18 & 2020/21 – 2022/23 (note that sites with a mean of zero birds were excluded from this list) and the mean peak count from the waterbird distribution surveys.

- Baun (mean = 1,700)
- Waterbird Distribution Surveys (mean = 154)

Based on the above, the mean wintering regional population is 1,854 birds. However, as previously stated this likely remains an underestimate. Taking a precautionary approach, a regularly occurring population of 18 or more birds (>1% of the regional population, as per NRA [2009]) is required to be classified as County Importance.

Golden plover were observed on 108 occasions during surveys of the Proposed Wind Farm site throughout the three years of surveying, during the winter and passage periods. The observations were of birds calling, travelling, flying, circling, feeding or foraging, comprising flocks of up to 300 birds in different locations. An 80-bird flock fed within the Proposed Wind Farm site, while a flock of 120 birds was recorded foraging during winter walkover surveys. No roosts were recorded. Thus, this population is considered to be of **County Importance.**

7.4.1.2 Hen Harrier

Based on the latest Breeding Hen Harrier Survey (Ruddock *et al.*, 2024), the ROI 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 ROI national wintering population is 3-4 birds. A regularly occurring wintering population of 3-4 hen harrier is required for classification as Nationally/Internationally Importance.

Hen harrier were observed on five occasions within or adjacent to the Proposed Wind Farm site during surveys of the Proposed Wind Farm site throughout the three years of surveying, during the winter and breeding seasons. All of the observations were of single birds flying; no breeding behaviour was recorded and no roosts were identified. Therefore, there is **no population of ecological significance** using the Proposed Wind Farm site.

7.4.1.3 Kingfisher

The national population of kingfisher is estimated to be 368-1,031 pairs (NPWS Article 12 Reporting 2013-2018) therefore, 1% of the ROI national breeding population is six birds, which is required to be classified as National Importance. There are no published figures for the of kingfisher population in County Kilkenny. Using the distribution of kingfisher across Ireland from the breeding bird atlas (2007-2011), 3.59% of the distribution of kingfisher lies within County Kilkenny during the breeding season. Extrapolating this, the population of kingfisher in County Kilkenny is estimated to be 13-37 pairs. Taking a precautionary approach and using the above as a guide, a regularly occurring population of just one bird is required for classification of County Importance.

Kingfisher is an SCI of the River Nore SPA. A survey of the River Nore in 2010 recorded 22 pairs of Kingfisher (based on 16 probable and 6 possible territories) within the SPA[3].

[3] *https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004233.pdf*

Kingfisher were not recorded on the Proposed Wind Farm site during the survey periods. However, they were recorded seven times during the breeding kingfisher surveys, and of these, five were within the Proposed Grid Connection at the River Nore crossing. A further two were approximately 800m from the Proposed Grid Connection. All of these observations were over 8.8km from the Proposed Wind Farm site.

Therefore, there is **no population of ecological significance** using the Proposed Wind Farm site. However, there are birds using the River Nore in proximity to the Proposed 110kV Underground Cabling. Thus, this species is considered to be a population of **County Importance** at the river crossing for the Proposed 110kV Underground Cabling.

7.4.1.4 Little Egret

Little egret were observed within the Proposed Wind Farm site on a single occasion throughout the three years of surveying when a single bird was recorded flying through. None of the other 42 observations were within or adjacent to the Proposed Wind Farm site. The next closest observation to the Proposed Wind Farm site was 2.5km away, and the closest observation to the Proposed 110kV Underground Cabling at the river crossing was 1.2km away.

Given the separation distance to the areas utilised by this species and the infrequency of records within the Proposed Wind Farm site, there is **no population of ecological significance** using the Proposed Wind Farm site.

7.4.1.5 Peregrine Falcon

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

There are no published figures for the population of peregrine in County Kilkenny. Using the distribution of peregrine falcon across Ireland from the breeding bird atlas (2007-2011), 1.4% of the distribution lies within County Kilkenny. Extrapolating this, the county population of peregrine falcon in Kilkenny is estimated to be six pairs. Taking a precautionary approach and using the above as a guide; a regularly occurring population of just one pair is required for classification of County Importance.

Peregrine falcon were observed on 102 occasions within or adjacent to the Proposed Wind Farm site throughout the three years of surveying, during the breeding and winter seasons. The observations were of birds flying, hunting, travelling, soaring, feeding, perching or roosting, comprising groups of up to five birds in different locations including chicks and fledged young. Adults provisioned nests accompanied begging juveniles and showed juveniles how to pluck prey.

There was a maximum of two breeding territories identified in the vicinity of the Proposed Wind Farm site in any one year. This indicates a population of four adult birds during the breeding season. Thus, this species is considered to be a population of **County Importance**.

7.4.1.6 Barn Owl

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

There are no published figures for the population of barn owl in County Kilkenny. Using the distribution of barn owl across Ireland from the breeding bird atlas (2007-2011), 1% of the breeding distribution lies within County Kilkenny. Extrapolating this, the county population of barn owl in

Kilkenny is estimated to be 5-7 pairs for both counties. Taking a precautionary approach and using the above as a guide; a regularly occurring population of just one pair is required for classification of county importance.

Barn owl were recorded breeding approximately 2.2km from the Proposed Wind Farm site in 2022. There was no recorded breeding in any other year. The only other observation of barn owl was in 2021, over 5km from the nest location, therefore it is unlikely to be a bird associated with that nest. Batey (2013) analysed barn owl nests in Britain and found that the median elevation for nests was 107m above sea level (ASL), with the majority under 250m ASL. This indicates that this species is predominately a lowland species. For context, the nest located in 2022 was at 140m ASL. Barn owl tend to forage 1km from their nest site, and outside the breeding season they are known to forage up to 3km (Hardy *et al.*, 2013). The nest location is over 2km from the Proposed Wind Farm site, putting it at the extremity of the non-breeding foraging range. The majority of the Proposed Wind Farm site is above 200m ASL with a peak elevation of 316m. Furthermore, approximately 50% of the Proposed Wind Farm site is forestry which is unsuitable for foraging barn owl. To summarise, the nest was greater than 2km from the Proposed Wind Farm site, their preferred foraging habitat (lowland) is closer to the nest site and abundant in the wider area, and the Proposed Wind Farm site is at high elevation and largely comprises unsuitable habitat for barn owl. This, coupled with the infrequency of observations within/adjacent to the Proposed Wind Farm site demonstrates that there is **no population of ecological significance** using the Proposed Wind Farm site.

7.4.1.7 Grey Wagtail

Grey wagtail is a BoCCI Red Listed species for breeding populations only in Ireland. However, this species is abundant (the national population is estimated to be 50,768; Lewis *et al.,* 2019) and widespread across Ireland (NBDC Biodiversity Maps). As such, the population recorded at the Proposed Wind Farm is considered to be of **Local Importance (Lower Value).**

7.4.1.8 Kestrel

As per NPWS Article 12 Reporting (2013-2018), the national breeding population estimates of kestrel in the ROI is 13,500. Preliminary results of the 2019-2024 reporting period indicate this has increased to 13,770 birds. Therefore, as per NRA (2009) criteria, a regularly occurring population of 135-138 birds is required for classification as National Importance.

There are no published figures for the population of kestrel in county Kilkenny. Using the distribution of kestrel across Ireland from the breeding bird atlas (2007-2011), 2.11% of the distribution lies within County Kilkenny during the breeding season. Extrapolating this, the county population of kestrel in County Kilkenny is estimated to be 285-289 birds. Therefore, a regularly occurring population of three birds is required for classification of County Importance.

Kestrel were observed on 419 occasions within or adjacent to the Proposed Wind Farm site throughout the three years of surveying, during the breeding and winter seasons. The observations were of birds flying, hunting, travelling, perching, circling or soaring, comprising groups of up to four birds in different locations. Birds mated, displayed, carried prey, alarm-called, entered and left nesting areas, and accompanied fledglings.

There was a maximum of three breeding territories identified in the vicinity of the Proposed Wind Farm site in any one year. This indicates a population of six adult birds during the breeding season. Thus, this species is considered to be a population of **County Importance.**

7.4.1.9 Lapwing

Wintering

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

To estimate the regional population, a review of all I-WeBS within 25km of the Ornithology Survey Area was conducted. It should be noted that, the population estimate based on I-WeBS figures below is likely to be an underestimate of the regional population[4]. Similar to golden plover, wintering lapwing will utilise agricultural grasslands and other habitats not typically surveyed during I-WeBS counts. To account (partly) for the birds that occur in terrestrial habitats that would not have been counted by I-WeBS surveyors, the lapwing that occur at terrestrial locations outside of any I-WeBS sites within the 5km or 8km survey radius of the Ornithology Study Area which was surveyed during the waterbird distribution and abundance surveys were added to the regional population estimate. The waterbird distribution and abundance survey locations can be found in Appendix 7-1 and show there is no overlap with the iWeBS sites. Habitats surveyed were terrestrial sites, The Loughans lake and its surrounds, and a section of the River Nore along with the adjacent fields.

Below are the mean count values recorded for I-WeBS sites over the most recent 5-season periods available, i.e., for the period 2016/17 – 2017/18 & 2020/21 – 2022/23 (note that sites with a mean of zero birds were excluded from this list) and the mean peak count from the waterbird distribution surveys.

- Baun (mean = 350)
- The Loughans (nr. Urlingford) (mean = 80)
- Waterbird Distribution Surveys (mean = 76)

Based on the above, the mean regional wintering population is 506 birds. However, as previously stated this likely remains an underestimate. Therefore, a regularly occurring population of 5 or more birds (>1% of the regional population, as per NRA [2009]) is required to be classified as county importance.

Lapwing were observed on 94 occasions during the surveys of the Proposed Wind Farm site throughout the three years of surveying, none of the observations were within the Proposed Wind Farm site, of the two vantage point observations the closest was approximately 900m from the nearest Proposed Turbine. The closest observation from the waterbird distribution and abundance surveys was approximately 2.8km away. Therefore, there is **no population of ecological significance** using the Proposed Wind Farm site.

During winter 2025/2026 there was a flock of 132 birds within the Proposed 110kV Underground Cabling at the River Nore crossing, and there were flocks of 17, 26, 82 and 120 recorded within 500m of the Proposed Grid Connection at the river crossing. These observations were spread across four winter months, suggesting a regularly occurring population, thus this species is considered to be a population of **County Importance** at the river crossing for the Proposed 110kV Underground Cabling.

Breeding

As per the latest NPWS Article 12 reporting document, the national population of breeding lapwing is estimated to be 476 – 620 pairs for the ROI. Therefore, as per NRA (2009) criteria, a regularly occurring population of four pairs is required for classification as nationally important.

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

There are no published figures for the population of breeding lapwing in county Kilkenny. Using the distribution of lapwing across Ireland from the breeding bird atlas[5] (2007-2011), 1% of the distribution lies within County Kilkenny during the breeding season. Extrapolating this, the county population of breeding lapwing is estimated to be a minimum of four pairs in County Kilkenny. Therefore, a regularly occurring population of one bird is required for classification of County Importance.

Lapwing were not recorded on the Proposed Wind Farm site during the core breeding season. In May, during the waterbird distribution and abundance survey, a flock of six birds recorded displaying approximately 3km from the Proposed Wind Farm site. There was no other evidence of breeding recorded. Given the separation distance to the areas utilised by this species and the infrequency of records within the Proposed Wind Farm site, there is **no population of ecological significance** using the Proposed Wind Farm site.

7.4.1.10 Meadow Pipit

Meadow pipit is a BoCCI Red Listed species for breeding populations only in Ireland. Meadow pipit was recorded in the breeding and winter seasons. Birds were resident and breeding 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 (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 Redwing

Redwing is a BoCCI Red Listed species for wintering population only in Ireland. Redwing was recorded in the winter season. Birds were foraging in the Proposed Wind Farm site and wider area. However, this species is a habitat generalist, 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 (NBDC Biodiversity Maps). As such, populations recorded at the Proposed Wind Farm site is considered to be of **Local Importance (Lower Value).**

7.4.1.12 Snipe

There are no published figures for the national winter population of snipe in Ireland. As reported (2013-2018) under Article 12 of the Birds Directive (Directive 2009/147/EC), the national breeding population estimate of snipe in the ROI is 4,275 breeding pairs. As there are no winter estimates this is the best available data, assuming the birds present in summer remain resident in winter. Therefore, as per NRA (2009) criteria, a regularly occurring population of 86 birds (based on 43 pairs) is required for classification as National Importance.

There are no equally no published figures for the wintering population of snipe in county Kilkenny. Using the distribution of snipe across Ireland from the breeding bird atlas (2007-2011), 3.08% of distribution lies within County Kilkenny during the breeding season. Extrapolating this, the population of snipe in county Kilkenny is estimated to be 262 birds (based on 131 pairs, and assuming they remain resident in winter). Therefore, a regularly occurring population of two birds (based on one pair) is required for the classification as County Importance.

The thresholds above are likely to be underestimates are the wintering population is bolstered by visitors from the Faeroe Islands, Iceland, and northern Scotland. However, conservative estimates based on breeding populations are used below.

[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.*

Snipe were observed on 44 occasions during surveys of the Proposed Wind Farm site throughout the three years of surveying, during the winter and passage periods from September to April. The observations were of birds being flushed, calling, travelling, flying, foraging or roosting, comprising groups of up to 18 birds in different locations. Roosting birds were recorded during waterbird distribution and abundance surveys and none were within the Proposed Wind Farm site.

No breeding territories or breeding behaviour were identified in the vicinity of the Proposed Wind Farm site, indicating that there was no confirmed breeding population present. Thus, this species is considered to be a population of **County Importance.**

7.4.1.13 Stock Dove

The estimated national (ROI) population of stock dove is 27,486 (Article 12 Reporting 2013-2018) while preliminary results of the 2019-2024 reporting period suggest it is between 9,350 and 26,950 (best value = 17,210) birds. Therefore, a regularly occurring population of 172-275 birds is required for classification as National Importance. There are no published figures for the County Kilkenny population. However, according to the distribution of stock dove across Ireland in the bird atlas, 5.38% of the population is found in Kilkenny in the breeding season. Extrapolating this, the Kilkenny breeding population is estimated to be 926-1,479 birds. Therefore, a regularly occurring population of 9-15 birds is required for classification of County Importance.

Given how infrequently this species was observed (eight occasions over three years), and in low numbers (range of one to four birds) there is **no population of ecological significance** using the Proposed Wind Farm site.

7.4.1.14 Swift

Swift was recorded in the breeding season. The estimated national (ROI) breeding population is 51,728 birds (Lewis *et al.*, 2019). Based on this, a regularly occurring population of 517 birds is required for classification as National Importance. In the absence of more detailed county-level information, the county population is estimated to be 1989 birds, assuming an even spatial distribution across the 26 counties of Ireland covered by these data. Therefore, a regularly occurring population of 20 birds is required for classification as County Importance.

Given how infrequently this species was observed (nine occasions over three years) there is **no population of ecological significance** using the Proposed Wind Farm site.

7.4.1.15 Woodcock

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

There are no published figures for the population of woodcock in county Kilkenny. Using the distribution of woodcock across Ireland from the breeding bird atlas (2007-2011), 2.15% of the distribution lies within County Kilkenny during the breeding season. Extrapolating this, the populations of woodcock in county Kilkenny is estimated to be 1,179 pairs. Therefore, a regularly occurring population of 11 pairs is required for the classification as County Importance.

Woodcock were observed on 95 occasions during surveys of the Proposed Wind Farm site throughout the three years of surveying, during the winter and breeding seasons. Of these, there were 88 observations of woodcock roding, 85 of these were within the Proposed Wind Farm site. The forestry in which the woodcock were recorded roding during breeding woodcock surveys is approximately 251ha. Woodcock are estimated to have an average population density of 2.76 males/km^2 (Hoodless *et al.*, 2009). Using these figures, this forestry of 270ha, or 2.7km2 would be capable of supporting on average,

7.5 male woodcock. On separate evenings and separate transects in the same month there was a record of three individuals, and two of two individuals. A conservative estimate indicates that at least seven males may be present in the area, however given the number of records the population could be higher.

Thus, this species is considered to be a population of **Local Importance (Higher Value).**

7.4.1.16 Yellowhammer

The national population of yellowhammer is estimated to be 217,252 birds (Lewis *et al.*, 2019). There are no published figures for the County Kilkenny population. However, according to the distribution of yellowhammer across Ireland in the bird atlas, 5.34% of the population is found in Kilkenny in the breeding season. Extrapolating this, the Kilkenny breeding population is estimated to be 11,601 birds. Therefore, a regularly occurring population of 116 birds is required for classification of County Importance. Thus, there is **no population of ecological significance** using the Proposed Wind Farm site.

7.4.1.17 Buzzard

As reported (2013-2018) under Article 12 of the Birds Directive (Directive 2009/147/EC), the national breeding population estimate of buzzard in the ROI is 1,938 breeding pairs. Preliminary results of the 2019-2024 reporting period suggest this has increased to 3,485. Therefore, as per NRA (2009) criteria, a regularly occurring population of 19-35 pairs is required for classification as National Importance. In the absence of more detailed county-level information, the county population is estimated to be 75-134 breeding pairs, assuming an even spatial distribution across the 26 counties of Ireland covered by these data. Therefore, a regularly occurring population of one breeding pair is required for classification as County Importance.

Buzzards were observed on 668 occasions within or adjacent to the Proposed Wind Farm site throughout the three years of surveying, during the breeding and winter seasons. The observations were of birds flying, hunting, calling, circling or soaring, comprising groups of up to five birds including chicks, juveniles and begging calls in different locations. Adults displayed, aerial-chased, carried prey and provisioned nests.

Although buzzard is on the BoCCI Green List, indicating it is of lower conservation priority and it is a habitat generalist and is widespread across Ireland (NBDC Biodiversity Maps), there was a maximum of five breeding territories identified in the vicinity of the Proposed Wind Farm site in any one year. This indicates a population of ten adult birds during the breeding season. Thus, this population is considered to be of **County Importance.**

7.4.1.18 Hobby

Hobby is a very scarce, non-breeding visitor to Ireland, and was recorded within or adjacent to the Proposed Wind Farm site on only one occasion over the three years of surveying.

Therefore, there is **no population of ecological significance** using the Proposed Wind, given how infrequently the area is utilised by this species.

7.4.1.19 Long-eared Owl

As reported (2013-2018) under Article 12 of the Birds Directive (Directive 2009/147/EC), the national breeding population estimate of long-eared owl in the ROI is 1,484 – 2,703 breeding pairs. Therefore, as per NRA (2009) criteria, a regularly occurring population of 15 – 27 pairs is required for classification as National Importance. In the absence of more detailed county-level information, the county population is estimated to be 57 – 104 breeding pairs, assuming an even spatial distribution across the

26 counties of Ireland covered by these data. Therefore, a regularly occurring population of one breeding pair is required for classification as County Importance.

Long-eared owl is on the BoCCI Green List, indicating it is of lower conservation priority. Birds were observed on a total of three occasions, twice in 2020 and once in 2021, within or adjacent to the Proposed Wind Farm site throughout the three years of surveying. All observations were of an individual flying, there were no breeding or roosting records. On one occasion a bird gave an alarm call, but it was most likely in response to being flushed by a surveyor. Given the species cryptic nature and the proximity of the observations to each other it is possible the species is resident in the area and as such this population is considered to be of **Local Importance (Higher Value).**

7.4.1.20 Sparrowhawk

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

Sparrowhawks were observed on 125 occasions during surveys of the Proposed Wind Farm site throughout the three years of surveying, during the breeding and winter seasons. The observations were of birds flying, travelling, hunting, calling, circling or soaring, comprising groups of up to three birds in different locations. Birds displayed, carried prey, mobbed or attacked kestrels and juvenile peregrines, and were recorded in family parties.

There was a maximum of one breeding territory identified in the vicinity of the Proposed Wind Farm site in any one year. This indicates a population of at least two adult birds during the breeding season, thus, this population is considered to be of **Local Importance (Higher Value).**

7.4.2 Identification of Key Ornithological Receptors

Table 7-12 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 7-13 Receptor evaluation and selection criteria rational

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
Golden Plover	Annex I Birds Directive & Red List	**Winter and Passage** County Importance	Golden plover was recorded using the Proposed Wind Farm site for foraging. The potential for direct habitat loss cannot be excluded. Birds were recorded within 500m of the Proposed Wind Farm site. The potential for disturbance/displacement cannot be excluded. Birds were recorded flying at PCH within 500m of the Proposed Turbines during vantage point surveys. The potential for collision risk cannot be excluded. As such, an assessment of the direct effects of habitat loss, disturbance/displacement and collision risk is required for golden plover.	**Yes**
Hen Harrier	Annex I Birds Directive & Raptor	**All Seasons** 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. **No pathways for significant effects were identified.**	**No**
Kingfisher	Annex I Birds Directive & SCI of River Nore SPA	**All Seasons (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	**Yes**

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
		No population of ecological significance recorded **Breeding (River Nore Proposed 110kV Underground Cabling crossing)** County Importance	limited. **No pathways for significant effects were identified** at the Proposed Wind Farm site. However, kingfisher was recorded using the Proposed 110kV Underground Cabling and are hunting and likely breeding in the River Nore in proximity to this location. The potential for direct habitat loss cannot be excluded. Birds were recorded within 500m of the Proposed 110kV Underground Cabling. The potential for disturbance/displacement cannot be excluded. As such, an assessment of the direct effects of habitat loss and disturbance/displacement is required for kingfisher at the Proposed 110kV Underground Cabling.	
Little Egret	Annex I Birds Directive	**All Seasons** 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. **No pathways for significant effects were identified.**	**No**

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
Peregrine Falcon	Annex I Birds Directive & Raptor	**All Seasons** County Importance	Peregrine falcon was recorded using the Proposed Wind Farm site for hunting and breeding. The potential for direct habitat loss cannot be excluded. Birds were recorded within 500m of the Proposed Wind Farm site. The potential for disturbance/displacement cannot be excluded. Birds were recorded flying at PCH within 500m of the Proposed Turbines during vantage point surveys. The potential for collision risk cannot be excluded. As such, an assessment of the direct effects of habitat loss, disturbance/displacement and collision risk is required for peregrine falcon.	**Yes**
Barn Owl	Red List & Raptor	**All Seasons** No population of ecological significance recorded	As previously discussed in Section 7.4.1.6, the habitat and elevation within the Proposed Wind Farm site are not optimal for barn owl. While they were recorded during surveys, and there was confirmed breeding, this was not within the Proposed Wind Farm site. There was 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. **No pathways for significant effects were identified.**	**No**
Grey Wagtail	Red List	**All Seasons** Local Importance (lower value)	This species was observed within the Proposed Wind Farm site. However, as per NatureScot guidance, 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 development will significantly impact this species. **No pathways for significant effects were identified.**	**No**

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
Kestrel	Red List & Raptor	**All Seasons** County Importance	Kestrel was recorded using the Proposed Wind Farm site for hunting and breeding. The potential for direct habitat loss cannot be excluded. Birds were recorded within 500m of the Proposed Wind Farm site. The potential for disturbance/displacement cannot be excluded. Birds were recorded flying at PCH within 500m of the Proposed Turbines during vantage point surveys. The potential for collision risk cannot be excluded. As such, an assessment of the direct effects of habitat loss, disturbance/displacement and collision risk is required for kestrel.	**Yes**
Lapwing	Red List	**All Seasons (Proposed Wind Farm site)** No population of ecological significance recorded **Winter (River Nore Proposed 110kV Underground Cabling crossing)** County Importance	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. **No pathways for significant effects were identified** at the Proposed Wind Farm site. However, flocks of lapwing were recorded using the fields adjacent to the Proposed 110kV Underground Cabling where it crosses the River Nore for foraging on five occasions. The potential for direct habitat loss cannot be excluded.	**Yes**

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
			Birds were recorded within 500m of the Proposed 110kV Underground Cabling. The potential for disturbance/displacement cannot be excluded. As such, an assessment of the direct effects of habitat loss and disturbance/displacement is required for lapwing at the Proposed 110kV Underground Cabling.	
Meadow Pipit	Red List	**All Seasons** Local Importance (lower value)	This species was observed within the Proposed Wind Farm site. However, as per NatureScot guidance, 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 development will significantly impact this species. **No pathways for significant effects were identified.**	**No**
Redwing	Red List	**Wintering** Local Importance (lower value)	This species was observed within the Proposed Wind Farm site. However, as per NatureScot guidance, 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 development will significantly impact this species. **No pathways for significant effects were identified.**	**No**

