

7. BIRDS

7.1 Introduction

This chapter assesses the likely significant effects of the Proposed Project on avian receptors. Particular attention has been paid to bird species with national and international protection under the Irish Wildlife Acts 1976-2022 and the European Union (EU) Birds Directive (2009/147/EC). Where potentially significant effects on avian 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 terminology: ‘Proposed Project’, ‘Proposed Wind Farm’, ‘Proposed Grid Connection’, ‘Site’ and ‘Proposed Wind Farm site’.

The chapter is structured as follows:

- The **Introduction** provides a description of the Proposed Wind Farm and the relevant legislation, guidance and policy context.
- The **Methodology** section is a comprehensive description of the desk study, field surveys and impact assessment methodology used to inform a robust assessment of potential impacts of the Proposed Wind Farm on birds.
- The **Baseline Ornithological Conditions** section describes the existing bird population at the Proposed Wind Farm site.
- The **Receptor Evaluation** section identifies key ornithological receptors.
- The **Impact Assessment** section describes the likely impacts of the Proposed Wind Farm on key ornithological receptors with regard to each phase of the Proposed Wind Farm: construction, operation and decommissioning.
- The **Mitigation and Best Practice Measures** section describes proposed mitigation and best practice measures to ameliorate the identified impacts and the residual effects on bird populations.
- The **Cumulative Impacts** section fully assesses potential cumulative effects of the Proposed Wind Farm in combination with other plans and projects.
- The **Monitoring** section outlines a schedule for monitoring birds during each phase of the Proposed Wind Farm if planning permission is granted: commencement and construction, operation and decommissioning.
- Finally, the **Conclusion** provides a summary statement on the overall significance of predicted effects on birds.

This chapter is supported by Technical Appendices 7-1 to 7-8. Technical Appendix 7-1 contains details of survey effort, including all survey dates, times and weather conditions, and maps of the survey locations. Appendix 7-2 contains a list of all species recorded during surveys. Appendix 7-3 presents a summary of bird records from surveys, while Appendix 7-4 contains the raw survey data and maps and Appendix 7-5 contains any ecologically sensitive information, such as important breeding or resting locations. Appendix 7-6 provides the methodology and results for the collision risk assessment. Finally, Appendix 7-7 presents the Bird Mitigation Plan, while Appendix 7-8 presents the proposed Bird Monitoring Programme.

The following definitions are used in this chapter:

- ‘Study area’ refers to the focal area during survey and assessment. As described in Section 7.2, this will differ with the species being targeted and the associated surveys proposed. These study areas follow the recommendations of NatureScot (formerly Scottish Natural Heritage [SNH]) guidance (SNH, 2017).

7.1.1 Description of the Proposed Wind Farm

A full description of the Proposed Wind Farm is provided in Chapter 4 of this EIAR. In brief, the applicant is seeking a ten-year planning permission for a project consisting of nine wind turbines and the associated works. The turbines will be 99-105m at hub height, with three blades of a rotor diameter between 150m and 162m, and a maximum tip height of 180m. The Proposed Wind Farm will have an operational life of 35 years from the date of commissioning.

7.1.2 Legislation, Guidance and Policy Context

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

- The Wildlife Act 1976. 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 regulations were amended in 2013 (290/2013 and 499/2013), 2015 (355/2015) as well as Chapter 4 of the Planning, Heritage and Broadcasting (Amendment) Act 2021 (11/2021) and in 2021 (293/2021).
- 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 (2000). Wind farms and birds: calculating a theoretical collision risk assuming no avoidance action. Scottish Natural Heritage, Inverness, Scotland. Available at: <https://www.nature.scot/sites/default/files/2017-09/Guidance%20Note%20-%20Windfarms%20and%20birds%20-%20Calculating%20a%20theoretical%20collision%20risk%20assuming%20no%20avoiding%20action.pdf>
- SNH (2009). Monitoring the impact of onshore wind farms on birds. Scottish Natural Heritage, Inverness, Scotland. Available at: <https://www.nature.scot/sites/default/files/2017-09/Guidance%20Note%20-%20Monitoring%20the%20impact%20of%20onshore%20windfarms%20on%20birds.pdf>
- SNH (2016). Assessing connectivity with Special Protection Areas (SPAs). Scottish Natural Heritage, Inverness, Scotland. Available at: <https://www.nature.scot/sites/default/files/2018-08/Assessing%20connectivity%20with%20special%20protection%20areas.pdf>
- SNH (2017). Recommended bird survey methods to inform impact assessment of onshore wind farms. Scottish Natural Heritage, Inverness, Scotland. Available at: <https://www.nature.scot/sites/default/files/2018-06/Guidance%20Note%20-%20Recommended%20bird%20survey%20methods%20to%20inform%20impact%20assessment%20of%20onshore%20windfarms.pdf>
- SNH (2018a) Avoidance rates for the onshore SNH wind farm collision risk model. Scottish Natural Heritage, Inverness, Scotland. Available at: <https://www.nature.scot/sites/default/files/2018-09/Wind%20farm%20impacts%20on%20birds%20-%20Use%20of%20Avoidance%20Rates%20in%20the%20SNH%20Wind%20Farm%20Collision%20Risk%20Model.pdf>
- SNH (2018b). Assessing the cumulative impacts of onshore wind farms on birds. Scottish Natural Heritage, Inverness, Scotland. Available at:

<https://www.nature.scot/sites/default/files/2018-08/Guidance%20-%20Assessing%20the%20cumulative%20impacts%20of%20onshore%20wind%20farms%20on%20birds.pdf>

- SNH (2018c). Assessing significance of impacts from onshore wind farms outwith designated areas. Scottish Natural Heritage, Inverness, Scotland. Available at: <https://www.nature.scot/doc/guidance-assessing-significance-impacts-bird-populations-onshore-wind-farms-do-not-affect-protected>
- NatureScot (2024). Guidance on using an updated collision risk model to assess bird collision risk at onshore wind farms. NatureScot, Inverness, Scotland. Available at: <https://www.nature.scot/doc/guidance-using-updated-collision-risk-model-assess-bird-collision-risk-onshore-wind-farms>

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:

- 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 Coimisiún Pleanála on carrying out Environmental Impact Assessment. Department of Housing, Planning and Local Government, Government of Ireland, Dublin.
- Galway County Development Plan 2022-2028.

7.1.3 Statement of Authority

This ornithology chapter has been prepared by Susan Doyle (Ph.D.), Senior Ornithologist of MKO and reviewed by Pádraig Cregg (M.Sc.), Principal Ornithologist. Both are suitably qualified ornithologists with experience in completing avifaunal assessments and competent experts for the purposes of the preparation of this EIAR.

Susan has seven years' experience in ecological consultancy and specialises in ornithological consulting, including Environmental Impact Assessments and operational monitoring. Prior to joining MKO in October 2020, Susan gained experience through her involvement in several bird conservation projects, including protected seabirds, waders and waterfowl, as well as research into Arctic birds, satellite telemetry in migrant birds, breeding hen harrier and avian diseases in Ireland, providing her with extensive experience in a wide variety of bird survey methods, data management and reporting.

Padraig has over thirteen years' experience of working in environmental consultancies. In his role with MKO, he acts as technical advisor for the ornithology team helping to take projects through their full lifecycle, from site selection through survey design, constraints studies, impact assessment and lodgement of the planning application. He is responsible for training the ornithology team and undertakes to keep up-to-date and keep his colleagues updated on all emerging guidance, legislation, policies, initiatives, industry best practice and emerging trends and market opportunities. Padraig joined MKO in 2018.

The scope of works and survey methodology was devised by Padraig and is fully compliant with recent NatureScot guidance (SNH, 2017). Field surveys were undertaken by Cian Cahalin (B.Sc.), Colin Delahunt (B.Sc.), Conor Geoghegan (B.Sc.), David Naughton (B.Sc.), Jonah Gaine (B.Sc.), Jack Kennedy (B.Sc.), Louis de Vries (M.Sc.), Marcus Hogan (B.Sc.), Margaux Pierrel (B.Sc.), Peter Capsey (B.A.), Paul Troake (N.Dip.), Susan Doran (B.Sc.), Sarah Jorgensen (M.Sc.), Sean O'Brien (B.Sc.), Zuzana Erosova (B.Sc.) and Zak O'Connor (B.Sc.). Surveyors are suitably qualified competent experts for undertaking these field surveys.

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. The Zone of Influence is defined in the Natura Impact Statement (NIS; Chapter 6 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 Rare and Protected Species Database.

7.2.2 Scoping and Consultation

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

Copies of all scoping responses are included in Appendix 2-3 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	BirdWatch Ireland	No response received at the time of writing.
02	Development Applications Unit; Department of Tourism, Culture, Arts, Gaeltacht, Sport & Media	Recommended that bird surveys should be conducted for all species and cover bird usage. In particular, surveys: • should be based around the daily and seasonal activity patterns of the species being surveyed;

	Consultee	Response
		• should cover year-round site use and should cover a minimum of two years; • hinterland surveys should include breeding raptor surveys, including roost watches, surveys for nocturnal species; • any watercourse or wetland which may be impacted on should be surveyed for the presence of protected species, including kingfisher. • vantage point surveys should ensure sufficient data is collected to allow an assessment of the importance of all the flight paths into, out of and between sites and assess migratory movements, and technological solutions should be considered in conjunction with these surveys. A visibility analysis of topography and vegetation should inform the selection of vantage points. Stated that bird surveys should facilitate assessment of potential collision risk, habitat loss, barrier effect and displacement. During assessment: • results for species should be referenced back to the overall populations; • cumulative impact from surrounding sites should be considered; • migration routes (day and night) should be assessed as well as the flight lines (day and night) of birds travelling between roosting and feeding areas; • limitations in guidance documentation, used in the analysis and discussion of results from any bird surveys, should be acknowledged; • should include an assessment of improved agricultural lands.
03	Irish Red Grouse Association	No response received at the time of writing.
04	Irish Raptor Study Group	No response received at the time of writing.
05	Irish Wildlife Trust	No issues raised in relation to birds.

7.2.3 Field Surveys

7.2.3.1 Identification of Target Species

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

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

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

7.2.3.2 Survey Methodology

Field surveys were undertaken during the survey period October 2019 to March 2022 and again from August 2023 to March 2025, consisting of three breeding seasons (April – September) and five winter seasons (October – March). This survey work forms the core dataset for the assessment of impacts on ornithology. The data provided in the field surveys is robust and allows clear, precise and definitive conclusions to be made on the avian receptors identified within the Proposed Wind Farm site. All survey location maps are presented in Appendix 7-1.

In the absence of specific national bird survey guidelines, the ornithological surveys were designed and undertaken in full accordance with the guidance document ‘Recommended bird survey methods to inform impact assessment of onshore wind farms’ (SNH, 2017). The various ornithological surveys undertaken at the Proposed Wind Farm site and hinterland are described in detail below. The Proposed Grid Connection was surveyed as part of a multidisciplinary walkover (details in Chapter 6 of this EIAR).

7.2.3.2.1 Vantage Point Surveys

Vantage point surveys were undertaken in accordance with SNH (2017) to monitor flight activity within the Proposed Wind Farm site and to a 500m radius of the proposed turbine locations. Surveys were conducted from three fixed point vantage points with comprehensive coverage of the Proposed Wind Farm site. The vantage point locations were selected by undertaking a viewshed analysis (described below) and confirmed by a reconnaissance visit and initial field surveys to ensure that the proposed turbine layout was sufficiently covered.

Viewsheds were calculated using the Visibility Analysis plugin (Version 1.8) over a raster digital elevation model (DEM) in QGIS (Version 3.28). Note that while the relevance of being able to view as much of the Proposed Wind Farm site to ground level is acknowledged, the NatureScot guidance emphasises the importance of visibility of the ‘collision risk volume’ when the data is to be used to estimate the risk of collision with turbines by birds. Therefore, the viewshed analysis aims to identify the most suitable locations to site vantage points such that the airspace of the turbine rotor swept area is in view using the fewest possible number of vantage points. As no specific turbine model was confirmed at the outset of surveys, the viewsheds were based on a notional layer suspended 20m above the ground. The vantage point locations were tested for visibility coverage by creating a point 1.75m in height (to represent the height of the surveyor) on a map using 10m contours terrain data. The relative height of any surrounding landscape features (e.g. trees) and their effects on visibility was also accounted for in the analysis. The software produced 360° viewsheds 20m above ground level up to a 2km radius around the vantage points. These viewsheds were then cropped to a 180° arc representing the area visible to the surveyor. Because there were three turbine dimension scenarios for assessment, three further sets of viewsheds were calculated based on the three minimum heights considered for the potential collision risk area: the first using a notional layer suspended at 18m, the second at 25m and the third at 35m. The viewsheds for the three scenarios provided adequate coverage of the Proposed Wind Farm site for a collision risk assessment to be undertaken.

Survey methodology followed SNH (2017). 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 every month of the survey period, 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).