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
Snipe	Red List	**Winter and Passage** County Importance	Snipe was recorded using the Proposed Wind Farm site. The potential for direct habitat loss cannot be excluded. Birds were recorded within 500m of the Proposed Wind Farm site. The potential for disturbance/displacement cannot be excluded. Birds were recorded flying at PCH within 500m of the Proposed Turbines during vantage point surveys. The potential for collision risk cannot be excluded. As such, an assessment of the direct effects of habitat loss, disturbance/displacement and collision risk is required for snipe.	**Yes**
Stock Dove	Red List	**All Seasons** Local Importance (lower value)	This species was observed within the Proposed Wind Farm site during the extensive suite of surveys conducted. However, their ecology is similar to passerine species and as such the potential for direct habitat loss, disturbance/displacement and collision risk are limited. **No pathways for significant effects were identified.**	**No**
Swift	Red List	**Breeding** Local Importance (lower value)	This species was observed within the Proposed Wind Farm site during the extensive suite of surveys conducted. However, their ecology is similar to passerine species and as such the potential for direct habitat loss, disturbance/displacement and collision risk are limited. **No pathways for significant effects were identified.**	**No**

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
Woodcock	Red List	**All Seasons** Local Importance (higher value)	Woodcock was recorded using the Proposed Wind Farm site. The potential for direct habitat loss cannot be excluded. Birds were recorded within 500m of the Proposed Wind Farm site. The potential for disturbance/displacement cannot be excluded. Birds were recorded flying at PCH within 500m of the Proposed Turbines during vantage point surveys. The potential for collision risk cannot be excluded. As such, an assessment of the direct effects of habitat loss, disturbance/displacement and collision risk is required for woodcock.	**Yes**
Yellowhammer	Red List	**All Seasons** Local Importance (lower value)	This species was observed within the Proposed Wind Farm site. However, as per NatureScot guidance, 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 development will significantly impact this species. **No pathways for significant effects were identified.**	**No**

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
Buzzard	Raptor	**All Seasons** County Importance	Buzzard was recorded using the Proposed Wind Farm site for hunting and breeding. The potential for direct habitat loss cannot be excluded. Birds were recorded within 500m of the Proposed Wind Farm site. The potential for disturbance/displacement cannot be excluded. Birds were recorded flying at PCH within 500m of the Proposed Turbines during vantage point surveys. The potential for collision risk cannot be excluded. As such, an assessment of the direct effects of habitat loss, disturbance/displacement and collision risk is required for buzzard.	**Yes**
Hobby	Raptor	**Breeding** No population of ecological significance recorded	Hobby are a scarce, non-breeding visitor to Ireland, and 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. **No pathways for significant effects were identified.**	**No**
Long-eared Owl	Raptor	**All Seasons** Local Importance (higher value)	Field survey records suggest that long-eared owl were using the Proposed Wind Farm site. On a precautionary basis, the potential for direct habitat loss cannot be excluded. Birds were recorded within 500m of the Proposed Wind Farm site. The potential for disturbance/displacement cannot be excluded. There were no birds recorded flying at PCH within 500m of the Proposed Turbines during vantage point surveys. This limits the potential for significant collision risk for this species.	**Yes**

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
			As such, an assessment of direct habitat loss and disturbance/displacement is required for long-eared owl.	
Sparrowhawk	Raptor	**All Seasons** Local Importance (higher value)	Sparrowhawk was recorded using the Proposed Wind Farm site for hunting and breeding. The potential for direct habitat loss cannot be excluded. Birds were recorded within 500m of the Proposed Wind Farm site. The potential for disturbance/displacement cannot be excluded. Birds were recorded flying at PCH within 500m of the Proposed Turbines during vantage point surveys. The potential for collision risk cannot be excluded. As such, an assessment of the direct effects of habitat loss, disturbance/displacement and collision risk is required for sparrowhawk.	**Yes**

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). The sensitivity of the KORs, as per Percival (2003), are listed below, including the rationale for their respective sensitivity classification.

Very High Sensitivity KORs are:

- Kingfisher (SCI of the River Nore SPA)

Medium Sensitivity KORs are:

- Golden Plover (Annex I Birds Directive & Red List)
- Kestrel (BoCCI Red List)
- Lapwing (BoCCI Red List)
- Peregrine Falcon (Annex I Birds Directive)
- Snipe (BoCCI Red List)
- Woodcock (BoCCI Red List)

Low Sensitivity KORs are:

- Buzzard (Raptor)
- Long-eared Owl (Raptor)
- Sparrowhawk (Raptor)

7.5 Impact Assessment

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

- Assessment of 'Do-Nothing' scenario;
- Assessment of the likely effects of the Proposed Wind Farm during construction, operation and decommissioning;
- Assessment of the likely effects associated with the Proposed Grid Connection;
- Assessment of the likely effects associated with the turbine delivery route;
- 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 active conifer forestry and agriculture practices, 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 Enhancement and Management Plan (BMEP) to be implemented during the development's operation, the opportunity to enhance the site for biodiversity, via a structured implementation and monitoring plan, 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 Ireland's Climate Action Plan(s) in mind and the potential contribution of this Proposed Project in reducing dependency on 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

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		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	Golden plover were observed on 108 occasions over the three years of surveying. Only on a single occasion were golden plover observed foraging within the Proposed Wind Farm site (April 2021). The majority of the observations were on the hill to the west of the Proposed Wind Farm site where the habitat is more suitable for foraging (rough grazing/less intensively managed grassland). This area will remain intact as it is outside the Proposed Wind Farm site. Of the ten Proposed Turbines, seven are within or adjacent to forestry which is of low value to golden plover and the final three are within agricultural grassland which is of value to this species. However, over three years of surveying, golden plover were found to prefer lands in the surrounds for roosting or foraging. Furthermore, the land lost to the permanent infrastructure footprint is small (i.e. 16.6ha or 2.9% of the Proposed Wind Farm site) relative to the total area within the Proposed Wind Farm site. Suitable areas of undisturbed habitat will remain both within the Proposed Wind Farm site and in the wider surroundings post construction, therefore no significant impacts are predicted at the Proposed Wind Farm site at the regional, national or international level. Golden plover were observed along the River Nore near the point where the Proposed 110kV Underground Cabling crosses the river. A flock was observed roosting on one occasion and foraging on another occasion within 500m of the	**The Proposed Wind Farm site** The magnitude of the effect is assessed as low. The cross tablature of a medium sensitivity species and low impact corresponds to a **low** effect significance. **The River Nore Proposed 110kV Underground Cabling crossing** **No Effect**	**The Proposed Wind Farm site** Likely long-term constant slight negative effect which is **Not Significant.** **The River Nore Proposed 110kV Underground Cabling crossing** **No Effect**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	river crossing. The Proposed 110kV Underground Cabling is underground, and any necessary temporary alterations to the habitat will be restored to its original state. Therefore, it can be reasonably determined that no significant effects of direct habitat loss are anticipated at the River Nore crossing.		
Disturbance	As previously discussed, golden plover had limited use of the Proposed Wind Farm site. Research indicates that this species is susceptible to disturbance impacts during construction works (Pearce-Higgins *et al.*, 2012). Additionally, Goodship and Furness (2022) reported mean disturbance distances of 143m for golden plover during the winter season. However, significant areas of suitable foraging and roosting habitat for the species occur greater than 143m from construction works and in the wider landscape and will be retained. Additionally, the preferred habitat in use by this species in the area is outside the Proposed Wind Farm site. Therefore, it can be reasonably determined that no significant effects of displacement are anticipated at the Proposed Wind Farm site for golden plover at the regional, national or international level. As previously discussed, golden plover were found to be infrequently utilising habitats within 500m of the Proposed 110kV Underground Cabling at the River Nore crossing. The construction phase at this location has the potential to cause some level of disturbance for this species at the river crossing. However, this will be temporary and limited to the area where the Proposed 110kV Underground Cabling crosses the River Nore. Extensive comparable habitats are available in the wider area, and golden plover were only observed utilising this location on two occasions, indicating they are not dependent on this area. Therefore, it can be reasonably determined that no significant effects of disturbance are anticipated at the River Nore crossing.	**The Proposed Wind Farm site** The magnitude of the effect is assessed as low. The cross tablature of a medium sensitivity species and low impact corresponds to a **low** effect significance. **The River Nore Proposed 110kV Underground Cabling crossing** The magnitude of the effect is assessed as negligible. The cross tablature of a medium sensitivity species and negligible impact corresponds to a **very low** effect significance.	**The Proposed Wind Farm site** Likely short-term constant slight negative effect which is **Not Significant.** **The River Nore Proposed 110kV Underground Cabling crossing** Likely short-term constant imperceptible negative effect which is **Not Significant.**
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated.	**No Effect**	**No Effect**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Displacement and Barrier Effect	As previously discussed, golden plover had limited use of the Proposed Wind Farm site during the survey period. Hötker *et al.* (2006) state that golden plover will approach wind turbines to an average distance of 175m in non-breeding season, with turbine height positively correlated with displacement distance (3.12m additional avoidance per metre of hub height). In the present case, displacement is expected to exceed 175m, given that displacement is positively correlated with turbine height, and the Proposed Turbines are considerably larger than those utilised for the study. As the 175m displacement distance is unlikely to be reflective of the likely displacement of golden plover from the Proposed Turbines, due to their height, an adjustment was made. Using 3.12m/m of hub height, for a turbine with a hub height of 103.5m the avoidance could be as far as 323m[6]. This distance should be treated cautiously, as it cannot be known if this is a constant linear relationship. However as already discussed the majority of the Proposed Turbines are located within or adjacent to habitats of low value to golden plover. To demonstrate this, of the ten Proposed Turbines only four had more than one golden plover flight within 323m over the three years of vantage point surveys. One Proposed Turbine had two flights within 323m, one had ten flights, the remaining two shared five flights. If golden plover were to avoid these Proposed Turbines to navigate around the Proposed Wind Farm site, the displacement would be minimal. Furthermore, golden plover were only recorded feeding within 323m of a Proposed Turbine on a single occasion, and within the Proposed Wind Farm site on a further occasion. This limits the amount of possible displacement of golden plover by the Proposed Turbines. Servicing of the wind farm will not add significantly to the background levels of disturbance currently occurring in the area. The temporary disturbance of golden plover is possible throughout the Proposed Wind Farm site during the	**The Proposed Wind Farm site** The magnitude of the effect is assessed as low. The cross tablature of a medium sensitivity species and low impact corresponds to a **low** effect significance. **The River Nore Proposed 110kV Underground Cabling crossing** **No Effect**	**The Proposed Wind Farm site** Likely long-term constant slight negative effect which is **Not Significant.** **The River Nore Proposed 110kV Underground Cabling crossing** **No Effect**

[6] *This is an indicative slope-based estimate, not a fully reproducible regression prediction.*

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	operational phase from disturbance by maintenance vehicles and personnel visits, particularly in the vicinity of the Proposed Turbines and access roads. However, the volume and frequency of such visits is considered to be very low and is likely to be generally minor in scale and short in duration when it occurs. Therefore, significant effects by maintenance crews along the access roads and other infrastructure (excluding the Proposed Turbines) are not anticipated. There is no evidence to suggest that the Proposed Wind Farm site lies on a regular commuting or migratory route for this species, therefore barrier effect is not anticipated. Therefore, it can be reasonably determined that no significant effects of displacement are anticipated at the Proposed Wind Farm site for golden plover at the regional, national or international level. As previously discussed, golden plover were found to be infrequently utilising habitats within 500m of the Proposed 110kV Underground Cabling at the River Nore crossing. The Proposed 110kV Underground Cabling is underground and will not require servicing outside of the substation, therefore will not cause any significant displacement or barrier effects at the River Nore crossing during the operational phase.		
Collision Risk	The species was recorded flying within PCH during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated a 2.07 collisions per year over the operational lifetime of the Proposed Wind Farm. Annual mortality of adult golden plover has been calculated at 27% per annum (Sandercock, 2003). If 2.07 collisions were to occur per year, it would mean that the losses at the Proposed Wind Farm would increase the annual mortality	The magnitude of the effect is assessed as negligible. The cross tablature of a medium sensitivity species and negligible impact corresponds to a **very low** effect significance.	Likely long-term constant imperceptible negative effect which is **Not Significant.**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	of the regional population (c.1,854) by 0.414%. The predicted collision risk is negligible. No significant effects are anticipated.		
Decommissioning			
Direct Habitat Loss	Direct or indirect effects are not anticipated.	**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 Kingfisher

The assessment of the impact of the Proposed Grid Connection at the River Nore crossing on kingfisher is detailed in Section 7.5.3.1

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	Kingfisher were not observed within the Proposed Wind Farm site, there is no suitable habitat on the Proposed Wind Farm site for this species. No significant effects of direct habitat loss are anticipated at the Proposed Wind Farm site.	The magnitude of the effect is assessed as negligible. The cross tablature of a very high sensitivity species and negligible impact corresponds to a **low** effect significance.	Likely long-term slight negative effect which is **Not Significant.**
Disturbance	Kingfisher were not found to be using the Proposed Wind Farm site. As such no significant effects of disturbance are anticipated at the Proposed Wind Farm site.	The magnitude of the effect is assessed as negligible. The cross tablature of a very high sensitivity species and negligible impact corresponds to a **low** effect significance.	Likely short-term slight negative effect which is **Not Significant.**
Operational Phase			

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Direct Habitat Loss	Direct habitat loss effects are not anticipated.	**No Effect**	**No Effect**
Displacement and Barrier Effect	Kingfisher were not found to be using the Proposed Wind Farm site. As such no significant effects of displacement are anticipated at the Proposed Wind Farm site. There is no evidence to suggest that the Proposed Wind Farm site lies on a regular commuting route for the species therefore a significant barrier effect is not anticipated.	The magnitude of the effect is assessed as negligible. The cross tablature of a very high sensitivity species and negligible impact corresponds to a **low** effect significance.	Likely long-term slight negative effect which is **Not Significant.**
Collision Risk	This species was not recorded within the Proposed Wind Farm site during the extensive vantage point survey work undertaken.	**No Effect**	**No Effect**
Decommissioning			
Direct Habitat Loss	Direct or indirect effects are not anticipated.	**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 Peregrine Falcon

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	Peregrine falcon were observed on 109 occasions over the three years of surveying. There was one confirmed breeding site identified, 1.8km from the Proposed Wind Farm site (occupied in 2020, 2021, and 2026). A second possible territory was identified in 2021 and 2022, 1.2km from the Proposed	The magnitude of the effect is assessed as low, the cross tablature of a medium sensitivity species and low impact	Likely long-term slight negative effect, which is **Not Significant.**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	Wind Farm site, however a nest was not located. The nest site and the potential territory are both outside the Proposed Wind Farm site. This limits the potential for ecologically significant effects on nesting sites as a result. Peregrine falcon were observed hunting within the Proposed Wind Farm site on six occasions. However, the land lost to the permanent infrastructure footprint is small (i.e., 16.6ha or 2.9% of the Proposed Wind Farm site) relative to the total area within the Proposed Wind Farm site. Given the abundance of similar suitable habitats (peatlands and improved agricultural grasslands) supporting similar prey species in the wider area as those found within the Proposed Wind Farm site, and that extensive areas of suitable foraging habitat will remain post construction, no significant impacts are predicted at the regional, national or international level.	corresponds to a **low** effect significance.	
Disturbance	As outlined above, peregrine falcon were observed on 109 occasions over the three years of surveying. There was one confirmed breeding site identified, 1.8km from the Proposed Wind Farm site, and a second possible territory was identified, 1.2km from the Proposed Wind Farm site. NatureScot (2022) found that breeding peregrine falcons can be disturbed up to 750m, therefore significant disturbance effects on this nest site are not anticipated. The closest major works (Proposed Turbine) to the confirmed nest site is 2km away and therefore beyond the potential for disturbance effects. The closest infrastructure is an access road, which is approximately 1.8km from the confirmed nest site. Construction works may cause temporary disturbance to peregrine falcon hunting in the vicinity of the Proposed Wind Farm site, however peregrine falcon has been documented to become accustomed to various sources of human disturbance (Ruddock *et al.,* 2007). Furthermore, peregrine is a wide-ranging species that will hunt within a wide variety of habitats which are not scarce in the local area, or unique to the Proposed Wind Farm site. This	The magnitude of the effect is assessed as low. The cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	Likely short-term slight negative effect, which is **Not Significant.**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	habitat in the wider area is functionally equivalent to that found within the Proposed Wind Farm site. No significant effects of disturbance are anticipated at the regional, national or international level.		
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated.	**No Effect**	**No Effect**
Displacement and Barrier Effect	As previously discussed, peregrine were observed within/partially within, 500m of Proposed Turbines on 18 occasions over the three years of surveying, and of these five were birds hunting. There was a confirmed nest site 1.8km from the Proposed Wind Farm site as well as a probable territory 1.2km from the Proposed Wind Farm site. NatureScot (2022) found that breeding peregrine falcons can be disturbed by human activity up to 750m. In the absence of research specific to wind turbine displacement, it is assumed that operating turbines will result in a similar displacement distance. The identified nest site (see above) is situated over 2km from the nearest Proposed Turbines and is therefore located outside the disturbance and displacement distance for peregrine during operation. Therefore, no significant effects of disturbance or displacement are anticipated on any breeding territories during operation. Peregrine is a wide-ranging species that will hunt within a wide variety of habitats which are not scarce in the local area, or unique to the Proposed Wind Farm site. The availability of alternative suitable habitats in the surroundings limits the potential for significant displacement effects. Furthermore, peregrine has been documented to become accustomed to various sources of human disturbance (Ruddock *et al.*, 2007). It is, therefore, reasonable to conclude that following a period of habituation, the population will become accustomed to the Proposed Wind Farm within the landscape.	The magnitude of the effect is assessed as low, the cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant.**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	Servicing of the Proposed Wind Farm will not add significantly to the background levels of disturbance currently occurring in the area. The temporary disturbance of peregrine falcon is possible throughout the Proposed Wind Farm site during the operational phase from disturbance by maintenance vehicles and personnel visits, particularly in the vicinity of the Proposed Turbines and access roads. However, the volume and frequency of such visits is considered to be very low and is likely to be generally minor in scale and short in duration when it occurs. Therefore, significant effects by maintenance crews along the access roads and other infrastructure (excluding the Proposed Turbines) are not anticipated. There is no evidence to suggest that the Proposed Wind Farm site lies on a regular commuting route for the species therefore barrier effect is not anticipated. No significant displacement and barrier effects are anticipated at the regional, national or international level.		
Collision Risk	The species was recorded flying within PCH during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated a 0.0587 collisions per year, or one bird every 12 years over the operational lifetime of the Proposed Wind Farm. Annual mortality of adult peregrine falcon has been calculated at 19% per annum (Craig *et al.,* 2004). If 0.0587 collisions were to occur per year, it would mean that the losses at the Proposed Wind Farm would increase the annual mortality of the county population (c.12 [6 pairs]) by 2.57%. The predicted collision risk is low. No significant effects are anticipated.	The magnitude of the effect is assessed as low. The cross tablature of a medium sensitivity species and low impact corresponds to a **low** effect significance.	Likely long-term slight negative effect, which is **Not Significant.**
Decommissioning			

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Direct Habitat Loss	Direct or indirect effects are not anticipated.	**No Effect**	**No Effect**
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.4 Kestrel

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	Kestrel were observed frequently over the three years of surveying. There were three confirmed breeding sites identified, two of which were partially within the Proposed Wind Farm site (occupied in 2021 and 2022), the third was approximately 1.8km from the Proposed Wind Farm site (occupied in 2021). Of the remaining two possible territories one was partially within the Proposed Wind Farm site (from 2023) and the other was approximately 600m away (from 2026), neither of these were confirmed. Although there were territories partially within the Proposed Wind Farm site, there is no planned permanent infrastructure within any of these territories. Furthermore, the land lost to the permanent infrastructure footprint is small (i.e., 16.6ha or 2.9% of the Proposed Wind Farm site) relative to the total area within the Proposed Wind Farm site. Substantial areas of undisturbed suitable breeding and foraging habitat will remain both within the Proposed Wind Farm site and in the wider surroundings post construction. Lastly, kestrel is a wide ranging, generalist species that will hunt within a wide variety of habitats (e.g., agricultural grassland, open peatland, scrub) which are not scarce in the local area, or unique to the Proposed Wind Farm site.	The magnitude of the effect is assessed as low. the cross tablature of a medium sensitivity species and low impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant.**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	Significant effects are not predicted at the regional, national or international scale.		
Disturbance	As previously discussed kestrel are resident within the area and have two breeding territories that are partially located within the Proposed Wind Farm site. Construction activities may case some temporary localised disturbance, potentially reducing breeding density within the site and temporarily reducing the availability of foraging habitat. Suitable habitats for kestrel are widespread in the surrounding landscape and are not unique to the Proposed Wind Farm site. However, given that breeding territories were recorded in proximity to works, the magnitude of the effect is assessed as medium.	The magnitude of the effect is assessed as medium, the cross tablature of a medium sensitivity species and medium impact corresponds to a **low effect significance**.	Likely short-term slight negative effect, which is **Not Significant.**
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated.	**No Effect**	**No Effect**
Displacement and Barrier Effect	As previously discussed kestrel are resident within the area and have two breeding territories that are partially located within the Proposed Wind Farm site. Raptor studies have generally found only low levels of turbine avoidance (Hötker *et al.*, 2006; Madders and Whitfield, 2006), with some species, such as kestrels, known to continue foraging activity close to turbines (Pearce-Higgins *et al.*, 2009). Two breeding territories were identified partially within the Proposed Wind Farm site, both were located along its periphery, with one confirmed, and one possible territory within 500m of a Proposed Turbine. Substantial areas of undisturbed suitable breeding and foraging habitat will remain both within the Proposed Wind Farm site and in the wider surroundings during the operational phase. Kestrel is also a wide ranging, generalist species that will hunt within a wide variety of habitats (e.g., agricultural grassland, open peatland, scrub) which are not scarce in the local area, or unique to the	The magnitude of the effect is assessed as medium. the cross tablature of a medium sensitivity species and medium impact corresponds to a **low effect significance**.	Likely long-term slight negative effect, which is **Not Significant.**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	Proposed Wind Farm. However, given that one breeding territory was recorded in proximity to a Proposed Turbine (~100m), the magnitude of the effect is assessed as medium. Servicing of the Proposed Wind Farm will not add significantly to the background levels of disturbance currently occurring in the area. The temporary disturbance of kestrel is possible throughout the Proposed Wind Farm site during the operational phase from disturbance by maintenance vehicles and personnel visits, particularly in the vicinity of the Proposed Turbines and access roads. However, the volume and frequency of such visits is considered to be very low and is likely to be generally minor in scale and short in duration when it occurs. Therefore, significant effects by maintenance crews along the access roads and other infrastructure (excluding the Proposed Turbines) are not anticipated. There is no evidence to suggest that the Proposed Wind Farm site lies on a regular commuting route for the species therefore a barrier effect is not anticipated.		
Collision Risk	The species was recorded flying within PCH during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated a 1.51 collisions per year over the operational lifetime of the Proposed Wind Farm. Annual mortality of adult kestrel has been calculated at 35% per annum (Orta *et al.,* 2020). If 1.51 collisions were to occur per year, it would mean that the losses at the Proposed Wind Farm would increase the annual mortality of the county population (c.285-289) by 1.49-1.51%. The predicted collision risk is low. No significant effects are anticipated.	The magnitude of the effect is assessed as low. The cross tablature of a medium sensitivity species and low impact corresponds to a **low** effect significance.	Likely long-term slight negative effect, which is **Not Significant.**
Decommissioning			

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Direct Habitat Loss	Direct or indirect effects are not anticipated.	**No Effect**	**No Effect**
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.5 Lapwing

The assessment of the impact of the Proposed 110kV Underground Cabling at the River Nore crossing on lapwing is detailed in Section 7.5.3.2

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	Lapwing were not observed within the Proposed Wind Farm site. No significant effects of direct habitat loss are anticipated at the Proposed Wind Farm site.	The magnitude of the effect is assessed as negligible. The cross tablature of a medium sensitivity species and negligible impact corresponds to a **very low** effect significance.	Likely long-term imperceptible negative effect which is **Not Significant.**
Disturbance	Lapwing were not found to be using the Proposed Wind Farm site, as such no significant effects of disturbance are anticipated at the Proposed Wind Farm site.	The magnitude of the effect is assessed as negligible. The cross tablature of a medium sensitivity species and negligible impact corresponds to a **very low** effect significance.	Likely short-term imperceptible negative effect which is **Not Significant.**
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated.	**No Effect**	**No Effect**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Displacement and Barrier Effect	Lapwing were not found to be using the Proposed Wind Farm site for activities such as foraging and roosting. As such no significant effects of displacement are anticipated at the Proposed Wind Farm site. There is no evidence to suggest that the Proposed Wind Farm site lies on a regular commuting route for the species therefore a significant barrier effect is not anticipated.	The magnitude of the effect is assessed as negligible. The cross tablature of a medium sensitivity species and negligible impact corresponds to a **very low** effect significance.	Likely long-term imperceptible negative effect which is **Not Significant.**
Collision Risk	The species was recorded flying within PCH during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated a 0.000119 collisions per year, or less than one bird over the operational lifetime of the Proposed Wind Farm. The predicted collision risk is negligible. No significant effects are anticipated.	The magnitude of the effect is assessed as negligible. The cross tablature of a medium sensitivity species and negligible impact corresponds to a **very low** effect significance.	Likely long-term constant imperceptible effect which is **Not Significant.**
Decommissioning			
Direct Habitat Loss	Direct or indirect effects are not anticipated.	**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 Snipe

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	Snipe were observed on 44 occasions over the three years of surveying at the Proposed Wind Farm site and surrounds, of these nine were within the Proposed Wind Farm site. Snipe were recorded within the Proposed Wind	The magnitude of the effect is assessed as low. The cross tablature of a medium sensitivity	Likely long-term constant slight negative effect which is **Not Significant.**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	Farm site, being flushed or flying and there was a concentration of flights in one area. Therefore, it is likely that they were foraging or roosting in this area. As well as this, there was a second area of concentrated activity, however this was on the hill to the west of the Proposed Wind Farm site and no habitat will be lost in this area. The land lost to the permanent infrastructure footprint is small (i.e. 16.6ha or 2.9% of the Proposed Wind Farm site) relative to the total area within the Proposed Wind Farm site. Substantial areas of undisturbed suitable roosting and foraging habitat will remain both within the Proposed Wind Farm site and in the wider surroundings post construction. Snipe, a waterbird species, were not recorded at the Proposed Grid Connection at the River Nore crossing. Therefore, it can be reasonably determined that no significant effects of direct habitat loss are anticipated at the Proposed Wind Farm site at the regional, national, international scale. No significant effects of direct habitat loss are anticipated at the River Nore cable crossing.	species and low impact corresponds to a **low** effect significance.	
Disturbance	As previously discussed, snipe were recorded within the Proposed Wind Farm site and in the surrounds. There was no evidence of breeding within the Proposed Wind Farm site, however it is likely individuals observed were roosting and foraging. Pearce-Higgins *et al.* (2012) found significant (53%) declines in snipe densities on wind farms during the construction phase, with no apparent recovery post-construction. Snipe were also shown by Pearce-Higgins *et al.* (2009) to exhibit significant avoidance of turbines extending to a distance of 400m, and there is also evidence of avoidance of access tracks. It is assumed that snipe will show similar avoidance of construction activity. As previously discussed, the main snipe activity was concentrated in two areas, one within the Proposed Wind Farm site and one outside. There is potential for temporary disturbance of	The magnitude of the effect is assessed as low. The cross tablature of a medium sensitivity species and low impact corresponds to a **low** effect significance.	Likely short-term constant slight negative effect which is **Not Significant.**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	roosting or foraging snipe within the Proposed Wind Farm site, however, the habitat used outside the Proposed Wind Farm site was greater than 500m from major works (Proposed Turbines), and there is a forestry creating an environmental barrier from the source of disturbance. There were infrequent observations of snipe within 500m of Proposed Turbines over the three years of surveying. Suitable areas of undisturbed habitat will remain both within the Proposed Wind Farm site and in the wider surroundings during construction. Therefore, it can be reasonably determined that no significant effects of disturbance are anticipated at the Proposed Wind Farm site at the regional, national or international level.		
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated.	**No Effect**	**No Effect**
Displacement and Barrier Effect	As previously discussed, snipe were recorded within the Proposed Wind Farm site and in the surrounds. Snipe were shown by Pearce-Higgins *et al.* (2009) to exhibit significant avoidance of turbines extending to a distance of 400m, and there is also evidence of avoidance of access tracks, leading to an expected 47.5% decline in abundance within 500m of the Proposed Turbines. Similarly, a review of 29 studies by Hötker *et al.* (2006) suggests that snipe will approach wind turbines to an average distance of 403m in non-breeding season. Due to the low level of snipe activity recorded within 500m of Proposed Turbines within the Proposed Wind Farm site over three years of survey, a significant effect of disturbance displacement during operation is not anticipated. Servicing of the Proposed Wind Farm will not add significantly to the background levels of disturbance currently occurring in the area. The temporary disturbance of snipe is possible throughout the Proposed Wind Farm site during the operational phase from disturbance by maintenance	The magnitude of the effect is assessed as low. The cross tablature of a medium sensitivity species and low impact corresponds to a **low** effect significance.	Likely long-term constant slight negative effect which is **Not Significant.**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	vehicles and personnel visits, particularly in the vicinity of the Proposed Turbines and access roads. However, the volume and frequency of such visits is considered to be very low and is likely to be generally minor in scale and short in duration when it occurs. Therefore, significant effects by maintenance crews along the access roads and other infrastructure (excluding the Proposed Turbines) are not anticipated. There is no evidence to suggest that the Proposed Wind Farm site lies on a regular commuting route for this species, therefore a significant barrier effect is not anticipated.		
Collision Risk	The species was recorded flying within PCH during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated a 0.0234 collisions per year, or less than one bird over the operational lifetime of the Proposed Wind Farm. The predicted collision risk is negligible. No significant effects are anticipated.	The magnitude of the effect is assessed as negligible. The cross tablature of a medium sensitivity species and negligible impact corresponds to a **very low** effect significance.	Likely long-term constant imperceptible negative effect which is **Not Significant.**
Decommissioning			
Direct Habitat Loss	Direct or indirect effects are not anticipated.	**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 Woodcock

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	Woodcock were observed on 94 occasions over the three years of surveying at the Proposed Wind Farm site and surrounds. Of these, there were 88 observations of woodcock roding, 85 of these were within forestry habitat in the Proposed Wind Farm site. The forestry in which the woodcock were recorded roding during breeding woodcock surveys is approximately 270ha. The area lost to the permanent infrastructure, plus the necessary felling around Proposed Turbines, amounts to 27.5ha or 10.9% of the woodcock territory. While an effect of direct habitat loss will occur at a local level, forestry is not unique to the wider surroundings and is not a scarce resource at the regional level. In addition, ultimately this is a commercial forestry that at will be harvested. At a regional, national and international level there is no significant effect predicted.	The magnitude of the effect is assessed as low. The cross tablature of a medium sensitivity species and low impact corresponds to a **low** effect significance.	Likely long-term constant slight negative effect which is **Not Significant.**
Disturbance	As previously discussed, woodcock were breeding within the Proposed Wind Farm site. The construction works could result in a temporary disturbance within and along the margins of the Proposed Wind Farm site. While an effect of disturbance will occur at a local level, forestry is not unique to the wider area and is not a scarce resource at the regional level. At a regional, national and international level there is no significant effect predicted.	The magnitude of the effect is assessed as low. The cross tablature of a medium sensitivity species and low impact corresponds to a **low** effect significance.	Likely short-term constant slight negative effect which is **Not Significant.**
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated.	**No Effect**	**No Effect**
Displacement and Barrier Effect	As previously discussed, woodcock were breeding within the Proposed Wind Farm site.	The magnitude of the effect is assessed as low. The cross tablature of a medium sensitivity	Likely long-term constant slight negative effect which is **Not Significant.**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	A study by Dorka *et al.* (2014) found that there was a reduction of breeding woodcock densities from 10 males/100ha to 1.2 males/100ha at 15 wind farms in Germany. This is an 88% reduction in display activity. These declines were attributed to the barrier effect of turbines and the effects of turbine noise on displaying woodcock. Engler *et al.* (2025) found that roding activity of woodcocks was significantly reduced at wind farm sites by around 59% (95% CI = 40–75%). Taking an average of these two figures, it can be estimated that there is potential for a 73.5% reduction in display activity by woodcock post construction. LAG VSW (2014) outline a displacement distance of 500m around operational turbines for breeding woodcock. The Proposed Wind Farm site may result in a measurable reduction in the number of breeding woodcock in the vicinity of the Proposed Turbines: a buffer of 500m from the Proposed Turbines would result in displacement from a large proportion of the forestry used by breeding woodcock within the Proposed Wind Farm site. While an effect of displacement will occur at a local level, forestry is not unique to the wider area and is not a scarce resource at the regional level. In addition, ultimately this is a commercial forestry that at will be harvested. At a regional, national and international level there is no significant effect predicted.	species and low impact corresponds to a **low** effect significance.	
Collision Risk	The species was recorded flying within PCH during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated a 0.00153 collisions per year, or less than one bird over the operational lifetime of the Proposed Wind Farm. The predicted collision risk is negligible. No significant effects are anticipated.	The magnitude of the effect is assessed as negligible. The cross tablature of a medium sensitivity species and negligible impact corresponds to a **very low** effect significance.	Likely long-term constant imperceptible effect which is **Not Significant.**
Decommissioning			
Direct Habitat Loss	Direct or indirect effects are not anticipated.	**No Effect**	**No Effect**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
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		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	Buzzard were observed frequently over the three years of surveying. There were three confirmed breeding sites identified, one of which was partially within the Proposed Wind Farm site (occupied in 2026). The second was approximately 1.2km from the Proposed Wind Farm site (occupied in 2021, 2022, and 2026). The third was approximately 1.5km from the Proposed Wind Farm site (occupied in 2022). In addition, there were two possible territories, one was partially within the Proposed Wind Farm site (from 2021 and 2026) and the other was approximately 1.5km away (from 2022 and 2026). Nests were confirmed at neither of these in any year. The land lost to the permanent infrastructure footprint is small (i.e., 16.6ha or 2.9% of the Proposed Wind Farm site) relative to the total area within the Proposed Wind Farm site. A section of road is proposed within one territory, but this is minor in scale. Substantial areas of undisturbed suitable breeding and foraging habitat will remain both within the Proposed Wind Farm site and in the wider surroundings post construction. Buzzard is a wide ranging, generalist species that will hunt within a wide variety of habitats (e.g., agricultural grassland, open peatland, scrub) which are not scarce in the local area, or unique to the Proposed Wind Farm site.	The magnitude of the effect is assessed as low. The cross tablature of a low sensitivity species and low impact corresponds to a **very low** effect significance.	Likely long-term constant imperceptible negative effect which is **Not Significant.**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	Therefore, it can be reasonably determined that no significant effects of habitat loss are anticipated at the Proposed Wind Farm site for buzzard at the regional, national and international scale.		
Disturbance	As previously discussed, buzzard were observed regularly in the area, breeding and foraging. Construction activities may case some temporary localised disturbance, potentially reducing breeding density within the site and temporarily reducing the availability of foraging habitat. Suitable habitats for buzzard are widespread in the surrounding landscape and are not unique to the Proposed Wind Farm site. However, given that breeding territories were recorded in proximity to works, the magnitude of the effect is assessed as medium.	The magnitude of the effect is assessed as medium. The cross tablature of a low sensitivity species and medium impact corresponds to a **very low** effect significance.	Likely short-term constant imperceptible negative effect which is **Not Significant.**
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated.	**No Effect**	**No Effect**
Displacement and Barrier Effect	As previously discussed, buzzard were observed regularly in the area, breeding and foraging. Pearce-Higgins *et al.* (2009) describes that buzzard has been found to show significant turbine avoidance extending to at least 500m. There was a single confirmed breeding territory identified within 500m of the Proposed Turbines, though the exact nest site was not located. Buzzard were observed in flight during vantage point surveys on 377 occasions, of these 130 flights were within 500m of the Proposed Turbines. Assuming the buzzards take avoidance action within 500m of turbines once operational, this will result in a reduction in the frequency of commuting/ foraging buzzard within the Proposed Wind Farm site. However, extensive suitable habitat is available in the wider landscape. Buzzard is a wide ranging, generalist species that will hunt within a wide variety of habitats (e.g., agricultural grassland, open peatland, scrub) which are not scarce in the local	The magnitude of the effect is assessed as medium. The cross tablature of a low sensitivity species and medium impact corresponds to a **very low** effect significance.	Likely long-term constant slight negative effect which is **Not Significant.**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	area, or unique to the Proposed Wind Farm site. However, given that one breeding territory was recorded in proximity to a Proposed Turbine (<100m), the magnitude of the effect is assessed as medium.		
Collision Risk	The species was recorded flying within PCH during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated at 1.06 collisions per year, over the operational lifetime of the Proposed Wind Farm. Annual mortality of adult buzzard has been calculated at 10% per annum (Kenward *et al.,* 2000). If 1.06 collisions were to occur per year, it would mean that the losses at the Proposed Wind Farm would increase the annual mortality of the county population (c.150-268 birds [75-134 pairs]) by 4-7%. The predicted collision risk is medium.	The magnitude of the effect is assessed as medium. the cross tablature of a low sensitivity species and medium impact corresponds to a **very low** effect significance.	Likely long-term imperceptible negative effect, which is **Not Significant.**
Decommissioning			
Direct Habitat Loss	Direct or indirect effects are not anticipated.	**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 Long-eared Owl

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	Long-eared owl were observed on only three occasions throughout the three years of surveying. Although long-eared owl was observed infrequently, given the nocturnal nature of this species it was likely under recorded during surveys and are resident. There were extensive woodcock surveys undertaken at the Proposed Wind Farm site in habitat that is also suitable for long-eared owl.	The magnitude of the effect is assessed as low. The cross tablature of a low sensitivity species and low impact	Likely long-term constant imperceptible negative effect which is **Not Significant.**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	During these surveys, which are conducted at dusk in May and June, and near where the observations of long-eared owl were, there were no records of any begging calls or other evidence of long-eared owl chicks. This suggests that although the species is likely under recorded, it is unlikely to be breeding within the Proposed Wind Farm site. The land lost to the permanent infrastructure footprint is small (i.e. 16.6ha or 2.9% of the Proposed Wind Farm site) relative to the total area within the Proposed Wind Farm site. Extensive suitable habitat is available in the wider landscape. While an effect of habitat loss may occur at a local level, forestry is not unique to the wider surroundings and is not a scarce resource at the regional level. In addition, ultimately this is a commercial forestry that at will be harvested. At a regional, national and international level there is no significant effect predicted.	corresponds to a **very low** effect significance.	
Disturbance	As previously discussed long-eared owl were observed on the Proposed Wind Farm site infrequently but were likely under recorded and are resident. Construction activities may case some temporary localised disturbance, potentially temporarily reducing the availability of foraging habitat. Suitable habitats for long-eared owl are widespread in the surrounding landscape and are not unique to the Proposed Wind Farm site. While an effect of disturbance may occur at a local level, forestry is not unique to the wider surroundings and is not a scarce resource at the regional level. At a regional, national and international level there is no significant effect predicted.	The magnitude of the effect is assessed as low. The cross tablature of a low sensitivity species and low impact corresponds to a **very low** effect significance.	Likely short-term constant imperceptible negative effect which is **Not Significant**
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated.	**No Effect**	**No Effect**
Displacement and Barrier Effect	As previously discussed, long-eared owl were observed on the Proposed Wind Farm site infrequently but were likely under recorded and are resident. No nest sites were identified, nor were any territories.	The magnitude of the effect is assessed as low. The cross tablature of a low sensitivity species and low impact	Likely long-term constant imperceptible negative effect which is **Not Significant**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	There is no evidence to suggest that the Proposed Wind Farm site lies on a regular commuting route for the species therefore barrier effect is not anticipated. While an effect of displacement may occur at a local level, forestry is not unique to the wider area and is not a scarce resource at the regional level. In addition, ultimately this is a commercial forestry that at will be harvested. At a regional, national and international level there is no significant effect predicted.	corresponds to a **very low** effect significance.	
Collision Risk	This species was not recorded flying at PCH during the extensive vantage point survey work undertaken. Collision related mortality is not likely to significantly impact this species, based on available data.	**No Effect**	**No Effect**
Decommissioning			
Direct Habitat Loss	Direct or indirect effects are not anticipated.	**No Effect**	**No Effect**
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.2.11 Sparrowhawk

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	Sparrowhawk were observed on 125 occasions over the three years of surveying within or in the surrounds of the Proposed Wind Farm site. Observations included breeding activities and birds hunting. There was one confirmed breeding site broadly identified as the conifer plantation within the Proposed Wind Farm site (occupied in 2021 and 2022, and possibly in 2026).	The magnitude of the effect is assessed as low. The cross tablature of a low sensitivity species and low impact corresponds to a **very low** effect significance.	Likely long-term constant imperceptible negative effect which is **Not Significant**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	Of the conifer plantation within the Proposed Wind Farm site, the area lost to the permanent infrastructure, plus the necessary felling around Proposed Turbines, amounts to 27.5ha or 10.9% of the forestry. However, sparrowhawk is a wide ranging, generalist species that will hunt within a wide variety of habitats (e.g. agricultural grassland, open peatland, scrub) which are not scarce in the local area, or unique to the Proposed Wind Farm site. Substantial areas of undisturbed suitable breeding and foraging habitat will remain both within the Proposed Wind Farm site and in the wider surroundings post construction. While an effect of habitat loss may occur at a local level, forestry is not unique to the wider surroundings and is not a scarce resource at the regional level. In addition, ultimately this is a commercial forestry that at will be harvested. At a regional, national and international level there is no significant effect predicted.		
Disturbance	As previously discussed, sparrowhawk were observed regularly in the area, breeding and foraging. Construction activities may case some temporary localised disturbance, potentially reducing breeding density within the site and temporarily reducing the availability of foraging habitat. Suitable habitats for sparrowhawk are widespread in the surrounding landscape and are not unique to the Proposed Wind Farm site. While an effect of disturbance may occur at a local level, forestry is not unique to the wider surroundings and is not a scarce resource at the regional level. At a regional, national and international level there is no significant effect predicted.	The magnitude of the effect is assessed as low. The cross tablature of a low sensitivity species and low impact corresponds to a **very low** effect significance.	Likely short-term constant imperceptible negative effect which is **Not Significant**
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated.	**No Effect**	**No Effect**
Displacement and Barrier Effect	As previously discussed, the Proposed Wind Farm site supports breeding and foraging sparrowhawk. Displacement from operational wind turbines is not reported for sparrowhawk, however, it is assumed for the purposes of this	The magnitude of the effect is assessed as low. The cross tablature of a low sensitivity species and low impact	Likely long-term constant imperceptible negative effect which is **Not Significant**

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	assessment that sparrowhawk show avoidance to a distance of 500m from turbines similar to other raptors (Pearce-Higgins *et al.*, 2009). The breeding territory broadly identified on the Proposed Wind Farm site is within 500m of Proposed Turbines (however, this is a large area of forestry (approximately 251ha) and an exact nest site was never located).. Sparrowhawk is a wide ranging, generalist species that will hunt within a wide variety of habitats (e.g. agricultural grassland, open peatland, scrub) which are not scarce in the local area, or unique to the Proposed Wind Farm site. While an effect of displacement may occur at a local level, forestry is not unique to the wider surroundings and is not a scarce resource at the regional level. In addition, ultimately this is a commercial forestry that at will be harvested. At a regional, national and international level there is no significant effect predicted. There is no evidence to suggest that the Proposed Wind Farm site lies on a regular commuting route for the species therefore barrier effect is not anticipated. Therefore, it can be reasonably determined that no significant barrier effects or displacement are anticipated at the Proposed Wind Farm site for sparrowhawk.	corresponds to a **very low** effect significance.	
Collision Risk	The species was recorded flying within PCH during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated at 0.0615 collisions per year, or three birds over the operational lifetime of the Proposed Wind Farm. Annual mortality of adult sparrowhawk has been calculated at 31% per annum (Newton, 1986). If 0.0615 collisions were to occur per year, it would mean that the losses at the Proposed Wind Farm would increase the annual mortality of the county population (c.448) by 0.044%. The predicted collision risk is negligible.	The magnitude of the effect is assessed as negligible. the cross tablature 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			

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Direct Habitat Loss	Direct or indirect effects are not anticipated.	**No Effect**	**No Effect**
Disturbance	As above for the construction phase.	As above for the construction phase.	As above for the construction phase.

7.5.3 Likely Effects Associated with the Proposed Grid Connection

It is proposed to construct a 110kV electricity substation within the Proposed Wind Farm site. The Proposed 110kV Substation is located within agricultural pastural land and will be accessed via the Proposed Wind Farm access roads.

Further details regarding the Proposed Grid Connection are provided in Chapter 4 Section 4.8.2.

Kingfisher and lapwing were found to be using the area where the Proposed 110kV Underground Cabling crosses the River Nore. The impact of the construction works and the operational phase of the Proposed 110kV Underground Cabling at this location for these species are discussed in detail below.

Required works on the remaining sections of the route are minor and are all located within the existing road corridor (full details in Chapter 15 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 other KORs (excluding kingfisher and lapwing, which are discussed individually below) is assessed as no greater than **low** (Percival, 2003) or a Likely short-term slight negative effect which is **Not Significant.** (EPA, 2022).

7.5.3.1 Kingfisher

Construction Phase (Habitat Loss)

Kingfisher were observed along the River Nore where the Proposed 110kV Underground Cabling crosses the channel. There was evidence that kingfisher may have been breeding along the watercourse when an individual was observed flying downstream carrying prey, and on another occasion when a bird alarm called. Kingfisher have been found to forage 1.5km – 4km from their nest site (O'Clery and Lusby, 2015). However, the surveyor also noted that the riparian habitat at the location of the Proposed 110kV Underground Cabling River Nore crossing was not suitable for kingfisher nesting and there was no evidence of a nest site in this area. Therefore, while kingfisher are likely breeding somewhere in this area, there is no evidence to suggest a nest in proximity to the crossing point. The cable will pass beneath the River Nore via a horizontal directional drilling mechanism and there will be no disturbance to the riverbanks. Full details can be found in Chapter 4 Section 4.3.2.4, and Section 4.8.2. Therefore, it can be reasonably determined that **no significant effects** of direct habitat loss are anticipated at the River Nore crossing following Percival (2003) and EPA (2022).

Construction Phase (Disturbance)

As previously discussed, kingfisher were found to be utilising the River Nore at the location of the Proposed 110kV Underground Cabling. The Proposed 110kV Underground Cabling will pass beneath the River Nore via a horizontal directional drilling mechanism, this will limit the potential disturbance of noise and vibration, and there will be no disturbance to the riverbanks. The construction phase at this location will likely cause some level of disturbance for this species at the river crossing. This will be temporary and limited to the point where the Proposed 110kV Underground Cabling crosses the River Nore. However, kingfisher utilise up to 4km of a watercourse for foraging and were recorded carrying prey (O'Clery and Lusby, 2015). If works were to take place during the breeding season, there is potential for disturbance to breeding birds. In the absence of mitigation, on a highly precautionary basis the magnitude of the disturbance during the construction phase is assessed as low. This corresponds to a **Medium** (Percival, 2003) or a **likely moderate negative effect** (EPA, 2022). As such, measures detailed in Section 7.6 are proposed to mitigate this effect.

Operational Phase (Displacement and Barrier)

As previously discussed, kingfisher were found to be utilising the River Nore at the Proposed 110kV Underground Cabling river crossing. The Proposed Grid Connection is completely underground, and will require no future servicing once operational. Therefore, it can be reasonably determined that **no significant effects** of displacement and barrier effects are anticipated at the River Nore crossing following Percival (2003) and EPA (2022).

7.5.3.2 Lapwing

Construction Phase (Habitat Loss)

On one occasion lapwing were observed roosting near the Proposed 110kV Underground Cabling at the River Nore river crossing. The cable will pass beneath the River Nore via a horizontal directional drilling mechanism and there will be no disturbance to the riverbanks. Therefore, it can be reasonably determined that **no significant effects** of direct habitat loss are anticipated at the River Nore crossing following Percival (2003) and EPA (2022).