These surveys provide data from over 856 hours of dedicated flight activity watches at the Proposed Wind Farm site. Note that one 6-hour survey at VP3 was not conducted in September 2021. However,

this is not considered a significant limitation in the data given that there are data from a total of three breeding seasons available for analysis. September surveys were conducted at this location in the two other breeding seasons (2020 and 2024), and all surveys were conducted in the months of August and October (which, along with September form the autumn passage season).

Table 7-2 Vantage point survey watch duration

Survey Season and Number of Vantage Points (VPs)	Effort per Vantage Point (VP)
Winter Season 2019/2020 (3 VPs)	36 hours per VP
Breeding Season 2020 (3 VPs)	36 hours per VP
Winter Season 2020/2021 (3 VPs)	36 hours per VP
Breeding Season 2021 (3 VPs)	36 hours at VP1 & VP2; 30 hours at VP3
Winter Season 2021/2022 (3 VPs)	36 hours per VP
Winter Season 2023/2024 (3 VPs)	36 hours per VP
Breeding Season 2024 (3 VPs)	36 hours per VP
Winter Season 2024/2025 (3 VPs)	36 hours per VP

Flight activity of target species were mapped and recorded as per defined flight bands, which were chosen in relation to the dimensions of potential turbine models for the site. Bands were split into 0-15m, 15-25m, 25-200m and >200m. The vantage point data is primarily used in the collision risk analysis. In order to undertake the collision risk assessment, it is necessary to define the Potential Collision Height (PCH). This is the height that overlaps with the airspace occupied by the rotating turbine blades. It will differ slightly for each of the proposed turbine models.

For the turbine model with the lowest swept height of 18m, all flight activity within the height bands 15-25m and 25-200m is considered to be within PCH with regard to the turbine swept area. For the turbine models with lowest swept heights of 25m and 30m, all flight activity within height band 25-200m is considered to be within PCH. In addition, the presence of any non-target species was recorded to inform the evaluation of supporting habitat. The survey effort is presented in Appendix 7-1, including full details of dates, times and weather conditions, and maps of the vantage point locations.

7.2.3.2.2 Winter Walkover Surveys

Winter walkover surveys were undertaken to record the presence of bird species within the Proposed Wind Farm site, including areas between vantage point locations. The methodology was adapted from the breeding walkover methodology outlined in O'Brien and Smith (1992) and Gilbert *et al.* (1998), combined with Common Bird Census methods (British Trust for Ornithology, 2021). Transect routes were walked across different habitat complexes within the survey area where access 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.

Winter walkover surveys were conducted in daylight hours over four visits between October and March (i.e. four visits in winter 2019/2020, four visits in winter 2020/2021, four visits in winter 2021/2022, four visits in winter 2023/2024 and four visits in winter 2024/2025). Survey effort and transects are presented in Appendix 7-1, including full details of dates, times and weather conditions for each survey, and maps of the transect routes.

7.2.3.2.3 Breeding Walkover Surveys

Breeding walkover surveys were undertaken to determine possible, probable or confirmed breeding bird activity within the Proposed Wind Farm site, including areas between vantage point locations. The methodology was based on O'Brien and Smith (1992) and Gilbert *et al.* (1998), combined with Common Bird Census methods (British Trust for Ornithology, 2021) for dense habitat. 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.

Breeding walkover surveys were conducted in daylight during breeding season 2020 and 2021, and in the early mornings (start time between 06:00 and 07:30) in breeding season 2024. Surveys were conducted over four visits during the core breeding season months April to July. Survey effort is presented in Appendix 7-1, including full details of dates, times and weather conditions for each survey, and maps of the transect routes.

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. Significant wetlands and waterbodies within 5km of the Proposed Wind Farm site were surveyed for waterbirds during the 2019/2020, 2020/2021, 2021/2022, 2023/2024 and 2024/2025 winter and passage seasons to provide information on their distribution in relation to the wind farm. Surveys were conducted during the months August to May inclusive within the study period October 2019 to March 2022, except in 2019/2020 when surveys finished in March. The area surveyed exceeds the 500m for foraging waterbirds and 1km for roosting waterbirds requirements of SNH (2017) 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 at wetlands and waterbodies. All target waterbird species were recorded and mapped. Survey effort, including details of survey duration and weather conditions, and a map of the survey area, is presented in Appendix 7-1.

7.2.3.2.5 **Hen Harrier Roost Surveys**

Hen harrier roost surveys were undertaken within the Proposed Wind Farm site and to a 2km radius. These surveys aimed to identify active winter hen harrier roosts near or within the Proposed Wind Farm site. Survey methodology followed Gilbert *et al.* (1998) and O'Donoghue (2019). Roost watches of 2-3 hours were conducted at four hen harrier vantage point locations (HHVP1-HHVP4) from dusk until last visible light during which all hen harrier observations were recorded and mapped.

Each hen harrier vantage point was surveyed once per month during the winter season between October and March inclusive (in winter 2019/2020, 2020/2021, 2021/2022, 2023/2024 and 2024/2025). In January 2020, the survey at HHVP4 was conducted twice (instead of HHVP3) due to potentially interesting activity at this location. In January, March and November 2024 and from January to March 2025, the survey at HHVP4 had to be moved to a slightly different location (HHVP4a) due to growing vegetation obscuring views. In winter 2024/2025, HHVP1 also had to be moved to a slightly different location (HHVP1a) for a similar reason. Survey effort is presented in Appendix 7-1, including full details of dates, times and weather conditions, and maps of survey locations.

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 the Proposed Wind Farm site and to a 2km radius to identify occupied territories and monitor their breeding success near or within the Proposed Wind Farm site. Survey methodology followed Hardey *et al.* (2013). Breeding raptor watches of 3 hours were conducted during daylight at five breeding raptor locations in breeding season 2020 and 2021, and six locations in breeding season 2024. 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.

Each breeding raptor location was surveyed once per month during the core breeding season between April and July. Surveys took place from the locations BR1-BR6 during breeding season 2020 and 2021. The survey at BR5 could not be conducted in April 2020 due to national travel restrictions during the COVID-19 pandemic and to address this an extra survey at a new location (BR6) was conducted in July. Surveys were conducted at BR6 again in June and July 2021 for additional coverage (i.e. six survey locations visited in these months). In breeding season 2024, due to the changes in habitat and access between 2021 and 2024, the survey locations BR3 and BR6 were retained, and four new locations were chosen (BR7-BR10). In June and July 2024, surveys at BR9 were moved to a new location (BR11). Survey effort is presented in Appendix 7-1, including full details of dates, times and weather conditions, and maps of the survey locations.

7.2.3.2.7 **Breeding Long-eared Owl Surveys**

A dedicated breeding long-eared owl survey was conducted in May 2021. The surveyor visited the site of a suspected long-eared owl territory at dusk to survey for evidence of breeding. A watch was conducted for 2 hours. Any long-eared owl observed was recorded and mapped and breeding status was assigned following BTO breeding status codes. Surveyors did not approach nest sites to avoid disturbance.

7.2.3.2.8 **Barn Owl Surveys**

In response to incidental observations of barn owl in the wider surroundings in May 2020, a dedicated barn owl roost and nest survey was conducted in January 2021, and again in April and May 2021. This survey was conducted under a Section 9 & 22 (9)(d) licence from the NPWS (No. 037/2020). Survey effort is presented in Appendix 7-1, including details of dates, times and weather conditions, and maps of the survey locations.

During daylight hours in January, the surveyor visited six structures (labelled BOS1-5 and BOS7a) within the Proposed Wind Farm site and to a 2km radius in which there was potential for a barn owl to roost. The structures were investigated for signs of barn owl such as feathers and pellets.

During daylight hours in April, the surveyor conducted a reconnaissance visit of structures within the Proposed Wind Farm site and to a 2km radius. Structures that had the potential to hold nesting or roosting barn owl, such as derelict buildings, were earmarked for a dusk survey. In May, the surveyor visited eight structures (BOS1-6, BOS7b and BOS8) at dusk. The structures were investigated for signs of barn owl such as feathers and pellets.

7.2.3.2.9 **Multidisciplinary Walkover Survey**

The Proposed Grid Connection was surveyed in August 2024 and again in June 2025 through a multidisciplinary walkover survey. The route was systematically walked, while the surveyor recorded a range of protected species, including birds. Further details on this survey are available in the Chapter 6 of this EIAR.

7.2.4 Receptor Evaluation and Impact Assessment

7.2.4.1 Geographical Framework

Guidance on Ecological Impact Assessment (CIEEM, 2019) recommends categories of ornithological value that relate to a geographical framework (e.g. international through to local). This EIAR utilises the geographical framework described in ‘Guidelines for Assessment of Ecological Impact of National Road Schemes’ (NRA, 2009). The following geographic frame of reference 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 study area upon which potential impacts are anticipated and assessed. All target species recorded during surveys are listed in Appendix 7-2. The list of target species was refined to KORs, excluding those for which pathways for a significant effect could not be identified.

7.2.4.3 Potential Impacts Associated with Proposed Wind Farm

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

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

For each of these three 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 Wind Farm on KORs. These impacts are also assessed cumulatively with other projects. The geographical framework and description of impacts are described below.

7.2.4.4 Collision Risk Assessment

Collision risk is calculated using a mathematical model to predict the number of individual birds of a particular species that may be killed by collision with moving wind turbine rotor blades. The modelling method used in this collision risk calculation follows the Band Model (Band *et al.*, 2007), as recommended by NatureScot guidance. The Band Model first determines the number of birds transits through the air space swept by the rotor blades of the wind turbines. Then it calculates the collision risk for the birds. The product of the transits multiplied by the collision risk provides a collision rate. An

avoidance factor is applied to this to account for birds actively avoiding turbines, providing a final ‘real world’ annual collision rate for each species. See Appendix 7-6 for full details on the collision risk modelling method.

7.2.4.5 Description of Impacts

The sensitivity, magnitude and significance of impacts on bird populations resulting from the Proposed Wind Farm 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 effects. 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’ (SNH, 2012), cumulative effects arising from two or more developments may be:

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

NatureScot guidance (SNH, 2012; 2018) was consulted while undertaking a cumulative impact assessment. SNH (2012; 2018) emphasises that its priority is to ‘maintain the conservation status of the species population at the national level.’ However, it is acknowledged that consideration should also be allowed for impacts at the regional level ‘where regional impacts have national implications (for example where a specific region holds the majority of the national population)’. Following this, the cumulative assessment has been carried out at the 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.

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

7.2.5 Assessment Justification

7.2.5.1 Survey Data

A comprehensive suite of bird surveys was undertaken at the Proposed Wind Farm site between October 2019 to March 2022 and again from August 2023 to March 2025. Results derived from three breeding seasons and five winter seasons 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 Wind Farm on avian receptors.

7.2.5.2 Mitigation

The Proposed Wind Farm has been designed to specifically avoid, reduce and minimise impacts on all avian receptors. Where potential impacts on KORs are predicted, mitigation has been prescribed to avoid, reduce and remove such impacts. Proposed best practice design and mitigation measures are specifically set out and are realistic in terms of cost and practicality. They have been subject to detailed design and will effectively address the effects on the identified KORs. In addition, a specific Bird Mitigation Plan regarding golden plover has been prepared (Appendix 7-7). As such, the potential impacts of the Proposed Wind Farm 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 EIAR chapter accurately and comprehensively describes the baseline environment and provides an informed prediction of the likely impacts of the Proposed Wind Farm. 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. All data collected since September 2019, including more recent data collected between October 2023 and March 2025 has been analysed in the preparation of this chapter.

It was not possible to achieve total coverage of the 500m turbine radius during Vantage Point Surveys due to the nature of the landscape. The collision risk model employed in this assessment can account for some lack of coverage during the ‘random’ analysis because it assumes a random distribution of bird flights in the landscape. Coverage was achieved for all important ecological features at the Proposed Wind Farm site that may attract birds or act as commuter routes (e.g., waterbodies). Some areas of the Proposed Wind Farm site were inaccessible during Breeding and Winter Walkover Surveys, but these areas were surveyed with as much coverage as possible through short point counts and watches over these areas or achieved good coverage during Vantage Point Surveys. Therefore, no significant limitations in the scope, scale or context of the assessment have been identified.