Construction Phase (Disturbance)

On one occasion lapwing were observed roosting near the Proposed 110kV Underground Cabling at the River Nore river crossing. Due to the infrequency of which lapwing were using the habitats in proximity to the Proposed 110kV Underground Cabling the potential for disturbance during construction is limited. The cable will also pass beneath the River Nore via a horizontal directional drilling mechanism, this will limit the potential disturbance of noise and vibration, and there will be no disturbance to the riverbanks. Disturbance for the construction phase is assessed as **low** (Percival, 2003) or a Likely short-term slight negative effect which is **Not Significant**. (EPA, 2022).

Operational Phase (Displacement and Barrier)

On one occasion lapwing were observed roosting near the Proposed 110kV Underground Cabling at the River Nore river crossing Proposed 110kV Underground Cabling is completely underground, and will require no future servicing once operational. Therefore, it can be reasonably determined that **no significant effects** of displacement and barrier effects are anticipated at the River Nore crossing following Percival (2003) and EPA (2022).

7.5.4 Likely Effects Associated with the Turbine Delivery Route

Temporary junction accommodation for abnormal loads will be required, however these works are minor in scale and are located within the existing road corridor (full details in Chapter 15 of this EIAR). Temporary accommodation works are proposed at the junction of R693-R435 Regional Roads in the townlands of Balief Lower and Balief Upper, Co. Kilkenny. Upon the completion of the turbine component delivery phase, the accommodation area will be covered with a layer of topsoil and reseeded. The trees that were removed during the construction phase will be replanted.

The Loughans SAC is within 200m of the proposed works at the junction of R693-R435 Regional Roads. Waterbirds were recorded using the turlough within this SAC, approximately 370m from these proposed works. Temporary accommodation works have the potential for short-term disturbance to the species present. The works will be supervised by an Ecological Clerk of Works to ensure that best practice noise mitigation measures as outlined in Section 7.6 below are followed. The other temporary accommodation works locations along the route do not have the potential to support other species of conservation interest in the area. Given that the works are minor in scale and temporary in nature, the

effect significance for all KORs is assessed as no greater than **Low** (Percival, 2003) or a Likely temporary slight negative effect which is **Not Significant.** (EPA, 2022).

7.5.5 Likely Effects on 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 Wind Farm. The screening identified and assessed a potential pathway for adverse effects on River Nore SPA. Following the screening, a Natura Impact Statement was prepared which concluded that:

'Therefore, it can be objectively concluded 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.

7.6 Mitigation and Best Practice Measures

This section describes the measures that are in place to mitigate negative effects associated with the Proposed Project on ornithological receptors. Effects on ornithological receptors have been addressed through the design of the Proposed Wind Farm site, a Construction and Environmental Management Plan (CEMP) (Appendix 4-3), and targeted mitigation measures. 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 ornithological receptors:

- Hard standing areas have been designed to the minimum size necessary to accommodate the turbine model that is selected.
- The Proposed 110kV Underground Cabling has been selected to utilise built infrastructure for the majority of its length (i.e., cables to be laid within public roads). Cables will be laid underground 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 Chapter 4 and Appendix 4-3 of this EIAR. Note that the majority of these measures are proposed as industry best practice rather than to mitigate any identified significant effect and will be updated as required to address any conditions of a permission or findings of any pre-construction survey results. Measures specific to birds are detailed below:

- Works will commence outside the bird nesting season (1st of March to 31st of August inclusive). Any requirement for construction works to run into the subsequent breeding season following commencement will be informed by pre-construction bird surveys.
- The removal of woody vegetation will be undertaken in full compliance with Section 40 of the Wildlife Act 1976 – 2022. Where sections of woody vegetation are removed for the purposes of the junction and road upgrades, these will be replaced with suitable hedge/tree species which are common in the local context.
- During the construction phase an Ecological Clerk of Works will monitor noise limits, noise control measures, hours of operation (i.e. dusk and dawn is high faunal activity time). 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.

- Silt fences will be installed as an additional water protection measure around existing watercourses.
- A pre-construction bird survey at the Proposed Wind Farm and the River Nore will be organised to ensure that any sensitive 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 (including breeding kingfisher at the River Nore) 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. In addition, the foraging routes of breeding kingfisher at the River Nore will be monitored and if works are found to interfere with adults provisioning dependent young, works will cease within a species-specific buffer of foraging routes until it can be demonstrated that the nest is no longer occupied.

7.6.3 Mitigation Measures

Mitigation measures to preserve water quality in the River Nore SAC are outlined in Chapter 9 and will by nature of preserving water quality and habitat quality will keep the habitats suitable for the resident avian populations. Mitigation measures specific to avian species are outlined below.

Kingfisher

Kingfisher are dependent on riparian habitats for foraging and breeding, with breeding pairs potentially utilising stretches of watercourse extending up to 4km from their nesting sites (O'Clery and Lusby, 2015). Construction activities at the River Nore crossing during the breeding season could result in noise, vibration and increased human activity, potentially causing temporary disturbance for foraging kingfisher at the affected section of the river. Where nesting kingfisher occur within the surrounding river corridor, disturbance associated with construction activities could temporarily restrict access to suitable foraging habitat within their established territories. This may potentially affect their ability to provision dependent young.

To minimise the potential for disturbance to breeding kingfisher, construction works at the River Nore crossing will be undertaken outside the core breeding season (April to July, inclusive). In addition, targeted kingfisher surveys will be undertaken at the Proposed 110kV Underground Cabling crossing of the River Nore if the works are to commence here between February and September. This precautionary period accounts for early courtship and the potential for multiple/late broods. Full details are provided in Appendix 7-7.

Through the implementation of seasonal restrictions and pre-construction surveys, the potential for disturbance to breeding kingfisher will be minimised.

7.6.4 Residual Effects

If the mitigation measures described in Section 7.6 are implemented, disturbance to kingfisher at the River Nore crossing during the construction phase is assessed as **Low** (Percival, 2003) or a Likely short-term slight negative effect which is **Not Significant**. (EPA, 2022).

Thus, 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,** as per EPA (2022) criteria, was identified for any KOR. Taking into consideration the effect significance levels identified and the proposed best practice and mitigation, significant residual

effects on the KORs with regard to direct habitat loss, disturbance/displacement or collision mortality are not anticipated.

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:

- Kilkenny City and County Development Plan 2021-2027
- Ireland's 4th National Biodiversity Action Plan 2023 – 2027
- Regional Spatial & Economic Strategy for the Southern Region 2020-2032
- Kilkenny Biodiversity Action Plan 2025-2030

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

Kilkenny City and County Development Plan 2021-2027

The Kilkenny City and County Development Plan 2021–2027, effective from 15 October 2021, incorporates the protection of birds through a framework of biodiversity conservation, green infrastructure planning, and compliance with European and national environmental legislation. The Plan recognises the importance of protecting designated sites, protected species and the wider network of habitats supporting birds.

The Plan includes objectives and requirements to:

- Protect SPAs, SACs, NHAs, proposed NHAs, Statutory Nature Reserves and Wildfowl Sanctuaries from inappropriate development.
- Avoid and mitigate effects on protected species and their habitats, including through ecological impact assessment where required.
- Ensure that plans and projects likely to significantly affect a European site are subject to Appropriate Assessment.
- Maintain and enhance ecological connectivity through green infrastructure, river corridors, hedgerows, and other stepping-stone habitats.
- Protect woodlands, trees, hedgerows, rivers, riparian areas, wetlands, and peatlands that provide feeding, breeding, roosting, and commuting habitat for birds.
- Protect existing breeding sites and, where appropriate, incorporate biodiversity measures such as Swift and Barn Owl boxes into new development.

The Plan identifies the River Nore SPA as the principal European site in County Kilkenny designated specifically for birds. The SPA supports Kingfisher as its Special Conservation Interest. The Plan states that the protection of the integrity of European sites takes precedence over other Plan provisions and requires potential direct, indirect, and cumulative effects to be considered.

The associated Natura Impact Report (NIR) considers potential effects on European sites arising from habitat loss and fragmentation, disturbance, lighting, recreational activity, and changes in water quality. Following the incorporation of avoidance and mitigation measures, it concludes that implementation of

the Plan is not expected to significantly affect the integrity of European sites, either alone or in combination with other plans or projects.

The Strategic Environmental Assessment (SEA) Statement establishes environmental targets including no loss of important or designated habitats, no deterioration in protected areas and no loss of protected species. It also provides for monitoring of protected habitats and species, biodiversity actions, and water quality.

Birds are therefore integrated into the Kilkenny planning framework primarily through the protection of the River Nore SPA and other designated sites, Appropriate Assessment requirements, the safeguarding of protected species and breeding sites, and the conservation and enhancement of the habitats and ecological networks upon which bird populations depend.

4th National Biodiversity Action Plan 2023-2030

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

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

Regional Spatial & Economic Strategy for the Southern Region 2020-2032

The Regional Spatial and Economic Strategy for the Southern Region 2020–2032 (RSES), which came into effect on 31 January 2020, provides a long-term strategic planning and economic development framework for the Southern Region, including County Kilkenny. The RSES incorporates the protection of birds through a framework of biodiversity conservation, green infrastructure planning, ecological connectivity and compliance with European and national environmental legislation. Chapter 5 (Environment) recognises the importance of protecting designated sites, maintaining ecological networks and conserving habitats that support biodiversity, including bird species.

The RSES includes objectives to:

- Protect the Natura 2000 network, including Special Protection Areas (SPAs) and Special Areas of Conservation (SACs), from adverse effects arising from development (RPO 1).
- Ensure that population growth and development have regard to environmental sensitivities, including European sites and their conservation objectives and qualifying interests (RPO 5).
- Protect and enhance biodiversity and environmentally sensitive habitats, including through the integration of biodiversity considerations into flood risk management (RPO 117).

- Protect and enhance green infrastructure, ecological corridors and networks connecting areas of high conservation value, including woodlands, hedgerows, watercourses and wetlands (RPO 124).
- Support green infrastructure corridors and improve ecological connectivity throughout the region (RPO 125).
- Promote biodiversity protection and habitat connectivity within and outside designated areas, including through the implementation of local and national biodiversity action plans (RPO 126).

The RSES recognises the importance of maintaining and enhancing the region's natural heritage, including wetlands, woodlands, rivers, hedgerows and other habitats of ecological value. These habitats provide feeding, breeding, nesting and roosting opportunities for bird species, while ecological corridors facilitate movement between suitable habitats. The Strategy also recognises the importance of protecting biodiversity outside designated conservation sites and integrating green infrastructure and ecosystem services into regional planning. The protection and enhancement of these habitats provide indirect benefits to bird populations through the maintenance of suitable habitat and ecological connectivity.

The environmental assessments accompanying the RSES, including the SEA Statement and NIR, establish environmental protection objectives that seek to avoid adverse effects on biodiversity, maintain ecological integrity and protect European sites and their qualifying interests and special conservation interests. The Appropriate Assessment Determination concluded that implementation of the RSES would not adversely affect the integrity of any European site, either individually or in combination with other plans or projects. This conclusion was reached having regard to the mitigation measures incorporated into the Strategy and the requirement for appropriate environmental assessment of subsequent plans and projects.

Birds are therefore integrated into the RSES through the protection of SPAs and other designated sites, the application of Appropriate Assessment requirements, the conservation and enhancement of habitats supporting breeding, wintering and migratory birds, the protection of ecological corridors and green infrastructure networks, and the broader objective of maintaining biodiversity and ecosystem function throughout the Southern Region.

Kilkenny Biodiversity Action Plan 2025-2030

The Kilkenny County Biodiversity Action Plan 2025–2030 provides a county-wide framework for the protection, conservation, and restoration of biodiversity, including bird species and the habitats on which they depend. The plan recognises the requirements of the EU Birds Directive, including the designation of Special Protection Areas for important bird populations. It also seeks to halt biodiversity loss by restoring habitats, improving ecological connectivity, and incorporating biodiversity considerations into local authority activities and decision-making.

The plan addresses a range of habitats important for birds, including river valleys, wetlands, estuarine habitats, grasslands, woodlands, hedgerows, and urban environments. These habitats provide feeding, breeding, nesting, and roosting opportunities for resident and migratory birds. River valleys are identified as important corridors for species such as sand martin and curlew, while wetlands and estuarine habitats support lapwing, wild swans, wintering shorebirds, and waders. Hedgerows provide food, shelter, nesting habitat, and movement corridors, while buildings provide nesting sites for species such as swift, swallow and barn owl.

Strategic actions within the plan include:

- Protect and restore important habitats, including wetlands, hedgerows, ancient woodlands, semi-natural grasslands, and riparian areas.
- Map, protect and enhance green, blue corridors, and restore ecological connectivity between biodiversity-rich sites.

- Identify and map non-designated sites of local biodiversity importance to support their consideration within planning and development.
- Improve biodiversity knowledge through habitat surveys, species monitoring, mapping, citizen science, and the integration of ecological information into decision-making.
- Record and monitor protected species and species of conservation concern and promote the findings of surveys to safeguard their habitats.

Beyond designated sites, the plan supports bird populations through the review of the County Kilkenny Wetland Survey, an audit of the county's hedgerows, improved management of public grasslands and open spaces, and the restoration of ecological corridors. It also recognises previous county surveys of swift, barn owl and nightjar and identifies the protection of swift and barn owl nesting sites as important for supporting these species and reversing population declines.

Birds are therefore integrated into the Kilkenny County Biodiversity Action Plan through the protection and restoration of bird habitats and nesting sites, improved ecological connectivity, monitoring of protected species and wider actions intended to embed biodiversity conservation within planning, public-land management, and community activity throughout the county.

7.7.2 Projects Considered in the Assessment

7.7.2.1 Developments

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 an/or alteration of one-off rural housing and the provision and/or alteration of agricultural buildings. These planning applications are outlined in full in Appendix 2-3. Owing to the scale and nature of these developments, significant cumulative impacts are not anticipated.

7.7.2.2 Forestry and Agricultural Practices

The wider surroundings of the Proposed Wind Farm site primarily consist of land managed for agriculture in the form of livestock grazing and commercial conifer plantations, both of low ecological value. The forestry works (felling/planting) associated with the forestry in the wider surroundings of the Proposed Project will be subject to relevant licencing and guidance from the Forestry Service. These land-uses have been taken into account in this cumulative assessment. Each of these habitat types (agricultural land and forestry) are discussed relative to each KOR in Section 7.7.3 below.

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

7.7.2.3 Other Wind Farm Developments

Wind Farm projects within 25km of the Proposed Wind Farm site are provided in Table 7 14, including details of their planning status, number of turbines and distance from the Proposed Wind Farm site. Each wind Farm is discussed individually in the following sections.

Table 7-14 Wind Farm developments within 25km of the Proposed Wind Farm site

Wind Farm	Planning Status	Number of Turbines	Separation Distance (turbine to turbine)
Gathabawn Wind Farm	Proposed	12	2.4 km
Lisdowney Wind Farm	Existing	4	4.5 km

Wind Farm	Planning Status	Number of Turbines	Separation Distance (turbine to turbine)
Ballybay Wind Farm	Existing	6	8.4 km
Seskin Renewables Wind Farm	Proposed	8	8.9 km
Lisheen Wind Farm III	Existing	8	9.8 km
Foyle Wind Farm Extension	Permitted	3	9.9 km
An Cnoc Wind Farm	Existing	5	10.1 km
Foyle Wind Farm	Existing	4	10.4 km
Bruckana Wind Farm	Existing	14	10.6 km
Lisheen Wind Farm II	Existing	12	10.8 km
Briskalagh Wind Farm	Permitted	7	10.8 km
Lisheen Wind Farm I	Existing	18	11.5 km
Littleton Wind Farm	Proposed	11	13.3 km
Farranrory Wind Farm	Permitted	9	13.4 km
Gurteen Lower Single Wind Turbine	Existing	1	14.1 km
Ballynalacken Wind Farm	Permitted	12	14.7 km
Ballincurry Wind Farm	Existing	2	18.9 km
Pinewoods Wind Farm	Permitted	11	20.1 km
Brittas Wind Farm	Permitted	10	20.2 km
Loan Single Wind Turbine	Proposed	1	20.8 km
Borrisbeg Wind Farm	Permitted	9	21.4 km
Monaincha Wind Farm	Existing	10	24.1 km
Monaincha Wind Farm Extension	Existing	5	24.7 km
White Hill Wind Farm	Permitted	5	25.0 km

Gathabawn Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside Gathabawn Wind Farm, which is c.2.4km from the nearest Proposed Turbine, was considered. The planning files[7] were reviewed on the An Coimisiún Pleanála website, and the EIAR was reviewed. This section summarises the information outlined within the EIAR for the Gathabawn Wind Farm.

The EIAR concluded that habitat loss for bird receptors would not result in significant effects. Suitable habitat for waders within the wind farm site was principally improved agricultural grassland, and its loss was considered to represent a low/negligible magnitude effect due to the widespread availability of comparable habitat in the surrounding landscape. No direct loss of suitable woodcock habitat was predicted. Disturbance and displacement effects on birds of prey during construction were assessed as not significant, while operational disturbance/displacement was assessed as slight and not significant. Disturbance/displacement effects on waders were similarly assessed as negligible to low and not

[7] https://www.pleanala.ie/en-ie/case/315157

significant, with the habitats within and surrounding the wind farm considered sub-optimal for sensitive waders such as golden plover.

Collision risk modelling predicted annual collision rates of 4.2 buzzard, 1.6 kestrel, 0.2 peregrine, 0.1 sparrowhawk, 12.3 golden plover, 0.1 lapwing and <0.05 snipe. The comparatively high predicted collision rate for golden plover was strongly influenced by a single migratory flock of approximately 220 birds recorded on 24 March 2023, which accounted for approximately 99% of the flight time used in the model; excluding this flight would reduce the estimated collision rate to approximately 0.1 birds per annum. The EIAR nevertheless retained the flock within the assessment and identified a risk of a slight significant effect for golden plover prior to mitigation. Collision effects on the other assessed bird receptors were not considered significant.

Mitigation includes maintaining a 50m buffer between turbine blade tips and trees and hedgerows and managing vegetation and sward height within these areas to reduce their suitability as foraging habitat for birds of prey. Confirmatory bird activity surveys and fatality monitoring are proposed during the operational phase, including carcass searches and assessment of carcass removal and detection efficiency. With implementation of these measures, residual collision effects were assessed as not significant for kestrel and neutral for buzzard, peregrine and sparrowhawk, while the residual effect on golden plover was assessed as not significant.

The Gathabawn Wind Farm EIAR concluded that:

"the collective cumulative impact of the Whole Gathabawn Windfarm Project and the Other Projects on Biodiversity in consideration of the mitigation measures stated, will not be significant."

Lisdowney Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside Lisdowney Wind Farm, which is c.4.5km from the nearest Proposed Turbine, was considered. The planning files[8] were reviewed on the Kilkenny County Council website and the EIS was reviewed. This section summarises the information outlined within the EIS for the Lisdowney Wind Farm.

An ecological field assessment of the site was conducted on the 2nd of April 2007, and a second visit was conducted in July 2011. The avian assemblage was considered typical of open Farmland and hedgerow habitats. Species considered in greater detail included peregrine falcon, buzzard, hen harrier, kestrel, sparrowhawk, skylark, meadow pipit, and snipe. There were no records of hen harrier in the vicinity, while the nearest known peregrine falcon nesting locations were over 10km from the Lisdowney Wind Farm. The site was considered generally unsuitable for wintering lapwing, golden plover, curlew, swans, geese, and ducks.

Habitat loss was considered unlikely to be significant because the development occupied a small proportion of the available habitat and extensive areas of similar habitat occurred nearby. Construction disturbance was considered potentially capable of affecting breeding skylark and meadow pipit, although any effect on their populations was not considered significant. Disturbance to peregrine falcon, hen harrier, buzzard, and sparrowhawk was not anticipated because these species were not known to nest near the site. Collision risk was considered low for peregrine falcon, buzzard, hen harrier, kestrel, sparrowhawk, skylark, meadow pipit and snipe, and any associated mortality was not expected to significantly affect their populations. No project-specific bird mitigation measures or cumulative ornithological assessment were identified in the information reviewed.

The Lisdowney Wind Farm EIS concluded that:

'*The EIS concluded no significant effects on these species due to habitat loss, collisions or disturbance.*'

[8] https://idocsweb.kilkenny.ie/ViewFiles.aspx?docid=150813&format=jpeg

Ballybay Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside Ballybay Wind Farm, which is c.8.4km from the nearest Proposed Turbine, was considered. The planning files[9] were reviewed on the Kilkenny County Council website and the EIS was reviewed. The planning files confirm that an EIS accompanied the application; however, the EIS was not available to view online. Consequently, detailed information on the ornithological surveys undertaken, key ornithological receptors identified and predicted effects could not be reviewed.

Seskin Renewables Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside the proposed Seskin Renewables Wind Farm, which is c.8.9km from the nearest Proposed Turbine, was considered. The planning files[10] were reviewed on the Kilkenny County Council website and the EIAR was reviewed. This section summarises the information outlined within the EIAR for the Seskin Wind Farm.

Ornithology surveys were conducted at the Seskin Renewables Wind Farm between October 2021 and September 2023. The following key ornithological receptors were identified and assessed for impacts: golden plover, peregrine, whooper swan, kestrel, snipe, buzzard, and sparrowhawk.

Habitat loss was assessed to be a low effect significance for golden plover, peregrine, kestrel, snipe, buzzard and sparrowhawk, and a very low effect significance for whooper swan. Disturbance/displacement was assessed to be a low effect significance for golden plover, peregrine, whooper swan, kestrel, snipe, buzzard, and sparrowhawk. Collision risk was assessed to be a low effect significance for golden plover (0.29 collisions per year), kestrel (0.49 collisions per year) and buzzard (1.2 collisions per year), and a very low effect significance for peregrine (0.003 collisions per year), whooper swan (0.02 collisions per year), snipe (0.006 collisions per year) and sparrowhawk (0.05 collisions per year).

A cumulative assessment was undertaken as part of the Seskin Renewables Wind Farm EIAR, with other plans and projects, including other wind farms, within 25km. Cumulative construction disturbance was considered highly unlikely to result in significant effects, and no significant cumulative habitat loss, displacement or collision-risk effects were predicted for the key ornithological receptors.

Mitigation measures to avoid significant impacts include undertaking works outside the bird nesting season, pre-construction surveys and species-specific buffers around active nests or roosts and completing works beneath the River Nore outside the kingfisher breeding season, with collision monitoring and bird surveys during operation.

The Seskin Renewables Wind Farm EIAR concluded that:

'Following consideration of the residual effects (post-mitigation), it is concluded that the Proposed Development will not result in any significant effects on any of the identified Key Ornithological Receptors.'

Lisheen Wind Farm III

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside Lisheen Wind Farm III, which is c.9.8km from the nearest Proposed Turbine, was considered. The

[9] https://planning.kilkennycoco.ie/AppFileRefDetails/021072/0
[10] https://planning.kilkennycoco.ie/AppFileRefDetails/2560418/0

Ornithological surveys relevant to Lisheen Wind Farm III were undertaken in August 2012 and between August and December 2013, with earlier surveys of adjacent cutover bog undertaken in 2009 and 2010 also informing the assessment. Species of note recorded during surveys included peregrine, swallow, and spotted flycatcher. It was noted that "*due to the highly managed nature of much of the proposed development site, the site is generally unsuitable for a number of rarer, sensitive bird species including red grouse, curlew, and lapwing. The site is unsuitable for breeding hen harrier. No wintering hen harriers were noted during surveys.*"

Construction effects on birds were assessed as imperceptible. Operational effects were assessed as minor, reflecting the likelihood of occasional collision mortality, particularly involving raptors, but no significant flight paths or important concentrations of sensitive species were identified. Operational collision effects were therefore considered likely to be minor or less.

Mitigation measures included undertaking tree removal or trimming outside the bird breeding season, reducing light spill, and avoiding white aviation lighting that could attract nocturnal migrants. Annual bird surveys during construction and the first two years of operation were recommended, including breeding and winter bird surveys, vantage-point watches and collision monitoring. The cumulative assessment considered Lisheen I, Lisheen II and Bruckana Wind Farms. Monitoring at the existing Lisheen developments had identified minor, localised collision mortality involving relatively common species, including kestrel, sparrowhawk, and buzzard. Cumulative effects on birds were consequently assessed as minor at the local scale, with no significant cumulative effects anticipated.

The Lisheen Wind Farm III EIS concluded that:

'It is considered that cumulative impacts to bats and birds are likely to be minor at a local scale based on this existing data.'

Foyle Wind Farm Extension

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside the Foyle Wind Farm Extension, which is c.9.9km from the nearest Proposed Turbine, was considered. The planning files[12][13] were reviewed on the Kilkenny County Council website and the EIS was reviewed. This section summarises the information outlined within the EISs for the Foyle Wind Farm Extension. The Foyle Wind Farm Extension comprises three turbines: a single turbine at Killeen and two turbines forming the Kyleballyoughter Wind Farm. These turbines adjoin the existing four-turbine Foyle Wind Farm. This section summarises the ornithological information presented in the two EISs.

General ecological field surveys of the Killeen turbine site were undertaken on 8 June, 4 September, and 9 October 2015, with the grid-connection route surveyed on 24 October 2014. The Kyleballyoughter site was surveyed on 28 April and 25 August 2016, with part of the site also visited on 24 October 2014. These were general ecological surveys rather than dedicated multi-season ornithological surveys. Recorded bird activity was limited to commonly occurring passerines, hooded crow, and barn swallow. The bird assemblages were assessed as being of Low Local Importance and low sensitivity to wind-farm development, and no project-specific KORs were identified.

Habitat-loss, disturbance/displacement, and collision effects on birds were assessed as not significant. No quantitative collision-risk modelling was undertaken. The cumulative assessments predicted only a non-significant increase in collision risk for common bird species and did not identify cumulative barrier or habitat-displacement effects. Bird-related mitigation comprised undertaking hedgerow removal outside the nesting season, defined as 1 March to 31 August.

The Foyle Wind Farm Extension EISs concluded that:

[12] https://planning.kilkennycoco.ie/AppFileRefDetails/16666/0
[13] https://planning.kilkennycoco.ie/AppFileRefDetails/1617/0

'All residual impacts will be not significant.'

An Cnoc Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside An Cnoc Wind Farm, which is c.10.1km from the nearest Proposed Turbine, was considered. The planning files[14] were reviewed on the Tipperary County Council website and the EIS was reviewed. This section summarises the information outlined within the EIS for the An Cnoc Wind Farm.

The bird assemblage was considered typical of open agricultural land. Up to four pairs of meadow pipit were considered likely to breed within the site, while two singing skylarks were recorded. Stonechat bred within gorse scrub, and a range of common and widespread Farmland, hedgerow and woodland-edge species was also recorded. No evidence was identified that the site occurred on a regularly used migration route or a route used by wintering waterbirds.

The loss of small areas of grassland and hedgerow was not expected to significantly affect bird populations. Some displacement from the vicinity of turbines was considered possible, but this was not expected to significantly affect any species because the birds recorded were common in the wider area and displacement was expected to decrease with habituation. Disturbance effects on migrating birds and wintering waterbirds were discounted. Collision risk was considered low, although a small number of casualties among local bird populations was considered possible, particularly during poor visibility or fog. Such mortality was not expected to significantly affect local bird populations. The bird information reviewed did not report bird-specific mitigation measures or a project-specific cumulative ornithological assessment.

The An Cnoc Wind Farm EIS concluded with regard to collision risk that:

'However, it is considered unlikely that such losses could be of a scale whereby there would be significant adverse effects on the local bird populations.'

Foyle Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside Foyle Wind Farm, which is c.10.4km from the nearest Proposed Turbine, was considered. The planning files[15] were reviewed on the Kilkenny County Council website and the EIS was reviewed. This section summarises the information outlined within the EIS for the Foyle Wind Farm.

The EIS does not provide details of any dedicated ornithological surveys, including survey dates, methodology or survey effort. The following key ornithological receptors were identified and assessed for impacts: peregrine, snipe, and woodcock. Habitat loss was assessed to be a low effect significance for snipe and woodcock, and a very low effect significance for peregrine. Disturbance/displacement was assessed to be a low effect significance for snipe and woodcock, and a very low effect significance for peregrine. Collision risk was not quantified for peregrine, snipe, or woodcock, as no collision risk model was undertaken.

Mitigation measures outlined within the EIS included the use of solid turbine structures rather than lattice designs and the restriction of potential perching sites for raptors. Planting of scrub or other vegetation that could attract small birds in the vicinity of turbines was to be avoided, while turbines were to have low-intensity navigation lighting to reduce potential night-time collision risk. Construction was, where possible, to be deferred until after the bird nesting period, when fledglings had matured. Where this was not possible, vibration and machinery operation were to be restricted to relatively low

[14] https://www.eplanning.ie/TipperaryCC/AppFileRefDetails/09781/0
[15] https://planning.kilkennycoco.ie/AppFileRefDetails/051256/0

levels. Following construction, human activity was anticipated to be largely confined to roadways and occasional visits to turbines, thereby minimising disturbance.

The EIS considered habitat loss associated with Foyle Wind Farm to be limited, noting that the site comprised predominantly improved grassland. Potential disturbance effects on peregrine were considered to be limited due to the relatively small scale of the development and the location of the nearest known nesting site more than 5 km from the wind farm. Habitat loss and disturbance effects on other bird species were also generally considered to be limited. No overall ornithological conclusion was identified within the information reviewed.

Bruckana Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside the Bruckana Wind Farm, which is c.10.6km from the nearest Proposed Turbine, was considered. The planning files[16] were reviewed on the Kilkenny County Council website. The planning files confirm that an Environmental Impact Statement accompanied the application; however, the Environmental Impact Statement was not available to view online. Consequently, detailed information on the ornithological surveys undertaken, key ornithological receptors identified and predicted effects could not be reviewed. In the absence of detailed project-specific ornithological information, and applying the precautionary principle, there remains potential for the KORs identified for the Proposed Project to occur within or pass through the Bruckana Wind Farm area. The development has therefore been retained in the cumulative assessment.

Lisheen Wind Farm II

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside Lisheen Wind Farm II, which is c.10.8km from the nearest Proposed Turbine, was considered. The planning files[17] were reviewed on the Tipperary County Council website and the EIS was reviewed. This section summarises the information outlined within the EIS for the Lisheen Wind Farm II.

Ornithology surveys were conducted during January and February 2009, comprising two visits in January and five visits in February. The development areas were scanned for raptors, corvids, and other large species, while transects were undertaken through the principal habitats to record passerines. Thirty-two species were recorded in the northern extension and 35 species in the southern extension. Large wintering flocks of starling, skylark, fieldfare, redwing, and chaffinch used agricultural fields, while lapwing, linnet and reed bunting were also recorded. Sparrowhawk and kestrel were the only raptors recorded. Hen harrier, merlin, and wintering geese were not recorded, and no regular waterbird flight paths were identified. Golden plover had been recorded during earlier studies but was not recorded during the 2009 surveys.

Habitat loss during construction was considered not significant because the development principally affected habitats of low ecological value and made use of existing access tracks and infrastructure. Construction and decommissioning disturbance was assessed as temporary and not significant. Operational habitat loss, disturbance, and collision risk were also assessed as not significant, and no significant long-term effects on birds using the site were anticipated. No quantitative collision-risk predictions were reported.

Mitigation measures included undertaking works within potential breeding habitat outside the main April–July breeding season where possible, employing a suitably qualified ecologist with stop-work authority where works were required during this period, completing a pre-construction breeding bird survey and incorporating the extension into the existing operational bird-monitoring programme. The programme included annual breeding and wintering bird surveys, seasonal vantage-point watches and

[16] https://www.eplanning.ie/KilkennyCC/AppFileRefDetails/10145/0
[17] https://www.eplanning.ie/TipperaryCC/AppFileRefDetails/09510100/0

bird–turbine interaction monitoring, with site-management measures to be implemented where required. No project-specific cumulative ornithological assessment was identified in the information reviewed.

The Lisheen Wind Farm II EIS concluded that:

"*The proposed extension of the wind Farm site and the associated construction of access tracks do not pose a significant threat to local populations of flora and fauna on the lands within the subject site.*"

Briskalagh Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside the proposed Briskalagh Wind Farm, which is c.10.8km from the nearest Proposed Turbine, was considered. The planning files[18] were reviewed on the Kilkenny County Council website and the EIAR was reviewed. This section summarises the information outlined within the EIAR for the Briskalagh Wind Farm.

Ornithology surveys were conducted at the Briskalagh Wind Farm between April 2021 and May 2023. The following key ornithological receptors were identified and assessed for impacts: kingfisher, little egret, kestrel, snipe, buzzard, and sparrowhawk.

Habitat loss was assessed to be a low effect significance for kingfisher, little egret, kestrel and snipe, and a very low effect significance for buzzard and sparrowhawk. Disturbance/displacement was assessed to be a medium effect significance for kingfisher, a low effect significance for little egret, kestrel and snipe, and a very low effect significance for buzzard and sparrowhawk. Collision risk was assessed to be a very low effect significance for kingfisher (no flights at collision height), little egret (0.007 collisions per year), kestrel (0.391 collisions per year), snipe (0.019 collisions per year), buzzard (0.945 collisions per year) and sparrowhawk (0.009 collisions per year).

A cumulative assessment was undertaken as part of the Briskalagh Renewable Energy Development EIAR, with other plans and projects, including other wind farms, within 25km. No significant cumulative habitat loss, disturbance/displacement, barrier, or collision-risk effects were predicted for the key ornithological receptors.

Mitigation measures to avoid significant impacts include undertaking works outside the bird nesting season, species-specific buffers around active nests or roosts, and pre-construction surveys and timing restrictions for works near potential kingfisher nests, with collision monitoring and bird surveys during operation.

The Briskalagh Wind Farm EIAR concluded that:

'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.'

Lisheen Wind Farm I

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside Lisheen I Wind Farm, which is c.11.5km from the nearest Proposed Turbine, was considered. The planning files[19] were reviewed on the Tipperary County Council website and the EIS was reviewed. This section summarises the information outlined within the EIS for the Lisheen Wind Farm I.

[18] https://planning.kilkennycoco.ie/AppFileRefDetails/2560003/0
[19] https://www.eplanning.ie/TipperaryCC/AppFileRefDetails/06510773/0

Ornithology surveys were conducted between March and May 2006, comprising walking surveys and transects around the proposed turbine locations and along woodland and cutaway-bog edges. Further breeding surveys during June and July and winter surveys between September and March were proposed, but the results of these additional surveys were not included in the information reviewed. A total of 63 species was recorded. Species of conservation interest included whooper swan, golden plover, lapwing, curlew, yellowhammer, kingfisher, kestrel, snipe, and woodcock. Three whooper swans and a flock of 14 golden plover were recorded flying through the site. Lapwing, curlew, and yellowhammer were each recorded once. A small black-headed gull breeding colony was also recorded close to several proposed turbines. Merlin was identified as a potential breeding species in woodland-edge and remnant-heather habitats, although it had not been recorded at the time of the assessment.

The assessment recognised the potential for habitat loss, displacement, and collision mortality. The flat topography and visibility of the turbines were considered to reduce the likelihood of unexpected encounters by flying birds. Small numbers of whooper swan and golden plover were recorded, but the site was not considered to support significant populations of wintering waterbirds or waders. No project-specific bird mitigation measures or cumulative ornithological assessment were identified in the information reviewed. The EIS proposed further breeding and winter bird surveys; these are survey commitments rather than confirmed mitigation measures in the material available.

The Lisheen Wind Farm I EIS concluded that:

'The EIS concluded no potential for significant negative effects on birds.'

Littleton Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside Littleton Wind Farm, which is c.13.3km from the nearest Proposed Turbine, was considered. The planning files[20] were reviewed on the An Coimisiún Pleanála website and the EIAR was reviewed. This section summarises the information outlined within the EIAR for the Littleton Wind Farm.

Ornithology surveys were conducted at the Littleton Wind Farm between October 2020 and March 2025. The following key ornithological receptors were identified and assessed for impacts: buzzard, curlew, golden plover, greylag goose, grey heron, hen harrier, kestrel, lapwing, lesser black-backed gull, little egret, mallard, marsh harrier, mute swan, peregrine, snipe, sparrowhawk, swift, teal, and whooper swan.

Habitat loss was assessed to be a very low effect significance for buzzard, curlew, golden plover, hen harrier, kestrel, lapwing, lesser black-backed gull, little egret, mallard, marsh harrier, mute swan, peregrine, snipe, sparrowhawk, swift, teal and whooper swan; habitat-loss effects on grey wagtail and grey heron were not separately quantified. Disturbance/displacement was assessed to be a high effect significance for curlew and snipe, a medium effect significance for kestrel and lapwing, a low effect significance for hen harrier, marsh harrier, mute swan and whooper swan, and a very low effect significance for buzzard, golden plover, lesser black-backed gull, little egret, mallard, peregrine, sparrowhawk, swift and teal; effects on grey wagtail and grey heron were not separately quantified.

Collision risk was assessed to be a very high effect significance for curlew at the local breeding-population scale and a low effect significance at the national scale (0.08 collisions per year based on all activity or 0.03 collisions per year based on local breeding-pair activity), a medium effect significance for kestrel at the local scale and a very low effect significance at the national and county scales (2.94 collisions per year), a low effect significance for buzzard at the local scale and a very low effect significance at the national scale (5.29 collisions per year), a low effect significance for hen harrier (0.01 collisions per year), peregrine (0.37 collisions per year) and whooper swan (0.40 collisions per year), and a low effect significance for swift at the local scale and a very low effect significance at the national

[20] https://www.pleanala.ie/en-ie/case/324370

scale (0.44 collisions per year). Collision risk was assessed to be a very low effect significance for golden plover (0.23 collisions per year), grey wagtail (0.01 collisions per year), grey heron (0.04 collisions per year), lapwing (0.20 collisions per year), lesser black-backed gull (0.07 collisions per year), little egret (0.02 collisions per year), mallard (2.23 collisions per year), marsh harrier (effectively zero), mute swan (0.01 collisions per year), snipe (0.03 collisions per year), sparrowhawk (0.02 collisions per year) and teal (0.05 collisions per year).

A cumulative assessment was undertaken as part of the Littleton Wind Farm EIAR, with other plans and projects, including proposed, consented, and operational wind farms, within 20km of the Littleton Wind Farm. Significant cumulative construction effects associated with habitat loss or disturbance/displacement were not anticipated. Potential cumulative construction-related effects on riverine bird species, including kingfisher, little egret, grey heron and duck species, were identified prior to mitigation. Cumulative barrier effects were assessed as long-term imperceptible and reversible for all species. Cumulative effects on buzzard, kestrel and peregrine were assessed as long-term not significant and reversible, while those on mallard and the remaining species included in the collision risk assessment were assessed as long-term imperceptible and reversible. Cumulative disturbance/ displacement effects were assessed as long-term slight to moderate and reversible for snipe and long-term not significant and reversible for woodcock. No cumulative collision risk, barrier or disturbance/ displacement effects were predicted for hen harrier.

Mitigation measures include seasonal restrictions and buffer zones around breeding birds, visual screening of important wetland habitats, restrictions to avoid disturbance to roosting hen harrier, and predator fencing and control for breeding curlew and other waders, together with collision monitoring and bird surveys during the operational phase.

The Littleton Wind Farm EIAR concluded that, following construction and decommissioning mitigation, no significant negative effects would remain for avifauna. Residual operational effects identified for individual receptors remain as summarised above.

Farranrory Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside the permitted Farranrory Wind Farm, which is c.13.4km from the nearest Proposed Turbine, was considered. The planning files[21] were reviewed on the Tipperary County Council website and the EIAR was reviewed. This section summarises the information outlined within the EIAR for the Farranrory Wind Farm.

Ornithology surveys were conducted at the Farranrory Wind Farm between November 2017 and June 2020. The EIAR identified black-headed gull, herring gull and breeding meadow pipit as the principal target species considered likely to occur in the area surrounding Farranrory Wind Farm. Buzzard, kestrel, and sparrowhawk were identified as secondary target species. The desktop review did not identify records of the principal target species, except meadow pipit. During the field surveys, kestrel and buzzard were the only raptor species recorded, while individual lesser black-backed gulls were recorded occasionally. Overall, the recorded assemblage was typical of Farmland habitats and was dominated by species of low conservation concern.

Habitat loss was assessed to be of negligible effect significance for birds, as the habitats affected primarily comprise recently improved agricultural grassland and minor sections of hedgerow of low importance to birds. No loss of breeding or foraging habitat was predicted for buzzard, while no direct effect on kestrel was anticipated because breeding was not recorded within or adjacent to the site during the 2019 or 2020 breeding seasons. Construction-related disturbance/displacement was assessed to be of negligible to low effect significance for passerines, corvids, and other birds of low conservation concern, while operational disturbance/displacement was assessed to be of low effect significance for

[21] https://www.eplanning.ie/TipperaryCC/AppFileRefDetails/20972/0

birds generally. No operational displacement was predicted for kestrel or buzzard. Collision risk was assessed qualitatively as a low-magnitude impact of very low effect significance for kestrel and buzzard; no annual collision rates were calculated. The residual-effects section nevertheless describes the residual collision risk for sensitive species such as kestrel as being of low significance.

Mitigation measures included locating turbines within habitats of low ecological value, maintaining a 50 m buffer from natural watercourses, restricting works to the development footprint, undertaking conifer felling outside the bird breeding season and, where construction during the breeding season could not be avoided, commencing works in advance of that period to reduce the risk of displacement of nesting birds. The cumulative assessment considered surrounding operational and consented wind farms. It concluded that Farranrory Wind Farm would not combine with these developments to result in negative cumulative effects on biodiversity receptors.

Gurteen Lower Single Wind Turbine

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside the Gurteen Lower Single Wind Turbine, which is c.14.1km from the nearest Proposed Turbine, was considered. The planning files[22] were reviewed on the Tipperary County Council website and the planning application was reviewed. The planning application refers to a chapter titled "Impact on Birds; however, the chapter was not available to view online. Consequently, detailed information on the ornithological surveys undertaken, key ornithological receptors identified and predicted effects could not be reviewed. Gurteen Lower Single Wind Turbine is located within an agricultural landscape comprising improved agricultural grassland, conifer plantation, and treelines, with no lakes present within 500 m of the turbine. Applying the precautionary principle, there is potential for KOR species identified for the Proposed Project to occur within or pass through the area, and the turbine has therefore been considered within the cumulative assessment.

Ballynalacken Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside the permitted Ballynalacken Wind Farm, which is c.14.7km from the nearest Proposed Turbine, was considered. The planning files[23] were reviewed on the An Coimisiún Pleanála website and the EIAR was reviewed. This section summarises the information outlined within the EIAR for the Ballynalacken Wind Farm.

Ornithology surveys were conducted at the Ballynalacken Wind Farm between October 2020 and March 2024. The following key ornithological receptors were identified and assessed for impacts: buzzard, sparrowhawk, kestrel, and golden plover.

Habitat loss was assessed to be a very low effect significance for buzzard, kestrel, and golden plover; habitat-loss effects on sparrowhawk were not separately assessed. Disturbance/displacement was assessed to be a very low effect significance for buzzard, kestrel, and golden plover; disturbance/displacement effects on sparrowhawk were not separately assessed. Collision risk was assessed to be a low effect significance for golden plover (0.3950 collisions per year during the breeding season and 2.4423 collisions per year during winter), a low to medium effect significance for kestrel (0.0737 collisions per year during the breeding season and 0.1226 collisions per year during winter), and a very low effect significance for buzzard (0.2202 collisions per year during the breeding season and 0.2379 collisions per year during winter) and sparrowhawk (0.0072 collisions per year during the breeding season and 0.0326 collisions per year during winter).

A cumulative assessment was undertaken as part of the Ballynalacken Wind Farm EIAR, with other plans and projects within 4km of the construction works and operating turbines. No cumulative habitat-

[22] https://www.eplanning.ie/TipperaryCC/AppFileRefDetails/09801/0
[23] https://www.pleanala.ie/en-ie/case/322069

loss or disturbance effects on birds were predicted in combination with Pinewood Wind Farm. Cumulative collision effects on kestrel were assessed as low magnitude and slight in a worst-case scenario, while cumulative collision and displacement effects on golden plover were precautionarily assessed as low magnitude and slight. Cumulative collision effects on buzzard and sparrowhawk were assessed as low to negligible and not significant. No significant cumulative collision effects were predicted for other birds of prey, waders, kingfisher, passerines, or waterbirds. Significant cumulative disturbance or displacement effects on kingfisher were considered unlikely. Potential moderate to significant unmitigated cumulative effects on kingfisher feeding resources were identified from concurrent construction-related water-quality impacts; however, mitigation would remove the impact pathway, and no residual cumulative effect was predicted.

Mitigation measures include undertaking vegetation clearance outside the bird breeding season, surveys and buffer zones around active passerine and wader nests, measures to protect water quality for kingfisher, and maintaining low-value foraging habitat around turbines for kestrel and other birds of prey, together with collision monitoring and bird surveys during the operational phase.

The Ballynalacken Wind Farm EIAR concluded that:

'Overall, it is evaluated that the residual impact on the Environmental Factor, Biodiversity, will be Neutral.'

Ballincurry Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside Ballincurry Wind Farm, which is c.18.9km from the nearest Proposed Turbine, was considered. The planning files[24] were reviewed on the Tipperary County Council website and the Ecological Report was reviewed. This section summarises the information outlined within the Ecological Report for the Ballincurry Wind Farm.

The ecological report did not specify the dates or methodologies of the ornithological surveys undertaken. Desktop research did not identify any records of bird species within the surrounding 2 km square. Species recorded during the site survey were typical of Farmland habitats and included rook, hooded crow, swallow, chaffinch, great tit, and meadow pipit. Meadow pipit was identified as a red-listed species and suitable roosting, feeding and potentially nesting habitat was present within the site. The nearest area identified by the BirdWatch Ireland sensitivity mapping tool was an area of low sensitivity for barn owl, approximately 3.5 km from the site.

The ecological report did not provide separate significance assessments for habitat loss or disturbance/displacement. The species recorded on the site or considered likely to occur were not considered particularly vulnerable to the effects of wind turbines. Although the potential for raptors using the area to be vulnerable to collision was acknowledged, collision risk was assessed to be not significant due to the relatively small scale of the two-turbine development. Significant impacts on barn owl were not anticipated. The qualifying bird species associated with surrounding designated sites were considered sufficiently distant from the development to avoid significant effects.

Mitigation measures included checking the site for ground-nesting meadow pipit where vegetation clearance or other development works would take place during the bird breeding season, between 1 March and 31 August. The ecological report did not include a cumulative assessment with other wind Farm developments.

The Ballincurry Wind Farm ecological report concluded that significant impacts on the bird species recorded or considered likely to use the site were not anticipated.

[24] https://www.eplanning.ie/TipperaryCC/AppFileRefDetails/15600561/0

Pinewoods Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside the permitted Pinewoods Wind Farm, which is c.20.1km from the nearest Proposed Turbine, was considered. The planning files[25] were reviewed on the Statkraft website and the EIAR was reviewed. This section summarises the information outlined within the EIAR for the Pinewoods Wind Farm.

Ornithology surveys were conducted at the Pinewoods Wind Farm between October 2010 and March 2015, across separate survey periods in 2010–2011 and 2014–2015. The ornithological assessment identified golden plover, hen harrier, merlin, peregrine falcon, kestrel, sparrowhawk, snipe, woodcock, curlew, lapwing, meadow pipit, and skylark as the principal bird species considered in the assessment. Habitat loss was assessed to be of very low effect significance for the bird assemblage, with potentially slight negative and localised effects arising from the loss or alteration of scrub, young conifer plantation, hedgerows, and grassland habitats. No significant habitat loss was predicted for species of conservation concern. Construction-related disturbance/displacement was assessed to be a localised slight negative effect, while operational disturbance/displacement was also assessed as slight negative prior to mitigation and imperceptible negative following mitigation. Collision risk was assessed to be negligible for woodcock, meadow pipit, and sparrowhawk, while kestrel was recognised as potentially more susceptible because of its relatively low turbine-avoidance rate. No quantitative collision-risk model or annual collision estimates were provided. Black-headed gull, golden plover, and hen harrier occurred only occasionally and were considered to be passing through the area. Overall, none of the regularly occurring species was considered to be at high risk of collision, and the residual operational effect on birds was assessed as imperceptible.

Mitigation measures include retaining scrub and rough wet grassland used by breeding birds and undertaking vegetation clearance and construction works outside the bird breeding season, together with breeding-bird surveys during the operational phase.