7.3 Baseline Ornithological Conditions

7.3.1 Designated Sites

A screening assessment and NIS were prepared to provide the competent authority with the information necessary to complete an Appropriate Assessment for the Proposed Wind Farm in compliance with Article 6(3) of the EU Habitats Directive (92/43/EEC). According to EPA (2022)T ‘A biodiversity section of an EIAR ... should not repeat the detailed assessment of potential effects on European sites contained in documentation prepared as part of the Appropriate Assessment process, but it should refer to the findings of that separate assessment’. Therefore, this section provides a

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

The potential for likely significant effects was identified for the Lough Corrib SPA. The potential for adverse effects was identified for the following SCIs:

- > [A051] Gadwall
- > [A056] Shoveler
- > [A059] Pochard
- > [A061] Tufted Duck
- > [A065] Common Scoter
- > [A125] Coot
- > [A140] Golden Plover
- > [A179] Black-headed Gull
- > [A182] Common Gull
- > [A193] Common Tern
- > [A194] Arctic Tern
- > [A395] Greenland White-fronted Goose

7.3.2 Breeding and Wintering Bird Atlas Records

‘Bird Atlas 2007-11: The breeding and wintering birds of Britain and Ireland’ (Balmer *et al.*, 2013) is the most recent comprehensive work on wintering and breeding birds in Ireland. Previous bird atlases have been the primary source of information on the distribution and abundance of British and Irish birds prior to Bird Atlas 2007–11. The three previously published atlases were:

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

The Proposed Wind Farm site lies within hectad M55 and M54, while the Proposed Grid Connection also extends into hectad M44. 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. Codes: *poss* = possible breeding, *prob* = probable breeding, *conf* = confirmed breeding, *seen* = seen, *bree* = breeding.

Species	Breeding Atlas 1968-1972			Breeding Atlas 1988-1991			Breeding Atlas 2007-2011		
	M44	M54	M55	M44	M54	M55	M44	M54	M55
Barn Owl	poss	-	-	seen	-	-	poss	-	-
Black-headed Gull	conf	poss	conf	seen	seen	bree	-	-	conf
Buzzard	-	-	-	-	-	-	poss	-	prob
Common Gull	-	-	-	seen	-	-	-	-	-
Common Sandpiper	poss	-	-	-	-	-	-	-	-
Coot	conf	conf	conf	bree	bree	bree	-	conf	conf
Cormorant	-	-	-	seen	-	-	-	-	-

Species	Breeding Atlas 1968-1972			Breeding Atlas 1988-1991			Breeding Atlas 2007-2011		
	M44	M54	M55	M44	M54	M55	M44	M54	M55
Corncrake	conf	prob	conf	-	-	-	-	-	-
Curlew	conf	conf	conf	seen	bree	seen	-	-	-
Dipper	conf	conf	conf	-	bree	-	-	poss	-
Dunlin	conf	-	prob	-	-	-	-	-	-
Gadwall	-	-	-	-	-	-	-	prob	-
Great Crested Grebe	-	-	-	seen	-	bree	-	-	conf
Grey Heron	poss	poss	prob	bree	seen	seen	poss	poss	conf
Grey Partridge	conf	prob	conf	-	-	-	-	-	-
Grey Wagtail	conf	conf	conf	bree	bree	seen	prob	-	-
Hen Harrier	-	-	-	seen	-	seen	-	-	-
Kestrel	conf	conf	conf	seen	-	-	poss	prob	-
Kingfisher	conf	-	-	seen	seen	-	conf	poss	-
Lapwing	conf	conf	conf	bree	bree	bree	conf	conf	conf
Lesser Black-backed Gull	-	-	-	seen	-	-	-	-	-
Little Grebe	-	conf	prob	bree	bree	bree	-	conf	conf
Long-eared Owl	poss	-	prob	-	-	-	-	-	-
Mallard	conf	conf	conf	bree	bree	bree	-	conf	conf
Meadow Pipit	conf	conf	conf	bree	bree	bree	conf	prob	conf
Moorhen	conf	conf	conf	bree	bree	bree	-	conf	conf
Mute Swan	-	conf	conf	bree	seen	bree	poss	conf	prob
Peregrine Falcon	-	-	-	-	-	-	-	-	prob
Pochard	-	prob	-	-	-	seen	-	-	-

Species	Breeding Atlas 1968-1972			Breeding Atlas 1988-1991			Breeding Atlas 2007-2011		
	M44	M54	M55	M44	M54	M55	M44	M54	M55
Red Grouse	poss	prob	conf	-	-	-	-	-	-
Redshank	conf	prob	prob	seen	-	bree	-	-	poss
Ringed Plover	-	-	prob	-	-	seen	-	-	-
Snipe	conf	conf	conf	seen	seen	seen	-	poss	conf
Sparrowhawk	conf	prob	conf	bree	seen	-	conf	poss	poss
Stock Dove	conf	conf	prob	seen	bree	seen	-	-	-
Swift	conf	conf	poss	-	bree	seen	conf	prob	-
Teal	-	poss	prob	bree	-	seen	-	-	poss
Tufted Duck	-	poss	-	-	-	bree	-	-	poss
Whinchat	-	-	-	-	-	bree	-	-	-
Woodcock	conf	prob	prob	-	-	-	-	-	-
Yellowhammer	conf	conf	conf	-	bree	bree	-	poss	-

Table 7-7 Wintering Bird Atlas data. Codes = pres = present.

Species	Wintering Atlas 1981-1984			Wintering Atlas 2007-2011		
	M44	M54	M55	M44	M54	M55
Barn Owl	-	-	-	pres	-	-
Black-headed Gull	pres	pres	pres	pres	pres	pres
Buzzard	-	-	-	pres	-	-
Common Gull	pres	-	-	pres	pres	-
Coot	-	pres	-	-	pres	pres
Cormorant	-	-	-	pres	pres	-
Curlew	pres	pres	pres	pres	pres	-
Dunlin	-	-	-	pres	-	-

Species	Wintering Atlas 1981-1984			Wintering Atlas 2007-2011		
	M44	M54	M55	M44	M54	M55
Golden Plover	pres	pres	pres	pres	pres	pres
Great Black-backed Gull	pres	-	-	-	-	-
Great Crested Grebe	-	pres	-	-	-	pres
Green Sandpiper	-	-	-	-	pres	-
Grey Heron	pres	pres	-	pres	pres	pres
Grey Wagtail	pres	pres	-	pres	pres	-
Herring Gull	pres	pres	-	-	-	-
Kestrel	pres	pres	pres	pres	pres	pres
Lapwing	pres	pres	pres	pres	pres	pres
Lesser Black-backed Gull	pres	-	-	-	-	-
Little Grebe	-	pres	-	-	pres	pres
Mallard	-	pres	pres	-	pres	pres
Meadow Pipit	pres	pres	pres	pres	pres	pres
Merlin	pres	-	-	-	pres	-
Moorhen	pres	pres	pres	pres	pres	pres
Mute Swan	pres	pres	pres	pres	pres	pres
Pochard	-	-	pres	-	pres	pres
Red Grouse	-	-	pres	-	-	-
Redshank	-	-	-	-	-	pres
Redwing	pres	pres	pres	pres	pres	pres
Ringed Plover	-	-	-	-	-	pres
Shoveler	-	pres	-	-	pres	pres

Species	Wintering Atlas 1981-1984			Wintering Atlas 2007-2011		
	M44	M54	M55	M44	M54	M55
Snipe	pres	pres	pres	pres	pres	pres
Sparrowhawk	pres	pres	-	pres	pres	pres
Stock Dove	pres	-	-	-	-	-
Teal	pres	pres	pres	pres	pres	pres
Tufted Duck	-	pres	pres	-	pres	pres
Whooper Swan	pres	-	-	pres	pres	pres
Wigeon	-	pres	-	-	pres	pres
Woodcock	-	pres	pres	-	pres	pres
Yellowhammer	pres	pres	pres	-	pres	-

7.3.3 Bird Sensitivity Mapping Tool

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

The Proposed Wind Farm site is partially located within areas of Low bird sensitivity to wind energy developments. The Proposed Wind Farm site is approximately 2.4km from the nearest area of Medium sensitivity. The Proposed Grid Connection is also partially within areas of Low sensitivity.

7.3.4 National Biodiversity Data Centre Records

The National Biodiversity Data Centre (NBDC) Biodiversity Maps provide records of flora and fauna within 10km hectads across Ireland. Data is available from the map viewer on the NBDC website (<https://maps.biodiversityireland.ie/Map>). The Proposed Wind Farm site lies within hectad M55 and M54, while the Proposed Grid Connection also extends into hectad M44. Table 7-8 lists the bird species have been recorded in these 10km Grids.

Table 7-8 National Biodiversity Data Centre records

Species	NBDC Dataset
Barn Owl	Birds of Ireland
Bittern	Rare birds of Ireland
Black-headed Gull	Birds of Ireland
Buzzard	Birds of Ireland

Species	NBDC Dataset
Common Gull	Bird Atlas 2007 - 2011
Common Sandpiper	Kingfisher Survey 2010
Coot	Kingfisher Survey 2010 & Birds of Ireland
Cormorant	Birds of Ireland & Bird Atlas 2007 - 2011
Corncrake	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972
Crane	Rare birds of Ireland & Birds of Ireland
Curlew	Bird Atlas 2007 - 2011 & Birds of Ireland
Dipper	Kingfisher Survey 2010 & Bird Atlas 2007 - 2011 The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972
Dunlin	Bird Atlas 2007 - 2011 & The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972
Gadwall	Bird Atlas 2007 - 2011
Golden Plover	Birds of Ireland & Bird Atlas 2007 - 2011
Great Black-backed Gull	Birds of Ireland & Kingfisher Survey 2010
Great Crested Grebe	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991 & The First Atlas of Wintering Birds in Britain and Ireland: 1981/82-1983/84 & Birds of Ireland
Green Sandpiper	Kingfisher Survey 2010 & Bird Atlas 2007 - 2011
Grey Heron	Bird Atlas 2007 - 2011 & Birds of Ireland
Grey Partridge	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972
Hen Harrier	Birds of Ireland & The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991
Herring Gull	Birds of Ireland & The First Atlas of Wintering Birds in Britain and Ireland: 1981/82-1983/84
Jack Snipe	Birds of Ireland
Kestrel	Birds of Ireland & Bird Atlas 2007 - 2011
Kingfisher	Birds of Ireland & Bird Atlas 2007 - 2011
Lapwing	Birds of Ireland
Lesser Black-backed Gull	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991
Little Egret	Birds of Ireland
Little Grebe	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991 & Birds of Ireland
Long-eared Owl	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972
Mallard	Birds of Ireland
Marsh Harrier	Birds of Ireland
Meadow Pipit	Birds of Ireland & Bird Atlas 2007 - 2011
Merlin	The First Atlas of Wintering Birds in Britain and Ireland: 1981/82-1983/84 & Bird Atlas 2007 - 2011 & Birds of Ireland

Species	NBDC Dataset
Moorhen	Bird Atlas 2007 - 2011 & Birds of Ireland
Mute Swan	Birds of Ireland
Peregrine	Birds of Ireland & Bird Atlas 2007 - 2011
Pochard	Bird Atlas 2007 - 2011
Red Grouse	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972 & The First Atlas of Wintering Birds in Britain and Ireland: 1981/82-1983/84
Redshank	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991 & Bird Atlas 2007 - 2011
Redwing	Birds of Ireland & Bird Atlas 2007 - 2011
Ringed Plover	Bird Atlas 2007 - 2011
Shelduck	Birds of Ireland
Shoveler	Birds of Ireland
Snipe	Birds of Ireland
Sparrowhawk	Birds of Ireland & Bird Atlas 2007 - 2011
Stock Dove	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991
Swift	Bird Atlas 2007 - 2011 & The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991
Teal	Birds of Ireland
Tufted Duck	Bird Atlas 2007 - 2011 & Birds of Ireland
Whinchat	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991
Whooper Swan	Birds of Ireland
Wigeon	Kingfisher Survey 2010 & Birds of Ireland
Woodcock	Birds of Ireland & Bird Atlas 2007 - 2011
Yellowhammer	The First Atlas of Wintering Birds in Britain and Ireland: 1981/82-1983/84 & Bird Atlas 2007 - 2011 & The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991

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:

- Ballindeereen Turlough
- Ballinduff Turlough & Grassland
- Ballyboy
- Ballyconneely Bay
- Ballynakill Harbour (no data)
- Ballynakill Lough (Gorumna Island) (no data)
- Bertraghboy Bay (no data)
- Caherglassaun Lough

- > Cahermore Turlough
- > Camus Bay, Connemara (no data)
- > Caranavoodaun Turlough
- > Coole Lough - Newtown Turlough
- > Dogs and Gorteen Bay (no data)
- > Doolough Headford (Turloughcor)
- > Glenamaddy Turlough
- > Inishbofin
- > Inishmore, Aran Islands
- > Inner Galway Bay
- > Inner Streamstown Bay
- > Kiltiernan Turlough
- > Kiltullagh Lough
- > Lough Coy – Blackrock – Bullaunagh – Ballylee
- > Lisravis & Pollshask Turloughs
- > Lough Adrehid
- > Lough Aughawoolia
- > Lough Corrib
- > Lough Cutra – Ballynakill Lough
- > Lough Poll
- > Lough Rea
- > Lyacan Castle Turlough
- > Mannin Bay
- > Murvey Machair Beach
- > Mweenish Island
- > North Central Galway Lakes
- > North East Galway Lakes
- > Omey Strand
- > Polleagh Turlough
- > Pollnagarragh Marshes
- > Rahasane Turlough
- > Rossadillisk
- > Termon Turloughs
- > Tullaghnafrankagh Lough

7.3.6 Rare and Protected Species Dataset

An information request was sent to NPWS requesting records from the Rare and Protected Species Database on the 20 June 2025. The following information on target species was received.

Barn Owl

There was a barn owl record in hectad M44. This record was over 5.9km from the Proposed Wind Farm site.

Curlew

Curlew was recorded in all three hectads. These records were in the wider surroundings of the Proposed Wind Farm site. These were recorded during the Kingfisher Assessment 2010, which took place between 15 March and 1 June 2010. No further information was provided if the birds were recorded in March (thus may be wintering or passage migrants) or later in the core breeding season April, May and June.

Golden Plover

Golden plover was recorded in hectad M44 and M54. These records were in the wider surroundings of the Proposed Wind Farm site.

Kestrel

Kestrel was recorded in hectad M54. This record was over 3.2km from the Proposed Wind Farm site.

Kingfisher

Kingfisher was recorded in all three hectads. All records were in the wider surroundings of the Proposed Wind Farm site. They were often associated with the Abbert River, running south of the Proposed Wind Farm.

Lapwing

Lapwing was recorded in hectad M44. This record was over 10km from the Proposed Wind Farm site.

Meadow Pipit

Meadow pipit was recorded in hectads M44 and M55. The closest record was over 2.1km from the Proposed Wind Farm site.

Snipe

Snipe was recorded in all three hectads. These records were in the wider surroundings of the Proposed Wind Farm site.

Swift

Swift was recorded in hectad M44. This record was over 13.5km from the Proposed Wind Farm site.

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 results summaries for each survey type.

The target species recorded within the study area of the Proposed Wind Farm site during field surveys are listed in Table 7-9, along with a summary of breeding and roosting status. Detailed species accounts under the individual survey headings are then provided in Sections 0 to 7.3.7.22. 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 the study area

Species	Overall breeding status	Overall roosting status
Golden Plover	Non-breeding. There was no evidence of breeding at the Proposed Wind Farm site during surveys.	A roost was identified. There was a roosting area in a bog at Derrybaun that was used on multiple occasions. The roost was outside the Proposed Wind Farm site boundary, though a small portion of the bog was within 500m of the proposed

Species	Overall breeding status	Overall roosting status
		turbine locations. There was a second roosting area at Horseleap Lough. This roost was outside the Proposed Wind Farm site boundary and not within 500m of the proposed turbine locations.
Hen Harrier	Non-breeding. There was no evidence of breeding at the Proposed Wind Farm site during surveys.	A roost was identified. There was a regularly used roost in a bog at Cloonboo More that was utilised by at least two individuals. The roost was outside the Proposed Wind Farm site and greater than 700m from the nearest proposed turbine location. Hen harrier was also observed roosting at Derrybaun (within 600m of the proposed turbine locations) and Cloonascragh (within the Proposed Wind Farm site, approximately 420m from the proposed turbine locations), but these were irregularly used, with roosting only confirmed on one occasion.
Little Egret	Non-breeding. There was no evidence of breeding at the Proposed Wind Farm site during surveys.	No regularly used roosts identified.
Kingfisher	Probable Breeding. There was probable breeding in the wider surroundings of the Proposed Wind Farm site on the Abbert River and at Summerville Lough. Pairs were observed at both locations.	No regularly used roosts identified.
Merlin	Non-breeding. There was no evidence of breeding at the Proposed Wind Farm site during surveys.	A roost was identified. A merlin was observed roosting at the hen harrier roost at Cloonboo More. This roost was outside the Proposed Wind Farm site boundary and greater than 700m from the nearest proposed turbine location.
Peregrine Falcon	Confirmed Breeding. There was a breeding territory identified, in Barnaderg, ~3.8km west of the nearest proposed turbine location.	No regularly used roosts identified.
Whooper Swan	Does not breed in Ireland.	A roost was identified. Whooper swan was regularly roosting at Horseleap Lough. This roost was outside the Proposed Wind Farm site boundary and not within 500m of the proposed turbine locations.
Common Gull	Non-breeding. There was no evidence of breeding at the Proposed Wind Farm site during surveys.	No regularly used roosts identified.

Species	Overall breeding status	Overall roosting status
Barn Owl	Non-breeding. Barn owl was using a derelict building in the Proposed Wind Farm site in 2021, but its vacancy during the nesting season and the relatively small amount of debris suggests that it was used for roosting during the winter season and not for breeding.	Potential roost identified. There were signs of occupation of the derelict building sometime between the first survey in January and the second survey in May, but no signs of occupation before January, and no recent use by May. This indicates that barn owl may have used this building for roosting in winter, but also suggests that barn owl was not regularly roosting here.
Curlew	Non-breeding. There was no evidence of breeding at the Proposed Wind Farm site during surveys.	No regularly used roosts identified.
Grey Wagtail	Probable Breeding. There was probable breeding in the wider surroundings of the Proposed Wind Farm site on the river at Derreen. A pair was observed here.	No regularly used roosts identified.
Kestrel	Confirmed Breeding. There were two breeding territories identified: one at Cloondahamer and one at Cloonascragh, both partially within in the Proposed Wind Farm site. In 2020 and again in 2021, a pair held a territory at Cloondahamer. In 2024, a pair held a territory in Cloonascragh.	No regularly used roosts identified.
Lapwing	Confirmed Breeding. Lapwing were breeding at Horseleap Lough. This was outside the Proposed Wind Farm site boundary and not within 500m of the proposed turbine locations.	A roost was identified. Lapwing was regularly roosting at Horseleap Lough. This roost was outside the Proposed Wind Farm site boundary and not within 500m of the proposed turbine locations.
Meadow Pipit	Probable Breeding. Meadow pipit was displaying and singing in the Proposed Wind Farm site.	No regularly used roosts identified.
Redwing	Does not breed in Ireland.	No regularly used roosts identified.
Swift	Confirmed Breeding. There was a breeding colony at Barnaderg, ~3.8km west of the nearest proposed turbine location.	Does not overwinter in Ireland.
Snipe	Probable Breeding. There was a probable breeding territory in the Proposed Wind Farm site and a second to the north of the Proposed Wind Farm site.	No regularly used roosts identified.

Species	Overall breeding status	Overall roosting status
Shoveler	Non-breeding. There was no evidence of breeding at the Proposed Wind Farm site during surveys.	A roost was identified. Shoveler was regularly roosting at Horseleap Lough. This roost was outside the Proposed Wind Farm site boundary and not within 500m of the proposed turbine locations.
Woodcock	Non-breeding. There was no evidence of breeding at the Proposed Wind Farm site during surveys.	No regularly used roosts identified.
Buzzard	Confirmed Breeding. There were four breeding territories identified: one at Cooloo, within in the Proposed Wind Farm site, and three in the wider surroundings at Cloonboo More, Dereen and Sunhill. In breeding season 2020, a pair held a territory at Cooloo. In 2021, a pair held a territory at Cloonboo More. Finally, in 2024, three pairs held territories at Cloonboo More, Dereen and Sunhill.	No regularly used roosts identified.
Long-eared Owl	Confirmed Breeding. There was a breeding territory within the Proposed Wind Farm site at Cloonascragh	No regularly used roosts identified.
Sparrowhawk	Probable Breeding. A sparrowhawk was mobbing a buzzard near Derrybaun, west of the Proposed Wind Farm site, which may indicate that the sparrowhawk was establishing a breeding territory in this area, although no further breeding behaviour was recorded.	No regularly used roosts identified.

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

Species	Observations
Great White Egret	The nearest record was approximately 3.9km from the Proposed Wind Farm site boundary. A single bird was foraging at Levally Lough in November 2024.
Pochard	The nearest record was approximately 3.9km from the Proposed Wind Farm site boundary. Two birds were foraging at Carrownabo Turlough in March 2024.

7.3.7.1 Golden Plover

Golden plover was observed in the winter and passage season. Raw survey data and maps are provided in Appendix 7-4. Survey data and maps relating to roosts are provided in Confidential Appendix 7-5.

Vantage Point

Golden plover was recorded 108 times during vantage point surveys, or on average once every 6 hours of winter and passage season surveys. Of these records, 68 were within 500m of the proposed turbine locations. Between 1 and 2,100 individuals were observed during the winter and passage (April) seasons. The average flock size was 167 birds.

Golden plover was recorded roosting on three occasions, in two roosting locations. In October 2019, up to 57 birds were recorded roosting at Derrybaun, with a further 43 circling overhead. This roosting area (labelled as GP-1 in the map in Appendix 7-5) was in a cutover bog over 350m from the proposed turbine locations and outside the Proposed Wind Farm site boundary, though three flocks of birds coming in to roost were observed flying within 500m of the proposed turbine locations before landing. On the second occasion, in January 2020, approximately 850 birds were roosting and feeding in the same area (GP-1), none of which were observed within 500m of the proposed turbine locations nor within the Proposed Wind Farm site. Finally, in February 2024, a flock of 12 golden plover was observed roosting at Horseleap Lough (GP-2), south of the Proposed Wind Farm site.

Birds were also recorded on the ground (likely feeding, though it is possible some birds were roosting) on eight further occasions. In November 2019, 80 birds landed on the bog at the roosting area in Derrybaun described above (GP-1), but within 500m of the proposed turbine locations. In December 2019, 21 birds were landed in the same roosting area (GP-1). Later in the same month, up to 80 birds were landed in grassland at Leecarrow (GP-3). These birds rose and circled, flying within 500m of the proposed turbine locations. Later again in the same month, 900 birds were observed circling over wet grassland and landing in Cooloo (GP-4). The field the birds were landing in is outside the Proposed Wind Farm site. In February 2020, a flock of 350 birds were circling over the bog and landed at Derrybaun (GP-1). Later in the same month, a flock of up to 1,206 birds were foraging and circling over the grassland at Leecarrow (GP-3). In March 2020, up to 215 birds were landed and circling over bog at Derrybaun (GP-1). Finally, in February 2024, 2 golden plover were foraging on grassland near Leecarrow, greater than 500m from the proposed turbine locations and outside the Proposed Wind Farm site boundary.

Of other records, 10 were of flocks ranging from 13 to 900 birds that were likely associating with landed flocks foraging or roosting on the ground in the areas described above (GP-1 - GP-4), which is typical golden plover behaviour. The remaining 75 records were of golden plover flying, circling and travelling over the Proposed Wind Farm site and wider surroundings.

Winter Walkover

Golden plover was recorded 7 times during winter walkover surveys, on 5 of the 20 survey dates (25%). Of these records, three were within or partially within the Proposed Wind Farm site. Between 2 and 250 individuals were observed. The average flock size was 111 birds.

Birds were flying, circling and travelling in the Proposed Wind Farm site and wider surroundings. A flock of 200 birds was observed landing in the roosting area at Derrybaun described above (GP-1). These birds were not within 500m of the proposed turbine locations nor within the Proposed Wind Farm site.

Waterbird Distribution and Abundance

Golden plover was recorded 73 times during waterbird distribution and abundance surveys, on 43 of 89 survey dates (48%). Between 1 and 2,000 birds were observed during the winter and passage (April) seasons. The average flock size was 213 birds.

There were two records of flocks within 500m of the proposed turbine locations: a flock of 300 birds circling over grassland and another flock of 150 birds in flight. The remaining 71 records were in the wider surroundings. The majority of these birds were associated with waterbodies in the wider surroundings (Barnaderg Turlough, Carrownabo Turlough, Gorteenlahard Turlough, Levally Lough, Horseleap Lough and Summerville Lough) where they were recorded foraging, roosting and in maintenance behaviours such as preening.

Incidental Records

There were 16 incidental records of golden plover during vantage point, breeding raptor and hen harrier roost surveys. Between 1 and 2,500 birds were observed during the winter and passage (April) seasons. The average flock size was 222 birds.

Four records were within 500m of the proposed turbine locations, within the Proposed Wind Farm site. These were of birds flying and travelling. One was comprised of several flocks adding up to ~2,500 birds flying around the Derrybaun area in the western section of the Proposed Wind Farm site. The remaining 12 records were in the wider surroundings. This included a flock of 147 birds foraging at Horseleap Lough.

7.3.7.2 Hen Harrier

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

Vantage Point

Hen harrier was recorded 37 times during vantage point surveys, or on average once every 17 hours of winter and passage season surveys. Of these records, 27 were within 500m of the proposed turbine locations. Single birds were observed in the winter and post-breeding (September) seasons.

A ringtail (female or juvenile) was observed roosting on the bog one evening in February 2024. The bird was within the Proposed Wind Farm site at Cloonascragh, approximately 420m from the proposed turbine locations. A bird was seen travelling across the bog in the same general area early in the morning in September 2024, and it is possible that it emerged from a roost in the bog, but this could not be confirmed.