The Pinewoods Wind Farm EIS concluded that:

'Given appropriate mitigation measures, and the retention of the maximum possible amount of scrub habitat, it is predicted that a wind Farm of the scale described will result in a significance of low impact.'

Brittas Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside the permitted Brittas Wind Farm, which is c.20.2km from the nearest Proposed Turbine, was considered. The planning files[26] were reviewed on the An Coimisiún Pleanála website and the EIAR was reviewed. This section summarises the information outlined within the EIAR for the Brittas Wind Farm.

Ornithology surveys were conducted at the Brittas Wind Farm between October 2020 and September 2023. The following key ornithological receptors were identified and assessed for impacts: lapwing, golden plover, snipe, black-headed gull, lesser black-backed gull, cormorant, curlew, kingfisher, little egret, grey heron, mute swan, jack snipe, woodcock, kestrel, sparrowhawk, buzzard, long-eared owl, whooper swan, barn owl, peregrine, and swift.

Habitat loss was assessed to be a medium effect significance for barn owl, a low effect significance for lapwing, golden plover, snipe, kingfisher, little egret, jack snipe, woodcock, kestrel, sparrowhawk, buzzard and peregrine, and a very low effect significance for black-headed gull, lesser black-backed gull, cormorant, curlew, grey heron, mute swan, long-eared owl, whooper swan and swift.

[25] https://projects.statkraft.ie/globalassets/0/.ie/0.-projects/4.-sid-sites/pinewoods-sub-sid/vol2-chapters/chapter-4-flora-fauna.pdf
[26] https://www.pleanala.ie/en-ie/case/321454

Disturbance/displacement was assessed to be a medium effect significance for snipe and kingfisher, a low effect significance for lapwing, golden plover, little egret, grey heron, jack snipe, sparrowhawk, long-eared owl and peregrine, and a very low effect significance for black-headed gull, lesser black-backed gull, cormorant, curlew, mute swan, woodcock, kestrel, buzzard, whooper swan, barn owl and swift. Collision risk was assessed to be a low effect significance for lapwing (0.03 collisions per year during the breeding season and 2.51 collisions per year during winter), golden plover (4.28 collisions per year), lesser black-backed gull (0.64 collisions per year), kestrel (0.21 collisions per year), snipe, peregrine and swift, and a very low effect significance for black-headed gull, cormorant, curlew, kingfisher, little egret, grey heron, mute swan, jack snipe, woodcock, sparrowhawk, buzzard (0.86 collisions per year), long-eared owl, whooper swan and barn owl. Collision rates were not separately quantified for species described as having negligible collision risk.

A cumulative assessment was undertaken as part of the Brittas Wind Farm EIAR, with other plans and projects, including wind farms and solar Farms, within 20km of the Brittas Wind Farm. Significant cumulative construction disturbance effects were not anticipated. No cumulative barrier effects were identified. Potential cumulative displacement effects on lapwing, snipe and golden plover were identified, principally in combination with Borrisbeg Wind Farm; however, following mitigation, no significant cumulative displacement effects were predicted. Habitat alteration associated with permitted solar farms was not expected to have additive effects on sensitive ornithological receptors. No significant cumulative population-level effects from combined collision risk were predicted.

Mitigation measures include buffer zones around breeding lapwing and peregrine, habitat management and predator control for breeding lapwing and snipe, and a no-take zone for wintering waterbirds, together with collision monitoring and bird surveys during the operational phase.

The Brittas Wind Farm EIAR concluded that:

'For the likely significant effects assessed, application of the proposed mitigation measures in full will limit residual effects to negligible/not significant (Percival, 2003) or imperceptible (EPA, 2022). The exceptions being disturbance/displacement effects to wintering waterbirds over construction ONLY and specifically to wintering lapwing, wintering golden plover, and wintering snipe, where residual effects of low significance (Percival, 2003) remain.'

Loan Single Wind Turbine

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside the proposed Loan Single Wind Turbine, which is c.20.8km from the nearest Proposed Turbine, was considered. The planning files[27] were reviewed on the Kilkenny County Council website and the EcIA was reviewed. This section summarises the information outlined within the ECIA for the Loan Single Wind Turbine.

Ornithological surveys were conducted between February 2024 and April 2026, covering breeding and non-breeding seasons. All bird species recorded in the vicinity of the proposed turbine were evaluated as being of low sensitivity or lower, and no higher-sensitivity Key Ornithological Receptors were identified.

Potential effects from habitat loss, disturbance/displacement and collision risk were assessed. Given the small development footprint, low sensitivity of the bird assemblage and low levels of target species flight activity, no significant effects on birds were predicted.

The cumulative assessment considered the proposed turbine in combination with other developments in the surrounding area and concluded that no significant cumulative effects on birds would occur.

[27] https://planning.kilkennycoco.ie/AppFileRefDetails/2660292/0

Mitigation includes avoidance of vegetation clearance during the breeding season where practicable and pre-construction checks where required.

The Loan Single Wind Turbine EcIA concluded that:

'A range of mitigation measures have been outlined for the proposed development and with the implementation of these measures the proposed development will not have the potential to result in significant negative residual impacts to habitats or fauna occurring at and in the wider area surrounding the proposed development site.'

Borrisbeg Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside the permitted Borrisbeg Wind Farm, which is c.21.4km from the nearest Proposed Turbine, was considered. The planning files[28] were reviewed on the An Coimisiún Pleanála website and the EIAR was reviewed. This section summarises the information outlined within the EIAR for the Borrisbeg Wind Farm.

Ornithology surveys were conducted at the Borrisbeg Wind Farm between September 2020 and September 2023. The following key ornithological receptors were identified and assessed for impacts: hen harrier, kingfisher, golden plover, merlin, peregrine, little egret, whooper swan, kestrel, lapwing, snipe, buzzard, and sparrowhawk.

Habitat loss was assessed to be a low effect significance for hen harrier, golden plover, merlin, peregrine, kestrel, lapwing and snipe, and a very low effect significance for kingfisher, little egret, whooper swan, buzzard, and sparrowhawk. Disturbance/displacement was assessed to be a low effect significance for hen harrier, kingfisher, golden plover, merlin, peregrine, little egret, whooper swan, kestrel, lapwing and snipe, and a very low effect significance for buzzard and sparrowhawk. Collision risk was assessed to be a medium effect significance for golden plover (55.95 collisions per year) and lapwing (0.639 collisions per year during summer and 68.673 collisions per year during winter), a low effect significance for hen harrier (no flights at collision height), merlin (0.015 collisions per year), peregrine (0.165 collisions per year), little egret (0.174 collisions per year), whooper swan (0.21 collisions per year), kestrel (2.136 collisions per year), snipe (1.149 collisions per year) and buzzard (5.651 collisions per year), and a very low effect significance for kingfisher (no flights at collision height) and sparrowhawk (0.274 collisions per year).

A cumulative assessment was undertaken as part of the Borrisbeg Wind Farm EIAR, with other plans and projects, including other wind farms, within 25km. Cumulative construction disturbance was considered highly unlikely to result in significant effects, and no significant cumulative habitat loss, disturbance/displacement, barrier or collision-risk effects were predicted for the key ornithological receptors.

Mitigation measures include locating turbines at least 650m from the identified lapwing breeding territory, species-specific buffers around active nests or roosts, and managing habitats within 500m of turbines to reduce lapwing and golden plover activity, with collision monitoring and bird surveys during operation.

The Borrisbeg Wind Farm EIAR concluded that:

'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.'

[28] https://www.pleanala.ie/en-ie/case/318704

Monaincha Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside the Monaincha Wind Farm, which is c.24.1km from the nearest Proposed Turbine, was considered. The planning files were reviewed on the Tipperary County Council website and the EIS was reviewed. This section summarises the information outlined within the EIS for the Monaincha Wind Farm.

The EIS records a site visit undertaken in October 2002, during which golden plover was recorded overwintering. However, no detailed ornithological survey period or methodology was reported. The following key ornithological receptors were identified and assessed for impacts: golden plover, white-fronted goose, and peregrine. Historical records of Greenland white-fronted goose at the site were over 20 years old at the time of the assessment, and there were no records of merlin breeding in the vicinity. Peregrine falcon was considered an occasional visitor from breeding locations at Devil's Bit Mountain, over 10km from the wind Farm.

Habitat loss was not considered significant because the turbines and associated infrastructure occupied a relatively small area and similar habitats remained available within the site and surrounding landscape. Construction disturbance was considered potentially capable of affecting breeding skylark and meadow pipit, although this effect would be temporary and was not considered significant. No disturbance effects were anticipated for breeding golden plover, merlin, or peregrine falcon because these species were not known to breed within or close to the site. Operational disturbance was expected to be minimal as birds became habituated to the turbines and human activity remained confined to the access roads and turbine locations.

Collision risk was assessed as low for Greenland white-fronted goose, peregrine falcon, merlin, and kestrel, and very low for sparrowhawk and other small bird species. Skylark, meadow pipit, snipe and woodcock were considered potentially susceptible because their display flights may bring them within rotor height. However, the EIS concluded that collision risk was low and that any associated mortality would not significantly affect their populations. Formal effect-significance ratings and quantitative collision-risk predictions were not reported.

Mitigation measures included using solid monopole turbine towers to discourage perching by raptors and corvids, completing construction over as short a period as practicable, minimising disturbance during the bird breeding season, and confining operational activity to the access roads and turbine locations. Monitoring of the operational wind Farm was also proposed, with particular attention to golden plover and merlin. No project-specific cumulative assessment was reported. However, given the limited habitat loss, low collision risk, absence of important breeding locations for sensitive species and separation from the Proposed Project, significant cumulative effects on KORs with regard to habitat loss, disturbance, displacement, or collision mortality are not anticipated.

Monaincha Wind Farm Extension

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside the Monaincha Wind Farm Extension, which is c.24.7km from the nearest Proposed Turbine, was considered. The planning files were reviewed on the Tipperary County Council website and the EIS was reviewed. This section summarises the information outlined within the EIS for the Monaincha Wind Farm Extension.

Ornithology surveys were conducted between December 2010 and July 2011. Winter vantage-point surveys were undertaken from December 2010 to March 2011, followed by summer vantage-point surveys between April and July 2011. General breeding bird, red grouse, merlin and 5km hen harrier surveys were also completed. KORs assessed included hen harrier, golden plover, lapwing, peregrine falcon, and buzzard. Golden plover was recorded on the adjacent permitted Monaincha Wind Farm but not within the extension site. Lapwing was recorded flying over and occasionally landing within the extension site during winter but did not breed there. A single male hen harrier was recorded foraging along the site boundary, with no evidence of a winter roost or breeding activity. Buzzard and kestrel

regularly used the site, with both species considered likely to breed in nearby forestry. Merlin was recorded during hinterland surveys but not within the extension site, and no red grouse were recorded.

Approximately 1.6ha, or 0.5% of the site, was expected to be permanently lost. Direct habitat loss and displacement effects on birds were assessed as negligible because sensitive species made limited use of the site and similar habitats were widely available in the surrounding landscape. The overall effect was assessed as low for hen harrier, golden plover, and lapwing, and very low for peregrine falcon, buzzard, and all other bird species. Collision risk for hen harrier was considered low, while buzzard was recognised as potentially susceptible but expected to show reduced activity around turbines.

The cumulative assessment considered the extension alongside the adjoining Monaincha Wind Farm. Some cumulative effects on wintering lapwing foraging habitat were considered possible, but no long-term population effect was anticipated. No cumulative effects were predicted for hen harrier, golden plover or peregrine falcon, and the EIS concluded that there would be no significant cumulative effects on birds.

White Hill Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside the permitted White Hill Wind Farm, which is c.25km from the nearest Proposed Turbine, was considered. The planning files[29] were reviewed on the An Coimisiún Pleanála website and the EIAR was reviewed. This section summarises the information outlined within the EIAR for the White Hill Wind Farm.

Ornithology surveys were conducted at the White Hill Wind Farm between November 2019 and March 2022. The following key ornithological receptors were identified and assessed for impacts: grey wagtail, buzzard, sparrowhawk, and golden plover.

Habitat loss was assessed to be a low effect significance for grey wagtail, buzzard, sparrowhawk, and golden plover. Disturbance/displacement was assessed to be a low effect significance for grey wagtail, buzzard, sparrowhawk, and golden plover. Collision risk was assessed to be a low effect significance for buzzard and sparrowhawk, and a very low effect significance for grey wagtail and golden plover. Species-specific collision rates were not provided.

A cumulative assessment was undertaken as part of the White Hill Wind Farm EIAR. It considered cumulative habitat loss, disturbance/displacement, collision mortality, and barrier effects in combination with other wind farms. No cumulative collision-risk or barrier effects on birds were predicted. Some potential for cumulative disturbance and displacement was identified; however, significant cumulative or in-combination effects were considered highly unlikely.

Mitigation measures include undertaking vegetation clearance outside the bird breeding season, pre-construction checks for active nests and construction-phase surveys of raptors, waders, and wildfowl, together with collision monitoring and bird surveys during the operational phase.

The White Hill Wind Farm EIAR concluded that:

'Overall, it is assessed that the detailed monitoring and mitigation commitments will be effective in ensuring that there are no significant residual effects on biodiversity arising from the construction, operation or decommissioning of the project.'

[29] https://www.pleanala.ie/en-ie/case/315365

7.7.3 Cumulative Impact Assessment

During the assessment of cumulative effects on KORs, cumulative habitat loss, disturbance, displacement, and collision risk associated with operational turbines were assessed. No significant cumulative effects are predicted to result from disturbance during the construction phase, given that these are short-term impacts that are unlikely to overlap temporally with other similar activities. For this reason, construction phase effects are not likely to result in significant impacts and are not considered further in the cumulative assessment. Cumulative impacts of habitat loss, displacement, and collision risk during the operational phase for each species are discussed in further detail in the relevant sections below.

7.7.3.1 Landscape Level Cumulative Assessment

A GIS mapping exercise was undertaken that aimed to quantify the amount of land within the wider landscape (i.e., the continuous habitat in which the Proposed Project lies) that is likely to be significantly impacted by the presence of turbines. Impacts were predicted to be restricted to the area near a Proposed Turbine. Near a turbine was defined as within 500m. This distance was chosen as Pearce-Higgins *et al.* (2009) identified, for a range of species, significant avoidance of turbines between 250m and 500m. It therefore follows that significant effects are unlikely at distances greater than 500m. To define the area of interest, the regional scale was used (i.e., 25km of the Proposed Turbines) as this allowed for the key suitable habitats for all KORs at a regional scale to be included. This area will be referred to as the Ornithology Cumulative Study Area. The CORINE land cover data[30] was used to determine the land uses within 25km of the Proposed Turbines. These data were simplified into six main land cover types: agricultural, forestry, open peatland, industrial (mineral extraction and waste disposal sites), transitional woodland and urban.

The GIS exercise provided the following results. The total Ornithology cumulative study area is 214,602ha, 3,469ha of which is urban or industrial and therefore of limited value to KORs and has been omitted from the Ornithology Cumulative Study Area for this assessment. Therefore, the Ornithology Cumulative Study Area for this assessment is 211,133ha, of which 8,019ha (3.7% of the Ornithology Cumulative Study Area) is within 500m of a turbine (excluding the Proposed Turbines). The 500m radius of the Proposed Turbines comprises 612 ha (0.3% of the Ornithology Cumulative Study Area). The three main land uses in the Ornithology Cumulative Study Area are agriculture, forestry (including commercial and transitional 'natural' woodland)[31] and open peatland. Of these three land uses, agriculture and open peatland have potential uses for breeding waders, wintering whooper swan and wintering hen harrier for foraging and/or roosting. Forestry is considered to be closed habitat for the purposes of these calculations and therefore of little use to these ornithological receptors. There is the following breakdown of these main land uses.

- The total area of agricultural land is 190,675ha (90% of the Ornithology Cumulative Study Area).
    - Agricultural land greater than 500m from turbines (excl. the Proposed Turbine layout) is 185,865ha (or 97.4% of the agricultural land).
    - Agricultural land greater than 500m from turbines (incl. the Proposed Turbine layout) is 185,504 ha (or 97.2% of the agricultural land).
- The total area of forestry is 10,402ha (4.9% of the Ornithology Cumulative Study Area).

[30] https://land.copernicus.eu/en/products/corine-land-cover
[31] *The majority of the KORs discussed in the species-specific cumulative assessment favour open habitats. Wooded habitats (forestry) are typically avoided to a greater or lesser extent. While commercial conifer plantations are generally of low ecological value, whereas natural type woodlands are comparatively of high biodiversity value, this distinction is not relevant for species that favour open habitats.*

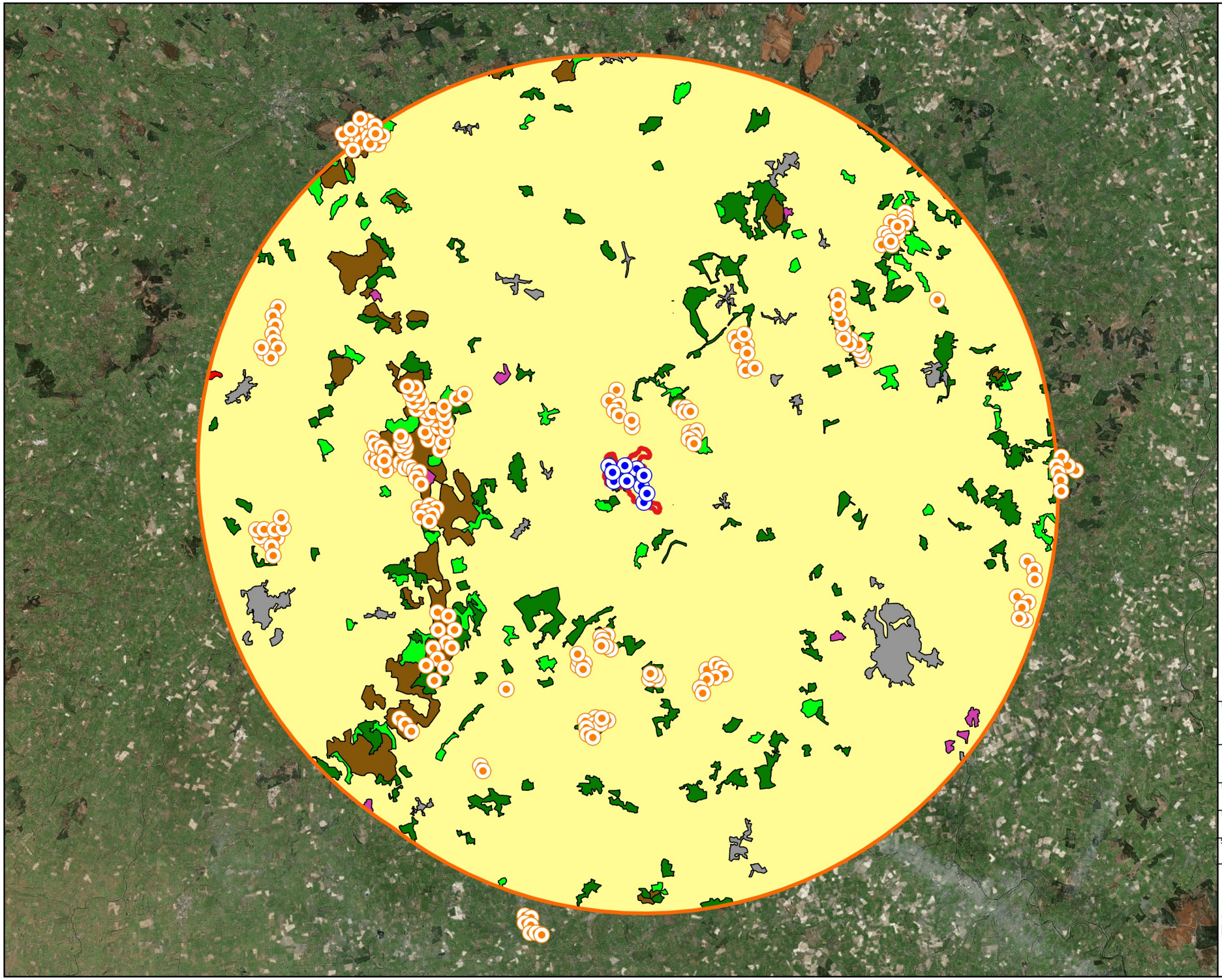
- Forestry greater than 500m from turbines (excl. the Proposed Turbine layout) is 9,469ha (or 91% of the forestry).
- Forestry a greater than 500m from turbines (incl. the Proposed Turbine layout) is 9,218ha (or 88.6% of the forestry).

- The total area of open peatland is 6,456ha (3% of the Ornithology Cumulative Study Area).
  - Open peatland greater than 500m from turbines (excl. the Proposed Turbine layout) is 4,715 (or 73.0% of the open peatland).
  - Open peatland greater than 500m from turbines (incl. the Proposed Turbine layout) is 4,715ha (or 73% of the open peatland).
- The total area, excluding urban or industrial land, within 500m of turbines (including the Proposed Turbine layout) is 8,631ha (4% of the Ornithology Cumulative Study Area).
  - 1,740ha is within open peatland (20% of the Ornithology Cumulative Study Area within 500m of turbines).
  - 5,170ha is within agricultural land (60% of the Ornithology Cumulative Study Area within 500m of turbines); and
  - 1,184ha is within forestry (13.8% of the Ornithology Cumulative Study Area within 500m of turbines).

Having undertaken the above analysis of the available area within the Ornithology Cumulative Study Area the following is of note:

- The vast majority of the Ornithology Cumulative Study Area is comprised of agricultural Farmland (90%).
- A large proportion of the turbines are located within agricultural land (57%), with a further 12% located within forestry.
- Although there is a high density of turbines within agricultural habitats relative to other habitats, the area occupied by the turbines (plus a 500m radius) is small in size when compared to the remaining agricultural habitats.
- Displacement effects associated with the Proposed Turbines account for 4% of the Ornithology Cumulative Study Area.

As agricultural land, peatland and forestry make up the vast majority of the total 211,133 ha within the Ornithology Cumulative Study Area, it is reasonable to conclude that the relative quality/suitability of these habitats is likely to have the greatest (positive or negative) influence on the local avian community. While several of the species encountered during field surveys are in decline at a national level, it is not possible to conclusively attribute the decline to any one industry; likely, the national hierarchy of threats/pressures as per Article 12 reporting holds true locally also. That is; forestry practice (including forest planting on open ground and forestry management) and factors associated with agricultural intensification are of high importance for a lot of species. Impacts associated with wind farms (renewable abiotic energy use) are likely of medium importance locally. As outlined in a recent NPWS report (Burke *et al.,* 2025) '*existing onshore windfarms have been considered a low-level pressure to Irish waterbirds [including whooper swan and golden plover] ... future expansion may increase the threat to particular species and waterbird communities at particular sites*.' Please see the following species-specific impact assessment for a detailed discussion of cumulative effects.



Drawing Title
Landscape Level Cumulative Assessment

Project Title
Killoshulan Wind Farm, Co. Kilkenny

Drawn By	Checked By
SD	CMcK
Project No.	Drawing No.
260172	Figure 7-1
Scale	Date
1:300,000	22/10/2026

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7.7.3.2 Cumulative Collision Risk Assessment

Table 7-15 below outlines the cumulative collision risk for each of the KORs. Where a zero is presented, a collision risk assessment was completed, and the result was zero collisions. Where '–' is presented, the species was not assessed for collision risk within the relevant assessment; however, given that the species was not recorded at the Proposed Project or not recorded regularly enough to warrant collision risk modelling, collision risk for these species is considered to be effectively zero. For wind farms where the available EIS, EIAR, EcIA or ecological report did not include a quantitative collision risk model, a best estimate was calculated using collision risk results from the nearest wind farm with broadly similar habitats and within the same ecological landscape as a proxy, as bird flight activity is considered likely to be broadly comparable between these areas. Gathabawn Wind Farm was used as a proxy for Lisdowney Wind Farm. Briskalagh Wind Farm was used as a proxy for An Cnoc Wind Farm, Ballincurry Wind Farm, Ballybay Wind Farm, Farranrory Wind Farm, Foyle Wind Farm, Foyle Wind Farm Extension and Gurteen Lower Single Wind Turbine. Littleton Wind Farm was used as a proxy for Bruckana Wind Farm, Monaincha Wind Farm and Monaincha Wind Farm Extension. Seskin Renewables Wind Farm was used as a proxy for the Loan Single Wind Turbine development. Ballynalacken Wind Farm was used as a proxy for Lisheen Wind Farm I, Lisheen Wind Farm II, Lisheen Wind Farm III, Pinewoods Wind Farm and White Hill Wind Farm. A proportional collision risk was estimated based on the number of turbines at each development. For example, Gathabawn Wind Farm comprises 12 turbines and predicted 1.6 kestrel collisions per year; therefore, the collision risk for the four turbines at Lisdowney Wind Farm was estimated as 0.5333 kestrel collisions per year. The same proportional approach was applied to each species for which collision risk modelling was available at the relevant proxy wind farm.