Birds were also using the Proposed Wind Farm site for hunting, particularly the bog at Cloonascragh. Males, females and ringtails were observed hunting over bog, grassland and rushy fields on ten separate occasions, sometimes more than once over the course of a survey. Birds were also perched resting for periods of time (over 30 mins) on the bog and in trees on two occasions, multiple times in the same day, including within the Proposed Wind Farm site. The remaining nine observations were birds flying or travelling through the Proposed Wind Farm site.

Winter Walkover

Hen harrier was recorded twice during winter walkover surveys, on 2 of the 20 survey dates (10%). Both of these records were within the Proposed Wind Farm site. Single birds were observed.

A female and ringtail were using bog and grassland habitat within the Proposed Wind Farm site for hunting. Hunting was observed in December 2019 and March 2022.

Hen Harrier Roost

Hen harrier was recorded 19 times during hen harrier roost surveys, on 16 survey dates. A regularly used roost was identified at Cloonboo More, north of the Proposed Wind Farm site (labelled as HH-1 in the map in Appendix 7-5). Birds were observed roosting in a bog here in October and November 2023, and January 2024. A bird was also observed flying towards this location at dusk in January 2025. A male and ringtail were observed on the same date, meaning at least two birds were roosting. The area of roosting habitat was ~700m from the nearest proposed turbine location and ~350m from the Proposed Wind Farm site.

In November 2019, a bird was flying low on the bog near Derrybaun at dusk, but it was uncertain if this bird was hunting or seeking a roost. In December 2023, a bird was flying low in the same area in the late afternoon, ~600m from the nearest proposed turbine location, but again roosting was not confirmed. Given the close proximity of these observations to the known roost at Cloonboo More, it is plausible that these birds could have travelled to Cloonboo More before dark. In January 2024, a male appeared to be roosting at Derrybaun, ~500m from the nearest proposed turbine location.

The remaining observations were of birds hunting and travelling in the northern section of the Proposed Wind Farm site and in the wider surroundings. This included at the roost site in Cloonboo More and 1.2km north of the Proposed Wind Farm site at Meelikmore. There is also anecdotal evidence of hen harrier roosting in Esker Nature Reserve, over 3.5km north-east of the Proposed Wind Farm site. Surveys were not conducted here given the considerable separation distance from the Proposed Wind Farm site.

Incidental Records

There were five incidental records of hen harrier during vantage point and waterbird distribution surveys. Of these records, four were within 500m of the proposed turbine locations or within the Proposed Wind Farm site. Single females and ringtails were using the Proposed Wind Farm site and wider surroundings for hunting in the winter and post-breeding (September) season.

Roosting Summary

In summary, there was a regularly used roost in a bog at Cloonboo More (HH-1) that was utilised by at least two individuals. The roost was outside the Proposed Wind Farm site and greater than 700m from the nearest proposed turbine location. Hen harrier was also observed roosting at Derrybaun (within 600m of the proposed turbine locations) and Cloonascragh (within the Proposed Wind Farm site, approximately 420m from the proposed turbine locations), but these were irregularly used, with roosting only confirmed on one occasion.

7.3.7.3 Little Egret

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

Vantage Point

Little egret was recorded 25 times during vantage point surveys, or on average once every 26 hours of winter and passage season survey. Of these records, one was within 500m of the proposed turbine locations. Between one and three individuals were observed during the winter and passage (April) seasons.

The majority of observations (22 of 25) were of birds fishing, roosting or flying around Horseleap Lough, south of the Proposed Wind Farm site, in winter. The remaining three observations were single birds flying and travelling, including across the Proposed Wind Farm site.

Waterbird Distribution and Abundance

Little egret was recorded 39 times during waterbird distribution and abundance surveys, on 32 of 89 survey dates (36%). Between 1 and 12 birds were observed during the winter and passage (August, September and April) seasons. The average count was 3 birds.

The closest record was ~1km from the nearest proposed turbine location. Birds were associated with waterbodies in the wider surroundings (Barnaderg Turlough, Horseleap Lough, Levally Lough and Summerville Lough, and along the Abbert River) where they were recorded foraging and roosting.

Incidental Records

There were four incidental records of little egret during hen harrier roost surveys. Single birds were observed travelling in winter. One was within the Proposed Wind Farm site, while the remaining three were in the wider surroundings.

7.3.7.4 Kingfisher

Kingfisher was observed in the winter and post-breeding season. Raw survey data and maps are provided in Appendix 7-4. Survey data and maps relating to nest are provided in Confidential Appendix 7-5.

Vantage Point

Kingfisher was recorded twice during vantage point surveys, or on average once every 269 hours of winter season survey. Of these records, none were within 500m of the proposed turbine locations. Single birds were observed during the winter season.

Both observations were in November 2023. Single birds were travelling – one near Horseleap Lough, south of the Proposed Wind Farm site, and the second near Cloonboo More, north of the Proposed Wind Farm site.

Waterbird Distribution and Abundance

Kingfisher was recorded 11 times during waterbird distribution and abundance surveys, on 9 of 89 survey dates (10%). Up to two birds were observed during the winter and post-breeding (August and September) seasons.

This species was recorded at two locations in the wider surroundings: Newtown Bridge on the Abbert River, which is ~665m from the Proposed Grid Connection; and at Summerville Lough, which ~3.1km from the nearest proposed turbine location. Birds were flying and perched. Pairs were observed at Newtown Bridge in August 2024 and Summerville Lough in February 2025. This suggests that kingfisher had breeding territories in these two locations.

7.3.7.5 Merlin

Merlin was observed in the breeding and winter season. Raw survey data and maps are provided in Appendix 7-4. Survey data and maps relating to roosts are provided in Confidential Appendix 7-5.

Vantage Point

Merlin was recorded 17 times during vantage point surveys, or on average once every 50 hours of survey. Of these records, two were within 500m of the proposed turbine locations. Between one and two individuals were observed, mostly during the winter season, but also once during the breeding season.

Merlin was recorded hunting, perched or preening during the winter months. The majority of observations were in the bog in the Cloondahamper/Tigreenaun area, north-west of the Proposed Wind Farm site. A smaller number of observations were around Horseleap Lough, south of the Proposed Wind Farm site. Of a total of 16 observations, just one was within 500m of the proposed turbine locations and two were within the Proposed Wind Farm site. Male and female birds were seen, including two together in December 2020.

Merlin was observed once during the breeding season: a single bird was being chased by a raven within the Proposed Wind Farm site in May 2024. No other breeding activity was recorded.

Winter Walkover

Merlin was recorded twice during winter walkover surveys, on 2 of the 20 survey dates (10%). Both of these records were within the Proposed Wind Farm site. Single birds were observed.

Birds (including a female) were using grassland and woodland within the Proposed Wind Farm site for hunting. Hunting was observed in February 2021 and 2022.

Incidental Records

There were 11 incidental records of merlin during vantage point and hen harrier roost surveys. Single birds were observed during the winter season. Two observations were within 500m of the proposed turbine locations and within the Proposed Wind Farm site boundary, including a bird hunting. The majority of the remaining observations were birds roosting, hunting, flying and perched at Cloonboo More, north-east of the Proposed Wind Farm site. A bird was observed going to roost in January 2025, in the hen harrier roost at Cloonboo More (HH-1), outside the Proposed Wind Farm site. A pellet and feed remains of a likely merlin were also found in this area in March 2021.

7.3.7.6 Peregrine Falcon

Peregrine falcon was observed in the breeding and winter season. Raw survey data and maps are provided in Appendix 7-4. Survey data and maps relating to nests are provided in Confidential Appendix 7-5.

Vantage Point

Peregrine falcon was recorded 10 times during vantage point surveys, or on average once every 86 hours of survey. Of these records, eight were within 500m of the proposed turbine locations. Single birds were observed, mostly during the winter season, but also once during the breeding season.

Peregrine falcon was using the Proposed Wind Farm site for hunting. Birds were recorded hunting on four occasions, sometimes with multiple observations in one survey, targeting species such as corvids, mallard and thrush in grassland and bog. The remaining observations were of birds flying through the Proposed Wind Farm site or past Horseleap Lough, south of the Proposed Wind Farm site.

Winter Walkover

Peregrine falcon was recorded once during winter walkover surveys (5% of survey dates). This record was within the Proposed Wind Farm site. A single bird was observed on the ground feeding on prey.

Breeding Raptor

Peregrine falcon was recorded 20 times during breeding raptor surveys, on 5 of the 42 survey dates (12%). Between 1 and 4 birds were observed. There was one record within the Proposed Wind Farm site: a single bird was travelling through. The remaining 19 records were in the wider surroundings, and 17 of them included breeding behaviour.

In breeding season 2024, a nest was located in a castle in Barnaderg, ~3.8km west of the nearest proposed turbine location (labelled as PE-1 in the map in Appendix 7-5). Adults were observed provisioning this nest in April, with begging chicks audible. In July, two fledged juveniles emerged from the nest.

Incidental Records

There were 13 incidental records of peregrine falcon during vantage point, hen harrier roost and waterbird distribution surveys. Between one and two birds were observed. All observations were within the wider surroundings. The majority were associated with the nest in Barnaderg (PE-1). In June 2021, a peregrine falcon was seen here, indicating that this nesting territory may have been used in the 2021 breeding season as well. A pair were also on the castle in March 2025, and may have held a territory again in 2025.

7.3.7.7 Whooper Swan

Whooper swan was observed in the winter and passage season. Raw survey data and maps are provided in Appendix 7-4. Survey data and maps relating to roosts are provided in Confidential Appendix 7-5.

Vantage Point

Whooper swan was recorded 226 times during vantage point surveys, or on average once every 3 hours of winter and passage season survey. Of these records, 77 were within 500m of the proposed turbine locations. Between 1 and 114 individuals were observed during the winter and passage (April) seasons. The average flock size was 14 birds.

Whooper swan was observed roosting on 13 occasions, sometimes with multiple observations during a survey. All roosting activity was associated with Horseleap Lough, south of the Proposed Wind Farm site (labelled as WS-1 in the map in Appendix 7-5). No roosting was recorded within 500m of the proposed turbine locations nor within the Proposed Wind Farm site.

Whooper swan was also observed foraging or swimming on 21 occasions. As above, the majority of activity was associated with Horseleap Lough and the fields to the north of this turlough (WS-2), which are outside the Proposed Wind Farm site. A flock of 10 birds was observed grazing in grassy fields within 500m of the proposed turbine locations on one occasion.

In June 2020, a lone bird was seen at the edge of the reedbed at Horseleap Lough. A dead whooper swan was nearby. This may have been a bonded pair where one bird was unable to make its annual spring migration to Iceland (perhaps due to illness or injury), and its mate waited with it until it died. The widowed bird may have rejoined a returning whooper swan flock the following winter.

The remaining 118 observations were of birds flying or travelling through the Proposed Wind Farm site and surrounding area. A large proportion of these flights were in the vicinity of Horseleap Lough.

Winter Walkover

Whooper swan was recorded 11 times during winter walkover surveys, on 6 of the 20 survey dates (30%). Of these records, three were within or partially within the Proposed Wind Farm site. Between 2 and 86 individuals were observed. The average flock size was 16 birds.

Whooper swan was recorded foraging and roosting on three occasions. In January 2020, 33 birds were foraging and resting at Cooloo, some within the Proposed Wind Farm site. In January 2024, 12 birds were grazing at Cooloo, outside the Proposed Wind Farm site, and flew towards Horseleap Lough. In March 2020, 111 birds were foraging on grassland in the fields north of Horseleap Lough, all south of the Proposed Wind Farm site (some within WS-2). The remaining observations were of swans travelling.

Waterbird Distribution and Abundance

Whooper swan was recorded 140 times during waterbird distribution and abundance surveys, on 52 of 89 survey dates (58%). Between 1 and 142 birds were observed during the winter and passage (April and May) seasons. The average flock size was 25 birds.

There were 13 records of flocks within 500m of the proposed turbine locations, occurring over 11 survey days. Flocks between 5 and 83 birds were foraging and roosting on grassland. The remaining 127 records were in the wider surroundings. The majority of these birds were associated with waterbodies in the wider surroundings (Barnaderg Turlough, Carrownabo Turlough, Gorteenlahard Turlough, Levally Lough, Horseleap Lough and Summerville Lough), but there were also observations in fields, such as at Mullaghmore. They were recorded swimming, roosting and foraging and in maintenance behaviours such as preening.

Incidental Records

There were 32 incidental records of whooper swan during vantage point, hen harrier roost and winter walkover surveys. Between 1 and 109 birds were observed. The average flock size was 25 birds.

Nine of the records were within 500m of the proposed turbine locations and within the Proposed Wind Farm site. Three flocks ranging from 7 to 84 birds were observed foraging on grassland north of Leecarrow (one within WS-2). The other observations were of birds in flight.

The remaining 23 records were within the wider surroundings. Roosting flocks ranging from 2 to 109 birds were recorded at (or flying to) Levally Lough and Horseleap Lough (within WS-1). Foraging flocks ranging from 11 to 108 birds were also recorded at Levally Lough, Horseleap Lough (within WS-2) and Gorteenlahard Turlough. The other observations were of birds in flight.