Table 7-15 Cumulative collision risk totals

Wind Farm	Golden Plover	Peregrine	Kingfisher	Kestrel	Lapwing	Snipe	Woodcock	Buzzard	Long-eared Owl	Sparrowhawk
Proposed Project	2.07	0.0587	–	1.51	0.000119	0.0234	0.00153	1.03	–	0.0615
Gathabawn Wind Farm	12.3000	0.2000	–	1.6000	0.1000	0.0000	–	4.2000	–	0.1000
Lisdowney Wind Farm	4.1000	0.0667	–	0.5333	0.0333	0.0000	–	1.4000	–	0.0333
Ballybay Wind Farm	–	–	–	0.3351	–	0.0163	–	0.8100	–	0.0077
Seskin Renewables Wind Farm	0.2900	0.0030	–	0.4900	–	0.0060	–	1.2000	–	0.0500
Lisheen Wind Farm III	1.8915	–	–	0.1309	–	–	–	0.3054	–	0.0265
An Cnoc Wind Farm	–	–	–	0.2793	–	0.0136	–	0.6750	–	0.0064
Foyle Wind Farm	–	–	–	0.2234	–	0.0109	–	0.5400	–	0.0051
Foyle Wind Farm Extension	–	–	–	0.1676	–	0.0081	–	0.4050	–	0.0039

Wind Farm	Golden Plover	Peregrine	Kingfisher	Kestrel	Lapwing	Snipe	Woodcock	Buzzard	Long-eared Owl	Sparrowhawk
Briskalagh Wind Farm	–	–	–	0.3910	–	0.0190	–	0.9450	–	0.0090
Lisheen Wind Farm II	2.8373	–	–	0.1963	–	–	–	0.4581	–	0.0398
Lisheen I Wind Farm	4.2560	–	–	0.2945	–	–	–	0.6872	–	0.0597
Littleton Wind Farm	0.2300	0.3700	–	2.9400	0.2000	0.0300	–	5.2900	–	0.0200
Farranrory Wind Farm	–	–	–	0.5027	–	0.0244	–	1.2150	–	0.0116
Gurteen Lower Single Wind Turbine	–	–	–	0.0559	–	0.0027	–	0.1350	–	0.0013
Ballynalacken Wind Farm	2.8373	–	–	0.1963	–	–	–	0.4581	–	0.0398
Ballincurry Wind Farm	–	–	–	0.1117	–	0.0054	–	0.2700	–	0.0026
Pinewoods Wind Farm	2.6009	–	–	0.1799	–	–	–	0.4199	–	0.0365
Brittas Wind Farm	4.2800	0.0000	0.0000	0.2100	2.5400	0.0000	0.0000	0.8600	0.0000	0.0000
Loan Single Wind Turbine	0.0363	0.0004	–	0.0613	–	0.0008	–	0.1500	–	0.0063
Borrisbeg Wind Farm	55.9500	0.1650	–	2.1360	69.3120	1.1490	–	5.6510	–	0.2740
Monaincha Wind Farm Extension	0.1045	0.1682	–	1.3364	0.0909	0.0136	–	2.4045	–	0.0091
Monaincha Wind Farm	0.2091	0.3364	–	2.6727	0.1818	0.0273	–	4.8091	–	0.0182
White Hill Wind Farm	1.6551	–	–	0.1145	–	–	–	0.2672	–	0.0232
Cumulative collision risk	95.9407	1.8393	0	20.4106	72.712619	1.3887	0.00153	41.3182	0	0.8095

7.7.3.3 Cumulative Impact Assessment

During the assessment of cumulative effects on KORs, cumulative habitat loss, displacement and collision risk associated with operational turbines was assessed. No significant cumulative effects are predicted to result from the construction phase. For this reason, construction phase effects are not considered further in the cumulative assessment.

7.7.3.3.1 *Golden Plover*

At a national level, the main threats and pressures for golden plover listed in Article 12 reporting are: hunting; temperature change due to climate change; wind, wave, and tidal power; sports, tourism, and leisure activities; and modification to flooding regimes. All of these threats and pressures are of medium importance. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative Habitat Review

Golden plover use open agricultural land, grassland, bog and other open peatland habitats for foraging and roosting. Agricultural land and open peatland collectively account for approximately 197,131 ha, or 93% of the Ornithology Cumulative Study Area. Most of the wind farms considered are situated wholly or partly within agricultural land, while several also contain open peatland. Five of the Proposed Turbines are located in agricultural land and five are located within forestry, which is generally unsuitable for golden plover. Habitat suitability within the agricultural landscape depends on factors including vegetation height, field size, drainage, visibility, and the intensity of agricultural management. Nevertheless, the extensive distribution of agricultural and open peatland habitats limits the potential for habitat loss associated with individual wind farms to result in a significant cumulative effect.

Landscape-level Analysis

The results of the landscape-level analysis indicate that, excluding the Proposed Project, approximately 190,580 ha of potentially suitable golden plover habitat, comprising agricultural land and open peatland, is located more than 500 m from a turbine within the Ornithology Cumulative Study Area. The Proposed Turbines would bring a further approximately 361 ha of agricultural land within 500m of a turbine, representing approximately 0.2% of the potentially suitable open habitat currently situated beyond 500m of other turbines. Approximately 190,219 ha would remain more than 500m from a turbine following construction of the Proposed Project. This represents an extensive area of potentially suitable foraging and roosting habitat, and the contribution of the Proposed Project to cumulative habitat loss or displacement would be very small. The assessment is precautionary because golden plover are generally predicted to be displaced by approximately 250m from operating turbines rather than the 500m screening distance used for the landscape-level analysis. Significant cumulative effects on golden plover habitat availability at the landscape level are therefore not anticipated.

Cumulative Impacts of Other Developments

With regard to the cumulative impacts of other developments relating to the key threats and pressures on golden plover, wind farms situated within agricultural and open peatland habitats have the potential to contribute to habitat loss, disturbance, displacement, and collision mortality. However, habitat-loss and disturbance or displacement effects were generally assessed as low or very low at the other wind farms where golden plover was identified as a key ornithological receptor, and the project-specific assessments did not predict significant cumulative population-level effects. The Proposed Project would affect only a small proportion of the extensive open habitat available within the Ornithology Cumulative Study Area. It would not contribute materially to pressures associated with hunting, sports, tourism, or modification of flooding regimes. Significant cumulative effects arising from the Proposed

Project in combination with the other identified developments and wider threats and pressures on golden plover are therefore not anticipated, other than the potential cumulative collision-risk effect assessed below.

Cumulative Collision Risk

As outlined in Table 7-15, the cumulative collision risk for golden plover is approximately 95.9407 birds per year across all wind farms within the Ornithology cumulative study area. The estimated regional wintering population is 2,315 birds, and annual adult mortality has been estimated at 27% (Sandercock, 2003), equating to background mortality of 625.05 birds per year. The predicted loss of approximately 95.9407 birds per year would increase annual mortality by approximately 15.35%. This represents a medium-magnitude effect under the Percival (2003) criteria. When cross-tabulated with the medium sensitivity of golden plover, this results in a low effect significance. The cumulative collision risk is therefore assessed as a long-term slight negative effect, which is not significant.

Cumulative Summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision risk effects is considered to be limited. No significant residual effects of habitat loss, disturbance/displacement or collision risk were reported for the other wind farms. Taking into consideration the reported effects and the predicted effects of the Proposed Project, cumulative effects on golden plover are considered to be influenced primarily by the broader effects of commercial forestry and agricultural practices on habitat availability and quality, rather than by the relatively limited contribution associated with the Proposed Project. No significant residual additive, antagonistic or synergistic cumulative effects have been identified with regard to habitat loss, disturbance/displacement, or collision risk. No significant impacts on golden plover are anticipated at the county, national, or international scale.

Significant cumulative impacts are not predicted.

7.7.3.3.2 *Peregrine Falcon*

At a national level, the main pressure/threats for peregrine falcon listed in Article 12 reporting are: wind, wave and tidal power, including infrastructure; agricultural activities (which relates to changes in habitat extent and quality due to agricultural management); and use of plant protection chemicals in agriculture; as well as poisoning of animals, illegal harvesting, and other human intrusions and disturbance not mentioned above (which relates to checking nests and taking chicks for the purposes of falconry). The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative Habitat Review

Peregrine may forage across agricultural land, open peatland and other open or semi-open habitats supporting suitable avian prey. Agricultural land and open peatland collectively account for 197,131 ha, or approximately 93% of the Ornithology Cumulative Study Area. Most of the wind farms considered are situated wholly or partly within agricultural land, while several also contain open peatland. Mature, closed-canopy forestry is generally of limited value for foraging peregrine, although clear-felled areas and forest edges may provide some suitable habitat. Five of the Proposed Turbines are located in agricultural land and five are located within forestry. Suitable open foraging habitat is therefore abundant within the study area, limiting the potential for habitat loss associated with individual wind farms to result in a significant cumulative effect. The landscape-level analysis does not identify potential nesting features such as cliffs, quarries, buildings, or other structures. Potential effects on nesting peregrine are therefore considered separately using the project-specific survey findings and assessments.

Landscape-level Analysis

Excluding the Proposed Project, approximately 190,580 ha of potentially suitable open peregrine habitat, comprising agricultural land and open peatland, is located more than 500 m from a turbine within the Ornithology Cumulative Study Area. The Proposed Turbines would bring a further approximately 361 ha of agricultural land within 500 m of a turbine, representing approximately 0.2% of the open habitat that currently lies beyond 500 m of other turbines. Approximately 190,219 ha of agricultural land and open peatland would remain more than 500 m from a turbine following construction of the Proposed Project. This represents an extensive area of potentially suitable foraging habitat, and the contribution of the Proposed Project to cumulative habitat loss or displacement would be very small. Significant cumulative effects on peregrine foraging-habitat availability at the landscape level are therefore not anticipated.

Cumulative Impacts of Other Developments

The principal non-collision threat identified for peregrine is human intrusion and disturbance, particularly where activities occur close to an occupied nest site. Construction-related disturbance from individual wind farms would be temporary and is unlikely to overlap extensively in time across the Ornithology cumulative study area. Human activity during operation would generally be limited to periodic maintenance and monitoring. Habitat loss and disturbance or displacement effects on peregrine were assessed as low or very low at Seskin, Foyle, Littleton, Brittas, Borrisbeg and the Monaincha developments. The relevant assessments did not predict significant cumulative population-level effects. Subject to pre-construction surveys and appropriate exclusion zones around any active peregrine nest identified near construction works, significant cumulative disturbance or displacement effects are not anticipated.

Cumulative Collision Risk

As outlined in Table 7-15, the baseline cumulative collision risk for peregrine is approximately 1.7806 birds per year across all wind farms within the Ornithology Cumulative Study Area, excluding the Proposed Project. Based on an estimated regional population of six pairs, equivalent to 12 adult birds, and an annual adult mortality rate of 19% (Craig et al., 2004), approximately 2.28 adult birds would be expected to die annually from natural causes. The baseline cumulative collision risk would therefore represent an estimated 78.1% increase in annual natural mortality. This represents a high-magnitude effect under the Percival (2003) criteria. When cross-tabulated with the high sensitivity of peregrine, this corresponds to a very high effect significance. The baseline collision risk is therefore assessed as a long-term moderate negative cumulative effect, which is significant. Bruckana Wind Farm is the largest contributor, with approximately 0.4709 predicted collisions per year, followed by Littleton Wind Farm with 0.3700 collisions per year. Together, these developments account for approximately 47.2% of the baseline cumulative collision risk. However, Littleton Wind Farm remains in the planning process and the estimate for Bruckana Wind Farm was derived using Littleton Wind Farm as a proxy. The baseline cumulative estimate is therefore subject to uncertainty.

The Proposed Project would contribute a further 0.0587 collisions per year, resulting in a total cumulative collision risk of approximately 1.8393 birds per year. This would increase the estimated effect on annual natural mortality from 78.1% to 80.7%. The Proposed Project would therefore add approximately 2.6 percentage points to the estimated increase in annual natural mortality. This represents a low-magnitude contribution under the Percival (2003) criteria and, when cross-tabulated with the high sensitivity of peregrine, corresponds to a low effect significance. The Proposed Project would not significantly alter the existing baseline cumulative collision-risk effect.

Cumulative Summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss and disturbance/displacement effects on peregrine is considered to be limited. No significant residual

habitat-loss or disturbance/displacement effects were reported for the other wind farms considered. Although the baseline cumulative collision risk is potentially significant, the Proposed Project would contribute approximately 0.0587 collisions per year, equivalent to an additional 2.6% of estimated annual natural mortality. This represents a low effect significance and would not change the overall classification of the baseline cumulative effect. Cumulative effects on peregrine are therefore considered to be influenced primarily by the baseline collision risk associated with other wind farms and the broader effects of commercial forestry and agricultural practices on habitat availability and quality, rather than by the relatively limited contribution of the Proposed Project.

Significant changes to the baseline cumulative impacts are not predicted.

7.7.3.3.3 *Kingfisher*

At a national level, the main threats and pressures for kingfisher listed in Article 12 reporting are: hunting; temperature change due to climate change; agricultural activities generating point source pollution to surface or ground waters; agricultural activities generating diffuse pollution to surface or ground waters; forestry activities generating pollution to surface or ground waters; pollution to surface or ground water due to urban run-offs; mixed source pollution to surface and ground waters (limnic and terrestrial); other invasive alien species (other than species of Union concern); problematic native species; and sports, tourism and leisure activities. All of these threats and pressures are of medium importance. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative Habitat Review

The Proposed Project contains small rivers, streams and drainage channels that may provide limited foraging or dispersal habitat for kingfisher. Several of the other wind farms considered within the Ornithology cumulative study area also contain or intersect watercourses that may support this species. However, the Proposed Turbines are set back from watercourses, and the Proposed Wind Farm would not result in the direct loss of riverine habitat suitable for breeding or foraging kingfisher.

The Proposed 110kV Underground Cabling crosses the River Nore, which forms part of the River Nore SPA, designated for kingfisher. Breeding kingfisher surveys undertaken in June and July 2026 recorded kingfisher foraging and exhibiting behaviour indicative of breeding in proximity to the proposed river crossing, including an individual carrying food and another alarm calling. However, no nest sites were identified at the crossing location, and the riparian habitat was not considered suitable for nesting. The Proposed 110kV Underground Cabling will be installed underground, and any disturbance or habitat alteration associated with construction works at the river crossing would be temporary and localised. Extensive suitable foraging habitat is available along the River Nore outside the immediate works area. Subject to the implementation of appropriate water-quality protection measures and the avoidance of disturbance to active nest sites, the Proposed Project would not contribute materially to the cumulative loss or deterioration of suitable kingfisher habitat. Significant cumulative habitat-loss effects are therefore not anticipated.

Landscape-level Analysis

At a landscape-level significant cumulative effects on kingfisher are not anticipated based on the following rationale: the Proposed Project does not contain any major rivers, with only small rivers and streams present onsite. At a regional level this only accounts for a small portion of the river system which is suitable to kingfisher. Furthermore, the Proposed Project includes setbacks from these rivers and water quality protection measures to minimise the impact on these rivers. Therefore, significant cumulative impacts of habitat loss or deterioration at a landscape-level are not anticipated.

Cumulative Impacts of Other Developments

With regard to the cumulative impact of other developments relating to the key threats and pressures on kingfisher, the majority of these threats and pressures relate to Farming practices and land management changes or water quality. The extent of suitable habitat for kingfisher within the wider landscape surrounding the Proposed Project, which has a widespread drainage and river network, limited the likelihood of significant cumulative impacts at the local scale. If farming practices were to change in some areas in the ways which are outlined in Article 12, the abundance of agricultural grassland within the Proposed Project area limits the potential for significant cumulative habitat loss effects as a significant proportion of the agricultural grassland is likely to remain suitable for this species. Furthermore, as outlined in Chapter 9 Hydrology and Hydrogeology, significant cumulative impacts on water quality are not anticipated. Therefore, significant cumulative effects of the Proposed Project and the key threats and pressures for kingfisher are not anticipated.

Cumulative Collision Risk

As outlined in Table 7-15, there is no cumulative collision risk for kingfisher across all wind farms within the Ornithology Cumulative Study Area, as no wind farms predicted any collision mortality for this species. No significant cumulative collision risk effects are anticipated.

Cumulative Summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision risk effects is considered to be limited. No significant residual effects of habitat loss, disturbance/displacement or collision risk were reported for the other wind farms. There are no other SPAs for which kingfisher is listed as an SCI within 4km (maximum foraging range of kingfisher) of the Proposed Wind Farm site or River Nore crossing. The Ornithology Cumulative Study Area includes other wind farms within maximum foraging range (4km) of where the Proposed 110kV Underground Cabling crosses the River Nore SPA. Taking into consideration the reported effects and the predicted effects of the Proposed Project, cumulative effects on kingfisher are considered to be influenced primarily by the broader effects of water quality and agricultural practices on habitat availability and quality, rather than by the relatively limited contribution associated with the Proposed Project. No significant residual additive, antagonistic or synergistic cumulative effects have been identified with regard to habitat loss, disturbance/displacement, or collision risk. No significant impacts on kingfisher are anticipated at the county, national, or international scale.

Significant cumulative impacts are not predicted.

7.7.3.3.4 *Kestrel*

At a national level, the main threats and pressures for kestrel listed in Article 12 reporting are: use of plant protection chemicals in agriculture; interspecific relations (competition, predation, parasitism, pathogens); conversion from mixed Farming and agroforestry systems to specialised (e.g. single crop) production; and removal of small landscape features for agricultural land parcel consolidation (hedges, stone walls, rushes, open ditches, springs, solitary trees, etc.). All of these threats and pressures are of medium importance. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative Habitat Review

Kestrel forage across agricultural land, open peatland, rough grassland, scrub, and woodland edges, while trees, woodland margins and structures may provide nesting habitat. These habitats are widespread within the Ornithology cumulative study area. Most of the wind farms considered are situated wholly or partly within agricultural land, with several also containing forestry, woodland, or open peatland. Five of the Proposed Turbines are located in agricultural land and five are located

within forestry. Mature, closed-canopy forestry is generally of limited foraging value, although forest edges, clear-felled areas and suitable trees may provide foraging or breeding opportunities. The widespread availability of these habitats limits the potential for habitat loss associated with individual wind farms to result in a significant cumulative effect. The landscape-level analysis does not identify individual nest sites or structures suitable for breeding kestrel; potential effects on these features are considered separately using project-specific survey findings.

Landscape-level Analysis

Kestrel is a habitat generalist capable of using agricultural land, open peatland, forestry edges and other open or semi-open habitats. Excluding the Proposed Project, approximately 200,049 ha of potentially suitable habitat within the Ornithology Cumulative Study Area is located more than 500 m from a turbine. The Proposed Turbines would bring a further approximately 612 ha of agricultural and forestry habitat within 500 m of a turbine, representing approximately 0.3% of the potentially suitable habitat currently situated beyond 500 m of other turbines. Approximately 199,437 ha would remain more than 500 m from a turbine following construction of the Proposed Project. This represents an extensive area of potentially suitable habitat, and the contribution of the Proposed Project to cumulative habitat loss or displacement would be very small. Significant cumulative effects on kestrel habitat availability at the landscape level are therefore not anticipated.

Cumulative Impacts of Other Developments

The principal wider pressures on kestrel relate to agricultural intensification, pesticide use, conversion from mixed Farming to specialised production and the removal of hedgerows, trees, stone walls, rough margins, and other small landscape features. These changes can reduce prey availability, nesting opportunities, and habitat diversity. However, agricultural land and other potentially suitable habitats remain extensive within the Ornithology Cumulative Study Area, and kestrel can forage across a range of habitat types. Habitat-loss and disturbance or displacement effects were generally assessed as low or very low at the other wind farms considered, although a moderate displacement effect was identified at Littleton Wind Farm. The individual assessments did not predict significant cumulative population-level effects. Given the limited habitat footprint of the Proposed Project relative to the habitat available across the wider landscape, significant cumulative habitat-loss or displacement effects arising in combination with other developments and land-use activities are not anticipated.

Cumulative Collision Risk

As outlined in Table 7-15, the cumulative collision risk for kestrel is approximately 20.4106 birds per year across all wind farms within the Ornithology Cumulative Study Area. The estimated County Kilkenny population is 285 birds, and annual adult mortality has been estimated at 35% (Orta et al., 2020), equating to background mortality of 99.75 birds per year. The predicted loss of approximately 20.4106 birds per year would increase annual mortality by approximately 20.46% This represents a medium-magnitude effect under the Percival (2003) criteria. When cross-tabulated with the medium sensitivity of kestrel, this results in a low effect significance. The cumulative collision risk is therefore assessed as a long-term slight negative effect, which is not significant.

Cumulative Summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision risk effects is considered to be limited. No significant residual effects of habitat loss, disturbance/displacement or collision risk were reported for the other wind farms. Taking into consideration the reported effects and the predicted effects of the Proposed Project, cumulative effects on kestrel are considered to be influenced primarily by the broader effects of commercial forestry and agricultural practices on habitat availability and quality, rather than by the relatively limited contribution associated with the Proposed Project. No significant residual additive,

antagonistic or synergistic cumulative effects have been identified with regard to habitat loss, disturbance/displacement, or collision risk. No significant impacts on kestrel are anticipated at the county, national, or international scale.

Significant cumulative impacts are not predicted.

7.7.3.3.5 *Lapwing*

At a national level, the main threats and pressures for lapwing listed in Article 12 reporting: temperature changes (e.g., rise of temperature and extremes) due to climate change; wind, wave and tidal power, including infrastructure; sports, tourism and leisure activities; and modification of flooding regimes, flood protection for residential or recreational development are listed as key pressures and threats to wintering lapwing which are of medium importance. With regard to breeding lapwing, mowing or cutting of grassland; conversion to forest from other land uses, or afforestation (excluding drainage); problematic native species; other invasive alien species (other than species of Union concern); and conversion from one type of agricultural land use to another (excluding drainage and burning) are listed as the key threats and pressures which are of high importance, while use of plant protection chemicals in agriculture; abandonment of grassland management (e.g. cessation of grazing or mowing); drainage for use as agricultural land; peat extraction; and wind, wave and tidal power, including infrastructure are of medium importance. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative Habitat Review

Lapwing use open agricultural land, wet grassland, short pasture, arable land, cutover bog and other open habitats for breeding, feeding, and roosting. Agricultural land and open peatland collectively account for approximately 197,131 ha within the Ornithology Cumulative Study Area, and several of the wind farms considered are situated wholly or partly within these habitats. Five of the Proposed Turbines are located in agricultural land and five are located within forestry, which is generally unsuitable for lapwing. Habitat suitability depends on factors including sward height, soil wetness, field size, visibility, proximity to woodland and hedgerows, and the intensity and timing of agricultural management. The landscape-level analysis therefore represents the broad availability of potentially suitable open habitat rather than confirmed lapwing habitat. Nevertheless, the extensive distribution of agricultural and peatland habitats limits the potential for habitat loss associated with individual wind farms to result in a significant cumulative effect.

Landscape-level Analysis

Excluding the Proposed Project, approximately 190,580 ha of broadly potentially suitable agricultural land and open peatland within the Ornithology cumulative study area is located more than 500 m from a turbine. Under the 500 m screening approach, the Proposed Turbines would bring a further approximately 361 ha of agricultural land within 500 m of a turbine, representing approximately 0.2% of the potentially suitable open habitat currently situated beyond 500 m of other turbines. Approximately 190,219 ha would remain beyond 500 m following construction of the Proposed Project. This calculation is precautionary because much of the agricultural land may be unsuitable due to intensive management, small field size, tall boundary vegetation, or proximity to woodland. Conversely, habitat within 500 m would not necessarily be completely lost or avoided. The contribution of the Proposed Project to cumulative habitat loss or displacement at the landscape level is therefore considered limited, and significant cumulative effects on the overall availability of lapwing habitat are not anticipated.