7.3.7.8 Common Gull

Common gull was observed in the breeding and winter season. Raw survey data and maps are provided in Appendix 7-4.

Vantage Point

Common gull was recorded two times during vantage point surveys, or on average once every 428 hours of survey. Of these records, one was within 500m of the proposed turbine locations. A single bird was observed in the breeding season and a flock of eight was observed in the winter season.

On both occasions, birds were observed travelling over farmland and lakes to the south of the Proposed Wind Farm site, in the area around Horseleap Lough.

Waterbird Distribution and Abundance

Common gull was recorded 4 times during waterbird distribution and abundance surveys, on 4 of 89 survey dates (4%). Between 2 and 16 birds were observed during the winter and passage (August) seasons. The average flock size was 7 birds.

The closest record was ~2.2km from the nearest proposed turbine location. Birds were recorded roosting and foraging in the wider surroundings at Summerville Lough and Gorteenlahard Turlough.

7.3.7.9 Barn Owl

Barn owl was observed in the breeding and winter season. Raw survey data and maps are provided in Appendix 7-4. Survey data and maps relating to sensitive locations are provided in Confidential Appendix 7-5.

Barn Owl Survey

No evidence of roosting barn owl was found during surveys in January 2021. However, some evidence of previous barn owl occupation was found in a derelict building during surveys in May 2021. This building is in Cooloo, within the Proposed Wind Farm site (labelled as BO-1 in the map in Appendix 7-5). Two feathers from an adult bird and some well decomposed pellets were found within the building. The building was occupied by jackdaw on the day of the survey, and no further evidence of barn owl was found.

Barn owl was using this building, but its vacancy during the nesting season and the relatively small amount of debris suggests that it was used for roosting during the winter season and not for breeding. There were signs of occupation sometime between the first survey in January and the second survey in May, but no signs of occupation before January, and no recent use by May. This indicates that barn owl may have used this building for roosting in winter, but also suggests that barn owl were not regularly roosting here.

Incidental Records

There were four incidental records of barn owl during vantage point surveys. Single birds were observed travelling or flushed in May 2020, November and December 2023, and in February 2025. All observations were outside the Proposed Wind Farm site (three to the north and one to the south).

7.3.7.10 Curlew

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

Vantage Point

Curlew was recorded once during vantage point surveys, or on average once every 538 hours of winter season survey. It was greater than 500m from the proposed turbine locations. A single bird was observed in the winter season.

The bird was recorded in March 2022. It was flying and calling as it circled over Horseleap Lough south of the Proposed Wind Farm site.

Waterbird Distribution and Abundance

Curlew was recorded 77 times during waterbird distribution and abundance surveys, on 50 of 89 survey dates (56%). Between 1 and 117 birds were observed during the winter and passage (April, August and September) seasons. The average flock size was 23 birds.

The closest records were ~2km from the nearest proposed turbine location. All other records of birds were associated with waterbodies in the wider surroundings (Barnaderg Turlough, Carrownabo Turlough, Gorteenlahard Turlough, Levally Lough and Summerville Lough) where they were recorded roosting, loafing and foraging.

Incidental Records

There were four incidental records of curlew during hen harrier roost and breeding raptor surveys. Between 1 and 58 birds were observed, with an average flock size of 16.

Curlew were recorded three times in winter, in the wider surroundings at Corralea and Levally Lough, calling and roosting. A single curlew was also recorded flying and calling over forestry in the wider surroundings at Cloonriddia in June 2020. This is likely to be a failed or post-breeding bird, given that it was not in suitable breeding habitat and was not recorded in this area on any other occasion during the core breeding season.

7.3.7.11 Grey Wagtail

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

Vantage Point

Grey wagtail was recorded 7 times during vantage point surveys, or on average once every 72 hours of breeding and passage season survey. Of these records, none were within 500m of the proposed turbine locations. Single birds were observed during the breeding and passage (March) seasons.

All mapped observations were at Horseleap Lough, south of the Proposed Wind Farm site. Birds were perched, singing, calling and traveling around the lake and grassland.

Winter Walkover

Grey wagtail was recorded once during winter walkover surveys (5% of survey dates). A single bird was observed travelling along a drainage ditch and hedgerow, in proximity to the Proposed Wind Farm site.

Breeding Walkover

Grey wagtail was recorded once during breeding walkover surveys (8% of survey dates). A single bird was heard calling in grassland just outside the Proposed Wind Farm site in May 2024.

Waterbird Distribution and Abundance

Grey wagtail was recorded four times during waterbird distribution and abundance surveys, on 4 of 89 survey dates (4%). Single birds were observed during the winter and early breeding (April) seasons.

The closest record was ~4.4km from the nearest proposed turbine location. Birds were recorded foraging and perched along the Abbert River, which runs south of the Proposed Wind Farm site.

Incidental Records

There were seven incidental records of grey wagtail during breeding raptor surveys. All observations were in the wider surroundings. Single birds or pairs were observed travelling or calling in breeding season 2024, and were likely breeding along the river at Derreen, south of the Proposed Wind Farm site, as there were several observations here in the core breeding season, including a pair.

7.3.7.12 Kestrel

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

Vantage Point

Kestrel was recorded 163 times during vantage point surveys, or on average once every 5 hours of survey. Of these records, 96 were within 500m of the proposed turbine locations. Between one and two individuals were observed through all seasons.

Kestrel used the Proposed Wind Farm site for breeding. In breeding season 2020, kestrel was observed mating in Cloonascragh in February. Later, in April, a male was observed carrying food and displaying near Cloondahamper (outside the Proposed Wind Farm site) suggesting a nest in this area (labelled as K-1 in the map in Appendix 7-5). In breeding season 2021, a kestrel was observed mobbing a buzzard and a pair were courting, with the male provisioning a female, near Derrybaun along the Proposed Wind Farm site boundary in March, indicating the establishment of a breeding territory. In June, a male was displaying in the same area (K-1), and in August, a kestrel was provisioning a chick (away from the nest; nest site unknown), within the Proposed Wind Farm site. Finally, in breeding season 2024, kestrel was observed carrying prey in June and July, and a juvenile was seen with an adult male, near Cloonascragh, in the northern section of the Proposed Wind Farm site (K-2).

Kestrel was also using the Proposed Wind Farm site for hunting. There were 120 records of kestrel hunting over bog and grassland and perched or eating prey. Much of the activity was within the northern section of the Proposed Wind Farm site and in the area around Horseleap Lough, south of the Proposed Wind Farm site. The remaining 31 observations were of birds travelling and flying around the Proposed Wind Farm site and wider surroundings.

Winter Walkover

Kestrel was recorded 22 times during winter walkover surveys, on 10 of the 20 survey dates (50%). Of these records, 13 were within or partially within the Proposed Wind Farm site. Up to two individuals were observed.

Kestrel are resident at the Proposed Wind Farm site. They were using the Proposed Wind Farm site and wider surroundings for hunting; there were 15 records of birds hunting or perched in grassland and bog. Males and females were observed together in March 2025, indicating that a pair may have held a territory during the breeding season.

Breeding Walkover

Kestrel was recorded 7 times during breeding walkover surveys, on 5 of the 13 survey dates (38%). Of these records, five were within or partially within the Proposed Wind Farm site boundary. Single birds were observed.

Birds were using the Proposed Wind Farm site and wider surroundings for hunting during all breeding seasons. Adult males and females were recorded. A juvenile was seen perched near Hillsbrook

Demense in July 2024, outside the Proposed Wind Farm site. It is possible this was the same bird (or a sibling of) the juvenile seen near Cloonascragh during vantage point surveys.

Breeding Raptor

Kestrel was recorded 2 times during breeding raptor surveys, on 11 of the 42 survey dates (26%). Single birds were observed. There were two records within the Proposed Wind Farm site: birds were hunting or travelling. The remaining 20 records were in the wider surroundings, and two of them included breeding behaviour.

In July 2021, a juvenile kestrel was observed hunting in a bog north of the Proposed Wind Farm site, in Ginnaun and Cloonboo More. It is possible that this bird originated from the territory near Derrybaun recorded during vantage point surveys.

Incidental Records

There were 50 incidental records of kestrel during vantage point, hen harrier roost and waterbird distribution surveys. Of these records, nine were within 500m of the proposed turbine locations or within the Proposed Wind Farm site. The remaining 41 were in the wider surroundings, particularly to the north. Birds were using the Proposed Wind Farm site and wider surroundings for hunting, perched resting and roosting in the winter and post-breeding (August) season.

Breeding Summary

In summary, there were two breeding territories identified: one at Cloondahamer (K-1) and one at Cloonascragh (K-2), both partially within in the Proposed Wind Farm site. From the observations, it was difficult to narrow down a more precise territory, therefore these overlap slightly. In 2020 and again in 2021, a pair held a territory at Cloondahamer (K-1). In 2024, a pair held a territory in Cloonascragh (K-2).

7.3.7.13 Lapwing

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

Vantage Point

Lapwing was recorded 183 times during vantage point surveys, or on average once every 5 hours of survey. Of these records, 46 were within 500m of the proposed turbine locations. Between 1 and 514 individuals were observed through all seasons. The average flock size was 65 birds.

Breeding activity was recorded in the area of Horseleap Lough, south of the Proposed Wind Farm site (labelled as L-1 in the map in Appendix 7-5), approximately 760m from the Proposed Wind Farm site and 900m from the nearest proposed turbine location. Nests were recorded in April 2020 on the north-east shore of the turlough. In May, a pair was displaying over the turlough and later a pair was attacking a whooper swan, indicative of nesting. In June 2024, a juvenile lapwing was observed at the turlough, indicating breeding.

Roosting and foraging activity was also recorded in the area of Horseleap Lough. Roosting was recorded on 8 occasions and foraging on 14. Almost all roosting, loafing and foraging flocks were greater than 500m from the proposed turbine locations and outside the Proposed Wind Farm site. The only exceptions were one landed foraging flock of 50 birds and the flight path of one flock of 53 birds coming in to roost, both of which were within 500m of the proposed turbine locations. Roosting activity

was concentrated at Horseleap Lough (L-2) and to a lesser extent in fields to the west of the lough (L-3), while foraging activity was concentrated at Horseleap Lough and the fields north of the turlough (L-2).

Of other records, 25 were of flocks ranging from 1 to 54 birds that were likely associating with landed flocks foraging or roosting on the ground in the areas described above, which is typical lapwing behaviour. Two of these flights passed within 500m of the proposed turbine locations. The remaining 114 records were of lapwing flying, circling and travelling over the Proposed Wind Farm site and wider surroundings. As above, these flights were mainly concentrated in the area around Horseleap Lough.

Winter Walkover

Lapwing was recorded 5 times during winter walkover surveys, on 5 of the 20 survey dates (25%). Of these records, three were within or partially within the Proposed Wind Farm site. Between 13 and 150 individuals were observed. The average flock size was 62 birds.

Birds were circling and travelling in the Proposed Wind Farm site and wider surroundings. A flock of 17 birds was observed feeding and roosting in a bog at Dangan Eighter (L-4). These birds were within 500m of the proposed turbine locations and within the Proposed Wind Farm site boundary.

Waterbird Distribution and Abundance

Lapwing was recorded 190 times during waterbird distribution and abundance surveys, on 75 of 89 survey dates (84%). Between 1 and 1,000 birds were observed during the winter and passage (April, May, August and September) seasons. The average flock size was 93 birds.

One record of a flock of 20 birds circling over grassland was within the Proposed Wind Farm site. The remaining 92 records were in the wider surroundings. The majority of these birds were associated with waterbodies in the wider surroundings (Barnaderg Turlough, Carrownabo Turlough, Gorteenlahard Turlough, Levally Lough Summerville Lough, Horseleap Lough and Templemoyle Turlough) where they were recorded foraging, roosting, loafing and in maintenance behaviours such as preening.

Incidental Records

There were seven incidental records of lapwing during vantage point, breeding raptor and hen harrier roost surveys. Between 14 and 280 birds were observed during the winter and breeding/post-breeding seasons. The average flock size was 122 birds.

There were no records within 500m of the proposed turbine locations or within the Proposed Wind Farm site. Flocks were observed flying and circling in the wider surroundings. Adults and juveniles were observed near Levally Lough in July 2020, and it is possible that they were breeding nearby. Birds were also foraging at Horseleap Lough.

7.3.7.14 Meadow Pipit

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

Vantage Point

Meadow pipit was recorded 67 times during vantage point surveys, or on average once every 13 hours of survey. Birds were within 500m of the proposed turbine locations and within Proposed Wind Farm site boundary, as well as in the surrounding areas. Between 1 and 35 individuals were observed through all seasons. The average flock size was 5 birds.

Meadow pipit was recorded throughout the survey period and were resident at the Proposed Wind Farm site, frequently flying and foraging. Birds are likely breeding, as they were observed displaying and singing during breeding season 2024 and early 2022 and 2025 (March).