Cumulative Impacts of Other Developments

The principal cumulative pathways affecting lapwing relate to the loss, deterioration, or displacement of suitable open habitat through agricultural intensification, drainage, changes in grazing or mowing, conversion between agricultural uses, afforestation, peat extraction, and scrub encroachment. Breeding

habitat is more restricted than the broad extent of agricultural land suggests because lapwing require open sites with appropriate vegetation structure, ground conditions, and visibility. Wintering birds may use a wider range of grassland, arable and cutover peatland habitats. Peat extraction may create temporarily suitable open conditions in some locations, while subsequent abandonment and vegetation succession may reduce their value. The Proposed Project would affect only a small proportion of the agricultural landscape and would not bring additional open peatland within 500m of a turbine. Subject to the avoidance and appropriate management of any important breeding, feeding or roosting areas identified through project-specific surveys, significant cumulative habitat-loss, or displacement effects in combination with other developments and land-management activities are not anticipated.

Cumulative Collision Risk

As outlined in Table 7-15, the baseline cumulative collision risk for lapwing is approximately 72.7126 birds per year across all wind farms within the Ornithology Cumulative Study Area, excluding the Proposed Project. The estimated regional wintering population is 1,037 birds and annual adult mortality has been estimated at 29.5% (Peach *et al.*, 1994), equating to expected annual natural mortality of approximately 305.9 birds. The baseline cumulative collision risk would therefore represent an estimated 23.77% increase in annual natural mortality. This represents a high-magnitude effect under the Percival (2003) criteria. When cross-tabulated with the medium sensitivity of lapwing, this corresponds to a medium effect significance. The baseline collision risk is therefore assessed as a long-term moderate negative cumulative effect, which is significant. Borrisbeg Wind Farm is the principal contributor, accounting for 69.312 predicted collisions per year, or approximately 95.3% of the baseline cumulative total. The remaining cumulative estimate includes proxy collision rates and is therefore subject to uncertainty.

The Proposed Project would contribute a further 0.000119 collisions per year, resulting in a total cumulative collision risk that remains approximately 72.7126 birds per year. This contribution would add less than 0.001 percentage points to the estimated increase in annual natural mortality and represents a negligible-magnitude effect under the Percival (2003) criteria. When cross-tabulated with the medium sensitivity of lapwing, this corresponds to a very low effect significance. The Proposed Project would not significantly alter the existing baseline cumulative collision-risk effect.

Cumulative Summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss and disturbance/displacement effects on lapwing is considered to be limited. Suitable agricultural and open peatland habitats remain widely available within the Ornithology Cumulative Study Area, and the Proposed Project would affect only a small proportion of this habitat. Although the baseline cumulative collision risk is potentially significant, this is primarily attributable to the collision prediction for Borrisbeg Wind Farm. The Proposed Project would contribute approximately 0.000119 collisions per year, representing a negligible contribution to annual natural mortality, and would not change the overall classification of the baseline cumulative effect. No significant residual additive, antagonistic or synergistic effects arising from the contribution of the Proposed Project have been identified with regard to habitat loss, displacement, barrier effects, or collision risk.

Significant changes to the baseline cumulative impacts are not predicted.

7.7.3.3.6 *Snipe*

At a national level, the main threats and pressures for breeding snipe listed in Article 12 reporting: mowing or cutting of grassland; intensive grazing or overgrazing by livestock; conversion to forest from other land uses, or afforestation (excluding drainage); problematic native species; and other invasive alien species (other than species of Union concern) are listed as the key threats and pressures which are of high importance, while conversion from one type of agricultural land use to another (excluding drainage and burning); abandonment of grassland management (e.g., cessation of grazing or mowing);

drainage for use as agricultural land; peat extraction; and wind, wave and tidal power, including infrastructure are of medium importance. There are no threats and pressures identified for wintering snipe. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative Habitat Review

Snipe use wet grassland, marsh, rush-dominated pasture, bog, wet heath, and other open habitats with soft, waterlogged ground for breeding, foraging, and roosting. Agricultural land and open peatland collectively account for 197,131 ha within the Ornithology Cumulative Study Area, although only a proportion of this area is likely to provide the wet ground conditions and vegetation structure required by snipe. Several wind farms considered in the assessment are situated wholly or partly within agricultural land or open peatland. Five of the Proposed Turbines are located in agricultural land and five are located within forestry, which is generally unsuitable for snipe. The widespread distribution of agricultural and peatland habitats limits the potential for habitat loss associated with individual wind farms to result in a significant cumulative effect.

Landscape-level Analysis

Excluding the Proposed Project, approximately 190,580 ha of broadly potentially suitable agricultural land and open peatland within the Ornithology Cumulative Study Area is located more than 500 m from a turbine. Under the 500 m screening approach, the Proposed Turbines would bring a further approximately 361 ha of agricultural land within 500m of a turbine, representing approximately 0.2% of the potentially suitable habitat currently situated beyond 500m of other turbines. Approximately 190,219 ha would remain beyond 500m following construction of the Proposed Project. These figures represent a precautionary upper estimate because much of the agricultural land is unlikely to provide suitable wet conditions for snipe. Nevertheless, the contribution of the Proposed Project to cumulative habitat loss or displacement at the landscape level would be very small, and significant cumulative effects on the overall availability of snipe habitat are not anticipated.

Cumulative Impacts of Other Developments

With regard to the cumulative impact of other developments relating to the key threats and pressures on snipe, the majority of these threats and pressures relate to Farming practices and land management changes. The extent of suitable habitat for snipe within the wider landscape surrounding the Proposed Project, which is dominated by agricultural farmland, limited the likelihood of significant cumulative impacts at the local scale. If farming practices were to change in some areas in the ways which are outlined in Article 12, the abundance of agricultural grassland within the Ornithology Cumulative Study Area limits the potential for significant cumulative habitat loss effects as a significant proportion of the agricultural grassland is likely to remain suitable for this species. Cumulative impacts on the snipe population from problematic native species and other invasive aliens are not anticipated given the low levels of mortality associated with this threat at a local scale and the fact that collisions with wind turbines are also a rare event. Therefore, these causes of mortality in combination will not result in a significant impact on the snipe population at any regional scale. With regard to the threat and pressure of peat extraction, there is no large-scale industrial removal of peat within the Proposed Project. Therefore, significant cumulative effects of the Proposed Project and the key threats and pressures for snipe are not anticipated.

Cumulative Collision Risk

As outlined in Table 7-15, the cumulative collision risk for snipe is approximately 1.3887 birds per year across all wind farms within the Ornithology Cumulative Study Area. The estimated County Kilkenny population is 262 birds, and annual adult mortality has been estimated at 37.5% (Spence, 1988), equating to background mortality of 98.25 birds per year. The predicted loss of approximately 1.3887

birds per year would increase annual mortality by approximately 1.41%. This represents a low-magnitude effect under the Percival (2003) criteria. When cross-tabulated with the medium sensitivity of snipe, this results in a low effect significance. The cumulative collision risk is therefore assessed as a long-term slight negative effect, which is not significant.

Cumulative Summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision risk effects is considered to be limited. No significant residual effects of habitat loss, disturbance/displacement or collision risk were reported for the other wind farms. Taking into consideration the reported effects and the predicted effects of the Proposed Project, cumulative effects on snipe are considered to be influenced primarily by the broader effects of commercial forestry and agricultural practices on habitat availability and quality, rather than by the relatively limited contribution associated with the Proposed Project. No significant residual additive, antagonistic or synergistic cumulative effects have been identified with regard to habitat loss, disturbance/displacement, or collision risk. No significant impacts on snipe are anticipated at the county, national, or international scale.

Significant cumulative impacts are not predicted.

7.7.3.3.7 *Woodcock*

At a national level, the main threats and pressures for breeding woodcock listed in Article 12 reporting: logging without replanting or natural regrowth; clear-cutting, removal of all trees; other human intrusions and disturbance not mentioned above; abandonment of traditional forest management; interspecific relations (competition, predation, parasitism, pathogens); problematic native species; abandonment of grassland management (e.g. cessation of grazing or mowing); removal of small landscape features for agricultural land parcel consolidation (hedges, stone walls, rushes, open ditches, springs, solitary trees, etc.); and hunting. All of which are of medium importance. There are no threats and pressures identified for wintering woodcock. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative Habitat Review

Woodcock use woodland, forestry and scrub with moist soils and well-developed ground vegetation for nesting, daytime shelter, and foraging. They may also forage at night within adjoining damp grassland and pasture. Forestry and woodland account for approximately 10,402 ha of the Ornithology Cumulative Study Area, and several of the wind farms considered are situated wholly or partly within these habitats. Five of the Proposed Turbines are located within forestry. However, habitat suitability varies according to woodland age, canopy structure, soil moisture, ground vegetation, and connectivity with suitable feeding areas. The availability of forestry and woodland throughout the study area limits the potential for habitat loss associated with individual wind farms to result in a significant cumulative effect. The landscape-level analysis does not distinguish individual nesting areas or particularly suitable wet woodland and scrub; these features are considered through project-specific habitat and survey findings.

Landscape-level Analysis

Excluding the Proposed Project, approximately 9,469 ha of broadly potentially suitable forestry and woodland habitat within the Ornithology Cumulative Study Area is located more than 500 m from a turbine. Under the 500 m screening approach, the Proposed Turbines would bring a further approximately 251 ha of forestry within 500 m of a turbine. This represents approximately 2.7% of the forestry and woodland currently situated beyond 500 m of other turbines. Approximately 9,218 ha would remain beyond 500 m following construction of the Proposed Project. This calculation is precautionary because it treats all forestry as potentially suitable and does not imply that habitat within

500 m would be lost or completely avoided. The contribution of the Proposed Project to cumulative habitat loss or displacement is therefore considered limited, and significant cumulative effects on woodcock habitat availability at the landscape level are not anticipated.

Cumulative Impacts of Other Developments

With regard to the cumulative impact of other developments relating to the key threats and pressures on woodcock, the majority of these threats and pressures relate to forestry practices and land management changes with regard to woodland and forestry. The extent of suitable habitat for woodcock within the wider landscape surrounding the Proposed Project, which has a significant amount of commercial forestry in particular, limited the likelihood of significant cumulative impacts at the local scale. If forestry practices were to change in some areas in the ways which are outlined in Article 12, significant cumulative impacts are not predicted given how widespread these habitats are in the area. Cumulative impacts on the woodcock population from problematic native species, interspecific relations and hunting are not anticipated given the low levels of mortality associated with these threats. Therefore, these causes of mortality in combination will not result in a significant impact on the woodcock population at any regional scale. Therefore, significant cumulative effects of the Proposed Project and the key threats and pressures for woodcock are not anticipated.

Cumulative Collision Risk

As outlined in Table 7-15, the cumulative collision risk for woodcock is approximately 0.00153 birds per year across all wind farms within the Ornithology Cumulative Study Area. This predicted mortality is effectively zero, and no significant cumulative collision-risk effects are anticipated.

Cumulative Summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision risk effects is considered to be limited. No significant residual effects of habitat loss, disturbance/displacement or collision risk were reported for the other wind farms. Taking into consideration the reported effects and the predicted effects of the Proposed Project, cumulative effects on woodcock are considered to be influenced primarily by the broader effects of commercial forestry and agricultural practices on habitat availability and quality, rather than by the relatively limited contribution associated with the Proposed Project. No significant residual additive, antagonistic or synergistic cumulative effects have been identified with regard to habitat loss, disturbance/displacement, or collision risk. No significant impacts on woodcock are anticipated at the county, national, or international scale.

Significant cumulative impacts are not predicted.

7.7.3.3.8 *Buzzard*

At a national level, the main threats and pressures for buzzard listed in Article 12 reporting are: abandonment of grassland management (e.g., cessation of grazing or mowing); poisoning of animals (excluding lead poisoning); illegal shooting/killing; and wind, wave, and tidal power, including infrastructure. All of these threats and pressures are of medium importance. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative Habitat Review

Buzzard forage across agricultural land, open peatland, rough grassland, scrub, clear-felled forestry, and woodland edges, while woodland and mature trees provide suitable nesting habitat. These habitats are widespread throughout the Ornithology Cumulative Study Area. Most of the wind farms considered are situated wholly or partly within agricultural land, with several also containing forestry, woodland, or

open peatland. Five of the Proposed Turbines are located in agricultural land and five are located within forestry. Mature, closed-canopy forestry is generally of limited foraging value, although forestry edges, clear-felled areas and mature trees may provide foraging and breeding opportunities. The widespread availability of these habitats limits the potential for habitat loss associated with individual wind farms to result in a significant cumulative effect.

Landscape-level Analysis

Buzzard is a habitat generalist that uses agricultural land, open peatland, forestry and other open or wooded habitats to varying degrees. Excluding the Proposed Project, approximately 200,049 ha of potentially suitable habitat within the Ornithology Cumulative Study Area is located more than 500 m from a turbine. The Proposed Turbines would bring a further approximately 612 ha of agricultural and forestry habitat within 500 m of a turbine, representing approximately 0.3% of the potentially suitable habitat currently situated beyond 500 m of other turbines. Approximately 199,437 ha would remain more than 500 m from a turbine following construction of the Proposed Project. This represents an extensive area of potentially suitable habitat, and the contribution of the Proposed Project to cumulative habitat loss or displacement would be very small. Significant cumulative effects on buzzard habitat availability at the landscape level are therefore not anticipated.

Cumulative Impacts of Other Developments

With regard to the cumulative impact relating to the key threats and pressures on buzzard, cumulative impacts on the buzzard population from poisoning and illegal shooting/killing are not anticipated given the low levels of mortality associated with this threat at a local scale and the fact that collisions with wind turbines are also a rare event. Therefore, these causes of mortality in combination will not result in a significant impact on the buzzard population at any regional scale. The abandonment of grassland is also considered a key threat and pressure on the buzzard population, however, within the Ornithology Cumulative Study Area where the Proposed Project is located, there is an abundance of agricultural grassland, the majority of which is improved agricultural grassland and is likely to remain as such for the duration of the Proposed Project. Furthermore, buzzard is a generalist species that will hunt within a wide variety of habitat types. Therefore, significant cumulative effects of the Proposed Project and the key threats and pressures for buzzard are not anticipated.

Cumulative Collision Risk

As outlined in Table 7-15, the cumulative collision risk for buzzard from other wind farms within the Ornithology Cumulative Study Area is 40.2882 birds per year. The Proposed Project would contribute a further 1.03 birds per year, resulting in a total cumulative collision risk of 41.3182 birds per year. Annual mortality of adult buzzard has been calculated at 10% per annum (Kenward et al., 2000). Based on an estimated County Kilkenny breeding population of 75 pairs, equivalent to approximately 150 adult birds, approximately 15 adult birds would be expected to die annually from natural causes. The baseline cumulative collision risk would represent an estimated 268.6% increase in annual natural mortality, while the Proposed Project would add approximately 6.9 percentage points, resulting in a total estimated increase of 275.5%. The baseline cumulative collision risk therefore represents a potentially significant effect. However, the contribution of the Proposed Project is assessed as medium magnitude and, when combined with the low sensitivity of buzzard, corresponds to a very low effect significance. The calculation is precautionary because the cumulative total includes proxy collision estimates, while the county population estimate assumes an even distribution of the reported national breeding population across Ireland.

Cumulative Summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss and disturbance/displacement effects is considered to be limited. Suitable agricultural, forestry and open

peatland habitats remain widely available within the Ornithology Cumulative Study Area, and no significant residual additive, antagonistic or synergistic effects have been identified with regard to habitat loss or displacement/barrier effects. The calculated baseline cumulative collision risk for buzzard is potentially significant, although this result is based partly on proxy collision estimates and a derived county population estimate. The Proposed Project would contribute 1.03 collisions per year, equivalent to an additional 6.9% of estimated annual natural mortality. This represents a very low effect significance for a species of low sensitivity and would not significantly alter the potentially significant baseline cumulative effect.

Significant changes to the baseline cumulative impacts are not predicted.

7.7.3.3.9 *Long-eared Owl*

At a national level, the main threats and pressures for long-eared owl listed in Article 12 reporting are: roads, paths, railroads and related infrastructure (e.g., bridges, viaducts, tunnels); use of plant protection chemicals in agriculture; removal of small landscape features for agricultural land parcel consolidation (hedges, stone walls, rushes, open ditches, springs, solitary trees, etc.); replanting with or introducing non-native or non-typical species (including new species and GMOs); and clear-cutting, removal of all trees. All of these threats and pressures are of medium importance. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative Habitat Review

Long-eared owl use woodland, conifer plantations, shelterbelts and mature trees for nesting and roosting, together with adjoining agricultural grassland, rough grassland, open peatland, clear-felled areas, and woodland edges for foraging. These habitats occur widely throughout the Ornithology cumulative study area, although their suitability depends on woodland structure, the availability of suitable nest sites and the abundance of small-mammal prey. Most of the wind farms considered contain a combination of agricultural land, forestry, woodland, or open peatland. Five of the Proposed Turbines are located in agricultural land and five are located within forestry. The widespread availability of this habitat mosaic limits the potential for habitat loss associated with individual wind farms to result in a significant cumulative effect.

Landscape-level Analysis

Long-eared owl may use agricultural land and open peatland for foraging and forestry or woodland for nesting and roosting. Excluding the Proposed Project, approximately 200,049 ha of habitat potentially contributing to nesting, roosting, or foraging is located more than 500m from a turbine within the Ornithology Cumulative Study Area. Under the 500m screening approach, the Proposed Turbines would bring a further approximately 612 ha of agricultural and forestry habitat within 500m of a turbine. This represents approximately 0.3% of the potentially suitable habitat currently situated beyond 500m of other turbines. Approximately 199,437 ha would remain beyond 500m following construction of the Proposed Project. The contribution of the Proposed Project to cumulative habitat loss or displacement would therefore be very small, and significant cumulative effects on long-eared owl habitat availability at the landscape level are not anticipated.

Cumulative Impacts of Other Developments

With regard to the cumulative impact of other developments relating to the key threats and pressures on long-eared owl, the majority of these threats and pressures relate to farming practices and land management changes. The extent of suitable habitat for long-eared owl within the wider landscape surrounding the Proposed Project, which is dominated by agricultural farmland, limited the likelihood of significant cumulative impacts at the local scale. Where farming or forestry practices to change in some areas in the ways which are outlined in Article 12, significant cumulative impacts are not predicted given how widespread these habitats are in the area, and that long-eared owl are a generalist

species that can hunt within a wide variety of habitat types. Cumulative impacts on the long-eared owl population from roads, paths, railways, and related infrastructure are not anticipated given the low levels of mortality associated with this threat at a local scale and the fact that collisions with wind turbines are also a rare event. Therefore, these causes of mortality in combination will not result in a significant impact on the long-eared owl population at any regional scale. Therefore, significant cumulative effects of the Proposed Project and the key threats and pressures for long-eared owl are not anticipated.

Cumulative Collision Risk

As outlined in Table 7-15, there is no cumulative collision risk for long-eared owl across all wind farms within the Ornithology cumulative study area, as no wind farms predicted any collision mortality for this species. No significant cumulative collision risk effects are anticipated.

Cumulative Summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision risk effects is considered to be limited. No significant residual effects of habitat loss, disturbance/displacement or collision risk were reported for the other wind farms. Taking into consideration the reported effects and the predicted effects of the Proposed Project, cumulative effects on long-eared owl are considered to be influenced primarily by the broader effects of commercial forestry and agricultural practices on habitat availability and quality, rather than by the relatively limited contribution associated with the Proposed Project. No significant residual additive, antagonistic or synergistic cumulative effects have been identified with regard to habitat loss, disturbance/displacement, or collision risk. No significant impacts on long-eared owl are anticipated at the county, national, or international scale.

Significant cumulative impacts are not predicted.

7.7.3.3.10 *Sparrowhawk*

At a national level, the main threats and pressures for sparrowhawk listed in Article 12 reporting are: removal of small landscape features for agricultural land parcel consolidation (hedges, stone walls, rushes, open ditches, springs, solitary trees, etc.); conversion from mixed farming and agroforestry systems to specialised (e.g., single crop) production; and use of plant protection chemicals in agriculture. All of these threats and pressures are of medium importance. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative Habitat Review

Sparrowhawk principally use woodland, forestry, shelterbelts, and mature trees for nesting, together with woodland edges, hedgerows, scrub, Farmland, and gardens for foraging. Agricultural and forestry habitats are widespread throughout the Ornithology Cumulative Study Area, and most of the wind farms considered contain one or both of these habitat types. Five of the Proposed Turbines are located in agricultural land and five are located within forestry. Although closed-canopy forestry may provide nesting habitat, habitat suitability varies with tree age, structure, and the availability of suitable nesting stands. The widespread distribution of agricultural and wooded habitats limits the potential for habitat loss associated with individual wind farms to result in a significant cumulative effect.

Landscape-level Analysis

Sparrowhawk may use agricultural land and open peatland for foraging and forestry or woodland for nesting, roosting, and edge-based foraging. Excluding the Proposed Project, approximately 200,049 ha of broadly suitable habitat within the Ornithology Cumulative Study Area is located more than 500 m

from a turbine. Under the 500m screening approach, the Proposed Turbines would bring a further approximately 612 ha of agricultural and forestry habitat within 500m of a turbine. This represents approximately 0.3% of the potentially suitable habitat currently situated beyond 500 m of other turbines. Approximately 199,437 ha would remain beyond 500m following construction of the Proposed Project. The contribution of the Proposed Project to cumulative habitat loss or displacement would therefore be very small, and significant cumulative effects on sparrowhawk habitat availability at the landscape level are not anticipated.

Cumulative Impacts of Other Developments

With regard to the cumulative impact of other developments relating to the key threats and pressures on sparrowhawk, the majority of these threats and pressures relate to farming practices and land management changes. The extent of suitable habitat for sparrowhawk within the wider landscape surrounding the Proposed Project, which is dominated by agricultural Farmland, limited the likelihood of significant cumulative impacts at the local scale. If farming practices were to change in some areas in the ways which are outlined in Article 12, the abundance of agricultural grassland within the Ornithology Cumulative Study Area limits the potential for significant cumulative habitat loss effects as a significant proportion of the agricultural grassland is likely to remain suitable for this species and given that sparrowhawk are a generalist species that can hunt within a wide variety of habitat types. Therefore, significant cumulative effects of the Proposed Project and the key threats and pressures for sparrowhawk are not anticipated.

Cumulative Collision Risk

As outlined in Table 7-15, the cumulative collision risk for sparrowhawk from other wind farms within the Ornithology Cumulative Study Area is 0.7480 birds per year. The Proposed Project would contribute a further 0.0615 birds per year, resulting in a total cumulative collision risk of 0.8095 birds per year. Annual mortality of adult sparrowhawk has been calculated at 31% per annum (Newton, 1986). Based on an estimated County Kilkenny population of 456 birds, approximately 141 birds would be expected to die annually from natural causes. The baseline cumulative collision risk would represent an estimated 0.53% increase in annual natural mortality. The Proposed Project would add approximately 0.04 percentage points, resulting in a total estimated increase of 0.57%. The predicted cumulative collision risk is negligible, and no significant cumulative collision-risk effects are anticipated at the county scale.

Cumulative Summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision-risk effects is considered to be limited. Suitable agricultural, forestry and open peatland habitats remain widely available within the Ornithology Cumulative Study Area. The Proposed Project would contribute approximately 0.0615 collisions per year, equivalent to an additional 0.04% of estimated annual natural mortality. Taking into consideration the reported effects of the other wind farms and the predicted effects of the Proposed Project, no significant residual additive, antagonistic or synergistic cumulative effects have been identified with regard to habitat loss, displacement/barrier effects, or collision risk.

Significant cumulative impacts are not predicted

7.8 Monitoring

7.8.1 Construction Phase

A Bird Monitoring Plan with the objective of monitoring the ornithological 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 ornithological 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 vantage point surveys, breeding raptor surveys, breeding woodcock surveys, breeding kingfisher surveys, and collision monitoring.

7.8.3 Decommissioning Phase

A Bird Monitoring Plan with the objective of monitoring the ornithological 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.

7.8.4 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.

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 enhancement measures that are described within this application, significant individual or cumulative effects on the identified KORs are not anticipated.