Winter Walkover

Meadow pipit was recorded 24 times during winter walkover surveys, on 11 of the 20 survey dates (55%). Birds were within the Proposed Wind Farm site, as well as in the surrounding areas. Between 1 and 25 individuals were observed. The average flock size was 5 birds.

Birds were recorded every winter season and are resident at the Proposed Wind Farm site. In winter, they were observed flying and perching. Singing and displaying were recorded in March 2022 and 2024.

Breeding Walkover

Meadow pipit was recorded 13 times during breeding walkover surveys, on 7 of the 13 survey dates (54%). Birds were within the Proposed Wind Farm site boundary, as well as in the surrounding areas. Between 1 and 18 individuals were observed. The average flock size was 3 birds. They were seen during every breeding season, flying, calling and perched, and were resident at the Proposed Wind Farm site.

Incidental Records

There were 29 incidental records of meadow pipit during breeding raptor, hen harrier roost and waterbird distribution and abundance surveys. Records were made throughout the survey period, within the Proposed Wind Farm site and wider surroundings. Between 1 and 23 birds were observed. The average flock size was five birds. Birds were flying, perched, calling and displaying.

7.3.7.15 Redwing

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

Vantage Point

Redwing was recorded 24 times during vantage point surveys, or on average once every 22 hours of winter season survey. Birds were within 500m of the proposed turbine locations, as well as in the surrounding areas. Between 1 and 320 individuals were observed during the winter season. The average flock size was 30 birds.

Birds were recorded every winter season at the Proposed Wind Farm site. They were recorded foraging in the grassy fields.

Winter Walkover

Redwing was recorded 21 times during winter walkover surveys, on 9 of the 20 survey dates (45%). Birds were within the Proposed Wind Farm site, as well as in the surrounding areas. Between 1 and 38 individuals were observed. The average flock size was 13 birds.

Birds were recorded in four winter seasons. They were observed foraging, flying and perching, sometimes in mixed flocks with fieldfare.

Incidental Records

There were 11 incidental records of redwing during hen harrier roost and waterbird distribution and abundance surveys. Records were made in all winter seasons, within the Proposed Wind Farm site and wider surroundings. Between 1 and 80 birds were observed. The average flock size was 33 birds. Birds were flying and foraging, sometimes in mixed flocks with fieldfare and starling.

7.3.7.16 **Swift**

Swift was observed in the breeding season. Raw survey data and maps are provided in Appendix 7-4. Survey data and maps relating to nest are provided in Confidential Appendix 7-5.

Vantage Point

Swift was recorded twice during vantage point surveys, or on average once every 159 hours of breeding season survey. This included records within 500m of the proposed turbine locations. Single birds were observed travelling in the breeding season in June 2021 and 2024.

Incidental Records

There were seven incidental records of swift during breeding raptor and waterbird distribution surveys. Between one and ten birds were observed in the breeding seasons. The average flock size was five birds.

All observations were in the wider surroundings. The majority were associated with a nesting colony in Barnaderg Castle, ~3.8km west of the nearest proposed turbine location (labelled as SI-1 in the map in Appendix 7-5).

7.3.7.17 **Snipe**

Snipe was observed in the breeding and winter season. Raw survey data and maps are provided in Appendix 7-4. Survey data and maps relating to breeding territories are provided in Confidential Appendix 7-5.

Vantage Point

Snipe was recorded 92 times during vantage point surveys, or on average once every 9 hours of survey. Of these records, 33 were within 500m of the proposed turbine locations. Between 1 and 60 individuals were observed through all seasons. The average count was five birds.

Snipe was resident at the Proposed Wind Farm site in both the winter and breeding season. Birds were frequently recorded flying or flushed by people or other birds. Drumming and chipping (courtship) was heard in breeding season 2020, 2024 and early 2025 (March), in the northern section of the Proposed Wind Farm site and at Horseleap Lough, south of the Proposed Wind Farm site.

Winter Walkover

Snipe was recorded 36 times during winter walkover surveys, on 13 of the 20 survey dates (65%). Of these records, 12 were within or partially within the Proposed Wind Farm site. Between 1 and 15 individuals were observed. The average count was two birds.

Snipe are resident at the Proposed Wind Farm site in winter. Birds were frequently recorded flying or flushed by people.

Breeding Walkover

Birds were recorded 3 times during breeding walkover surveys, on 3 of the 13 survey dates (23%). Of these records, all were within or partially within the Proposed Wind Farm site. Single birds were observed.

A snipe was heard drumming in a bog within the Proposed Wind Farm site near Cooloo in April 2024. Birds were also flushed from the bog on two occasions in May and July 2024. It is likely that snipe were breeding at the Proposed Wind Farm site, given the courtship behaviour and that they were present throughout the core breeding season. Probable breeding territories based on the location of drumming birds are outlined in the map in Appendix 7-5, labelled SN-1 and SN-2.

Waterbird Distribution and Abundance

Snipe was recorded 23 times during waterbird distribution and abundance surveys, on 18 of 89 survey dates (20%). Between 1 and 12 birds were observed during the winter and passage (April and September) seasons. The average count was 3 birds.

There were four records within 500m of the proposed turbine locations. These comprised small numbers of 1-3 birds flushed from the ground. The remaining 19 records were in the wider surroundings. Snipe were often associated with waterbodies (Carrownabo Turlough, Gorteenlahard Turlough, Horseleap Lough, Levally Lough, Summerville Lough and the Grange River), where they were recorded foraging and roosting.

Incidental Records

There were 64 incidental records of snipe during vantage point, breeding raptor, hen harrier roost and winter walkover surveys. Records were made throughout the survey period, within the Proposed Wind Farm site and wider surroundings. Between 1 and 21 birds were observed. The average count was two birds. Birds were recorded drumming and chipping, including within the Proposed Wind Farm site. Birds were also flying, flushed and heard calling.

7.3.7.18 Shoveler

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

Vantage Point

Shoveler was recorded 68 times during vantage point surveys, or on average once every 9 hours of winter and passage season surveys. Of these records, none were within 500m of the proposed turbine locations. Between 1 and 55 individuals were observed during the winter and passage (April) seasons. The average flock size was 17 birds.

All shoveler activity was associated with Horseleap Lough, south of the Proposed Wind Farm site. They are attracted to the water here for food and safety from predators. Birds were observed foraging and roosting at the turlough during all winter seasons of survey and formed mixed flocks with other duck species such as teal, mallard and wigeon. Ten flights were recorded passing over the Proposed Grid Connection. No flights were within 500m of the proposed turbine locations.

Waterbird Distribution and Abundance

Shoveler was recorded 79 times during waterbird distribution and abundance surveys, on 49 of 89 survey dates (55%). Between 1 and 150 birds were observed during the winter and passage (April and September) seasons. The average flock size was 20 birds.

The closest records were ~985m from the nearest proposed turbine location. All records of birds were associated with waterbodies in the wider surroundings (Barnaderg Turlough, Carrownabo Turlough, Gorteenlahard Turlough, Levally Lough, Templemoyle Turlough, Horseleap Lough and Summerville Lough) where they were recorded swimming, roosting and foraging and in maintenance behaviours such as preening.

Incidental Records

There was one incidental record of shoveler during vantage point surveys. A flock of 15 birds was observed foraging at Horseleap Lough in March 2022.

7.3.7.19 Woodcock

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

Incidental Records

There were two incidental records of woodcock during hen harrier roost surveys in November 2021. On both occasions, two birds were recorded flying in the bog. One observation was at Cloonascragh, within 500m of the proposed turbine locations and within the Proposed Wind Farm site. The second observation was at Cloondahamper, outside the Proposed Wind Farm site. Woodcock was not recorded during any other survey for the entire survey period. No breeding behaviours such as roding or chipping (woodcock display calls) were heard during any survey.

7.3.7.20 Buzzard

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

Vantage Point

Buzzard was recorded 176 times during vantage point surveys, or on average once every 5 hours of survey. Of these records, 131 were within 500m of the proposed turbine locations. Between one and four individuals were observed through all seasons.

Buzzard was resident at the Proposed Wind Farm site. Birds were using bog and farmland for hunting and were observed successfully catching prey and perched resting. They were also observed perched and feeding around Horseleap Lough, south of the Proposed Wind Farm site. Buzzard was observed soaring and circling high over and travelling through the Proposed Wind Farm site. In the early breeding season (March) of years 2020, 2021, 2022 and 2025, up to four individuals (sometimes in two pairs) were observed displaying over the northern section of the Proposed Wind Farm site. In August 2021, a family party of two adults and two juveniles was seen in the same area. This suggests that buzzard were repeatedly breeding in this general area, although a territory was not located.

Winter Walkover

Buzzard was recorded 25 times during winter walkover surveys, on 13 of the 20 survey dates (65%). Of these records, 18 were within or partially within the Proposed Wind Farm site. Up to two individuals were observed.

Birds were using bog, grassland and woodland in the Proposed Wind Farm site for hunting and to perch on three occasions. Two birds were also observed soaring together in the Proposed Wind Farm site on three occasions. The remaining observations were single birds flying and travelling through the Proposed Wind Farm site.

Breeding Walkover

Buzzard was recorded 9 times during breeding walkover surveys, on 4 of the 13 survey dates (31%). Of these records, five were within or partially within the Proposed Wind Farm site. Up to two individuals were observed.

A bird was observed hunting in bog outside the Proposed Wind Farm site in May 2020. A pair were observed soaring in Cloonboo More, north of the Proposed Wind Farm site, in May 2024. The remaining observations were of birds perched and travelling.

Breeding Raptor

Buzzard was recorded 48 times during breeding raptor surveys, on 13 of the 42 survey dates (31%). Between one and three birds were observed. There were three records within the Proposed Wind Farm site: one of a suspected nesting pair, one of three birds soaring, and one of a single bird flying. The remaining 46 records were in the wider surroundings, and 18 of them included breeding behaviour.

In breeding season 2020, there was a suspected nesting pair in a treeline within the Proposed Wind Farm site at Cooloo. Two birds were observed here in May (labelled as BZ-1 in the map in Appendix 7-5). However, there were no further records here.

In breeding season 2021, a bird was seen flying with prey at Cloonboo More (BZ-2), suggesting a breeding territory near this location. Three buzzard were also seen near Cloonascragh in April and May, but there were no other indications of breeding.

In breeding season 2024, pairs were observed displaying around Dereen and Sunhill, south of the Proposed Wind Farm site, in May. There was likely two territories: the Dereen pair were seen defending a territory from an intruding buzzard, before flying into the woodland (BZ-3). The Sunhill pair were seen carrying prey, likely to provision a nest, and in July begging chicks were observed here, confirming breeding (BZ-4). In the same year, there was a third territory back at Cloonboo More (BZ-2): a pair was soaring here in May, and remained here throughout the core breeding season, including mobbing a grey heron, which suggests they were defending a territory.

Incidental Records

There were 65 incidental records of buzzard during vantage point, hen harrier roost and waterbird distribution surveys. Between one and three birds were observed, throughout the Proposed Wind Farm site (18 records) and wider surroundings (47 records). Birds were recorded hunting and displaying during most of the survey seasons.

A pair were observed soaring in and out of conifer woodland at Cooloo, in the Proposed Wind Farm site in February 2020. However, no further breeding behaviour was recorded at this location. Two buzzard were attacking each other near Derrybaun, also within the Proposed Wind Farm site in

November 2023. Given that this was the mid-winter season, it is possible that the attacks were related to dispersing juveniles from the 2023 breeding season.

Breeding Summary

In summary, there were four breeding territories identified: one at Cooloo (BZ-1), within the Proposed Wind Farm site, and three in the wider surroundings at Cloonboo More (BZ-2), Dereen (BZ-3) and Sunhill (BZ-4). In breeding season 2020, a pair held a territory at Cooloo (BZ-1). In 2021, a pair held a territory at Cloonboo More (BZ-2). Finally, in 2024, three pairs held territories at Cloonboo More (BZ-2), Dereen (BZ-3) and Sunhill (BZ-4).

7.3.7.21 Long-eared Owl

Long-eared owl was 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 Appendix 7-5.

Vantage Point

Long-eared owl was recorded 3 times during vantage point surveys, or on average once every 106 hours of breeding season survey. Of these records, two were within 500m of the proposed turbine locations. Birds were recorded during the breeding season.

In May 2021, long-eared owl chicks were heard, and a pellet (regurgitate of undigested food) was found under conifer trees near Cloonascragh, confirming breeding in this area. The trees are along the boundary of the Proposed Wind Farm site, and within 500m of the proposed turbine locations. In breeding season 2024, long-eared owls were seen travelling across the bog in the north-west section of the Proposed Wind Farm site in the night or early morning of May and August. Breeding activity was not recorded. However, long-eared owl is a nocturnal species, and cryptic during daylight hours, when the majority of surveys are conducted. As such, these two observations still suggest breeding, given that the owls were present throughout the breeding season close to where a territory was held in 2021.

Breeding Raptor

Long-eared owl was recorded 4 times during breeding raptor surveys, on 2 of the 42 survey dates (5%). Breeding was confirmed along the Proposed Wind Farm site at Cloonascragh (labelled as LE-1 in the map in Appendix 7-5). In May 2024, a bird was seen here early in the morning. Later, in July, owls were heard 'singing' at the same location, and two chicks were heard begging.

Breeding Long-eared Owl

During the breeding long-eared owl survey in April 2021, two chicks were heard calling, with an adult responding. This was at the same location along the Proposed Wind Farm site where chicks were heard during breeding raptor surveys (Cloonascragh, LE-1), confirming that this territory was used in multiple years.

Incidental Records

There was one incidental record of a long-eared owl during vantage point surveys. A bird flew across the bog and at Cloondahamper early one morning in March 2021.

7.3.7.22 Sparrowhawk

Sparrowhawk was observed in the breeding and winter season. Raw survey data and maps are provided in Appendix 7-4.

Vantage Point

Sparrowhawk was recorded 40 times during vantage point surveys, or on average once every 21 hours of survey. Of these records, 11 were within 500m of the proposed turbine locations. Single birds were observed throughout all seasons.

Sparrowhawk were using the Proposed Wind Farm site and wider surroundings for hunting. Birds were recorded hunting and perching in grassland, bog and scrub on 12 occasions in the winter and breeding seasons, sometimes with multiple observations in one survey. An immature female was seen in July 2024, but there was no other breeding behaviour recorded, and the origin of this immature bird is unknown. The remaining observations were of birds flying and travelling.

Winter Walkover

Sparrowhawk was recorded 9 times during winter walkover surveys, on 8 of the 20 survey dates (40%). Of these records, 5 were within or partially within the Proposed Wind Farm site boundary. Single birds were observed.

Birds were using bog and grassland habitats within the Proposed Wind Farm site and wider surroundings for hunting. Male and female birds were seen on four occasions, hunting prey such as reed bunting. In March 2020, a sparrowhawk was mobbing a buzzard near Derrybaun, west of the Proposed Wind Farm site. This behaviour may indicate that the sparrowhawk was establishing a breeding territory in this area. The remaining records were birds flying and travelling through the Proposed Wind Farm site and wider surroundings.

Breeding Walkover

Sparrowhawk was recorded once during breeding walkover surveys (8% of survey dates). An adult female was travelling through the bog, partially within the Proposed Wind Farm site in July 2021.

Breeding Raptor

Sparrowhawk was recorded 7 times during breeding raptor surveys, on 6 of the 42 survey dates (14%). Single birds were observed. There was one record within the Proposed Wind Farm site (a bird travelling across the bog). The remaining six records were in the wider surroundings, but none of them included breeding behaviour: sparrowhawk were hunting and travelling.

Incidental Records

There were 27 incidental records of sparrowhawk during hen harrier roost and waterbird distribution surveys. Between one and two birds were observed in the winter and breeding seasons. There were four records within 500m of the proposed turbine locations and within the Proposed Wind Farm site. These were of birds travelling. The remaining 25 observations were in the wider surroundings. These birds were hunting, perched, preening and travelling.

7.4 Receptor Evaluation

7.4.1 Determination of Population Importance

A determination of population importance for birds within the study area is provided below, following the criteria described in Section 7.2.4. Estimates of national population sizes were obtained from the most recent species-specific national survey, or national surveys by Burke *et al.* (2018), 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 County Galway¹, or derived from national estimates, according to what literature was available.

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

7.4.1.1 Golden Plover

Golden plover was recorded during the winter and passage season. The estimated national (Republic of Ireland; ROI) wintering population is 80,707 birds (Burke *et al.* 2018). Therefore, regularly occurring population of 807 birds is required for classification as National Importance.

There are no published figures for the county Galway population. To estimate the county population, a review of all Galway I-WeBS sites was conducted. It should be noted that the population estimate based on I-WeBS figures alone is likely to be an underestimate of the county population². This is due to the foraging ecology of wintering golden plover that will utilise agricultural grasslands and other terrestrial habitats not typically surveyed during I-WeBS counts, as this is a survey of wetland habitats. The following mean count values have been recorded for I-WeBS sites over the most recent 5-season period (2016/17 – 2020/21). Note that sites with a mean of zero birds were excluded from this list:

- > Ballindeereen Turlough: 44
- > Ballyconneely Bay: 13
- > Caranavoodaun Turlough: 124
- > Doolough Headford: Turloughcor: 140
- > Inner Galway Bay: 1628
- > Kiltiernan Turlough: 41
- > Lough Corrib: 240
- > Mannin Bay: 97
- > North Central Galway Lakes: 200
- > Omey Strand: 78
- > Polleagh Turlough: 47
- > Pollnagarragh Marshes: 93
- > Rahasane Turlough: 1420
- > Termon Turloughs: 44

To account (partly) for the birds that occur in other wetland sites and terrestrial habitats that would not have been counted during I-WeBS, the golden plover that occurred at the Proposed Wind Farm site

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.* (2018) in relation to the golden plover count, "these estimates must be treated as conservative on the basis that they are widely disturbed in a variety of wetland and non-wetland habitats that are under-sampled during I-WeBS."

and other non-I-WeBS sites, as well as some I-WeBS sites where no data was available, were included in the county population estimate. It also included the peak counts from the I-WeBS North East Galway Lakes, which were excluded above because they were covered during field surveys (Levally Lough, Summerville Lough and Horseleap Lough). The following mean peak values have been recorded for such sites over the five winter seasons of field surveys:

- Levally Lough: 938
- Summerville Lough: 2
- Gorteenlahard Turlough: 516
- Carrownabo Turlough: 100
- Horseleap Lough: 99
- Barnaderg Turlough: 1
- Derrinacrick Lough: 30

Based on the above, the mean wintering population from I-WeBS sites is 4,209 birds and the mean wintering population from other sites is 1,686 birds. Taken together, this is a Galway population of 5,895. Therefore, regularly occurring population of 59 birds is required for classification as County Importance.

Flocks up to 2,500 birds were recorded at the Proposed Wind Farm site and wider surroundings during surveys. Thus, the wintering golden plover population at the Proposed Wind Farm site is considered to be of **National Importance**.

7.4.1.2 Hen Harrier

Hen Harrier was mainly recorded during the winter season, with some records during the post-breeding season. The estimated national (ROI) wintering population is 311-435 birds (Article 12 Reporting). Therefore a regularly occurring wintering population of 3-4 birds is required for classification as National Importance.

A regularly used hen harrier roost was identified in the wider surroundings at Cloonboo More, ~700m from the nearest proposed turbine location. Additionally, a bird was observed roosting at Derrybaun on one occasion, 500m from the nearest proposed turbine location, and at Cloonascragh on one occasion, 420m from the nearest proposed turbine location. Hen harrier was hunting at the Proposed Wind Farm site, and at least two individuals were observed during surveys. Thus, the hen harrier population at the Proposed Wind Farm site does not meet the National Importance criteria and is therefore considered to be of **County Importance**.

7.4.1.3 Little Egret

Little egret was recorded during the winter and passage season. The estimated national (ROI) wintering population is 1,274 birds (Burke *et al.* 2018). Therefore, regularly occurring population of 12 birds is required for classification as National Importance.

Counts of up to 12 little egret were recorded during surveys on two occasions. These counts were associated with waterbodies in the wider surroundings (Levally Lough) and were not birds using the Proposed Wind Farm site. At the Proposed Wind Farm site itself, there were counts of up to three birds travelling over. Thus, the little egret population at the Proposed Wind Farm site does not meet the National Importance criteria and is therefore considered to be a wintering population of **County Importance**.

7.4.1.4 Kingfisher

Kingfisher was recorded during the winter and post-breeding season. The estimated national (ROI) population is 368-1,031 pairs (Article 12 Reporting; there are no estimates for winter season only).

Therefore, a regularly occurring population of 4-10 pairs (8-20 individuals) is required for classification as National Importance. There are no published figures for the county Galway population. However, according to the distribution of kingfisher across Ireland in the breeding bird atlas³, 5% of the winter population is found in Galway. Extrapolating this, the wintering Galway population is estimated to be 18-52 pairs (36-104 individuals). Therefore, a regularly occurring population of one bird is required for classification of County Importance.

Up to two individuals were observed together in the wider surroundings during surveys. These birds were associated with the Abbert River, running south of the Proposed Wind Farm site, and are likely breeding here. Kingfisher were only recorded in the vicinity of the Proposed Wind Farm site on two occasions, and both were outside the Proposed Wind Farm site (Horseleap Lough and Cloonboo More). Thus, the Proposed Wind Farm site is of **No Ecological Importance** to this species given how infrequently it is utilised by this species

7.4.1.5 **Merlin**

Merlin was recorded during the breeding and winter seasons. The estimated national (ROI) population is 200-400 pairs (Article 12 Reporting). Therefore, a regularly occurring population of 2-4 pairs is required for classification as National Importance. There are no published figures for the county Galway population. However, according to the distribution of merlin across Ireland in the breeding bird atlas, 13% of the population is found in Galway in both the breeding and winter seasons. Extrapolating this, the Galway population is estimated to be 26-52 pairs. Therefore, a regularly occurring population of one pair (breeding) or one bird (wintering) is required for classification of County Importance.

Winter

Merlin were recorded during surveys in winter, and on one occasion, merlin was observed roosting at Cloonboo More, at the regularly used hen harrier roost ~700m from the nearest proposed turbine location. Merlin was also observed hunting at the Proposed Wind Farm site. Two birds were seen during a survey on one occasion. Thus, this species is considered to be a wintering population of **County Importance**.

Breeding

Merlin was recorded on only one occasion over three breeding seasons. The Proposed Wind Farm site is of **No Ecological Importance** to this species during the breeding season given how infrequently it is utilised by this species.

7.4.1.6 **Peregrine Falcon**

Peregrine falcon was recorded during the breeding and winter seasons. The estimated national (ROI) population is 425 pairs (Article 12 Reporting). Therefore, a regularly occurring population of four pairs is required for classification as National Importance. There are no published figures for the county Galway population. However, according to the distribution of peregrine across Ireland in the breeding bird atlas, 7.62% of the population is found in Galway. Extrapolating this, the Galway population is estimated to be 32 pairs. Therefore, a regularly occurring population of one pair is required for classification of County Importance.

³ Bird Atlas data (2007-2011) 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.

A breeding pair of peregrine were identified in the wider surroundings during surveys, ~3.8km from the nearest proposed turbine location. The core foraging range of peregrine falcon is 2km (SNH, 2016), therefore birds seen at the Proposed Wind Farm site during the breeding season are unlikely to be associated with this nest. However, birds were also hunting at the Proposed Wind Farm site (that may not have been the nesting pair, but other birds from elsewhere). Thus, this species is considered to be a population of **County Importance**.

7.4.1.7 Whooper Swan

Whooper swan was recorded in the winter and passage seasons. The estimated national (ROI) wintering population is 14,467 (Burke *et al.*, 2021). Therefore, a regularly occurring population of 145 birds is required for classification as National Importance. The estimated Galway wintering population is 1,485 (Burke *et al.*, 2021). Therefore, regularly occurring population of 15 birds is required for classification as County Importance.

Flocks up to 142 birds were observed in the wider surroundings during surveys. The majority of whooper swan observed were associated with waterbodies in the wider surroundings. These were within a 5km radius of the Proposed Wind Farm site (the core foraging range of whooper swan; SNH, 2016) and some flocks were also within the Proposed Wind Farm site itself. Thus, this species is considered to be a population of **County Importance**.

7.4.1.8 Common Gull

Common gull was recorded once during three breeding seasons of surveys. A single bird was travelling at Horseleap Lough. Common gull were not observed within the Proposed Wind Farm site during the breeding season. As such, the Proposed Wind Farm site is of **No Ecological Importance** to this species during the breeding season.

Common gull was recorded five times over five winter seasons of survey. All records were associated with waterbodies in the wider surroundings (Horseleap Lough, Summerville Lough and Gorteenlahard Turlough). There were no observations of birds using the Proposed Wind Farm site. As such, the Proposed Wind Farm site is of **No Ecological Importance** to this species during the winter season.

7.4.1.9 Barn Owl

Barn owl was recorded during the breeding and winter seasons. The estimated national (ROI) population is 562-702 pairs (Article 12 Reporting; there are no estimates for winter season only). Therefore, a regularly occurring population of 6-7 pairs is required for classification as National Importance. There are no published figures for the county Galway population. However, according to the distribution of barn owl across Ireland in the breeding bird atlas, 7% of the breeding population is found in Galway. Extrapolating this, the Galway breeding population is estimated to be 39-49 pairs. Therefore, a regularly occurring population of one pair is required for classification of County Importance.

Barn owl was recorded in proximity to the Proposed Wind Farm site on four occasions, three of which were in winter. Furthermore, signs of a roosting barn owl were found in a derelict building in the Proposed Wind Farm site. Thus, this species is considered to be a wintering population of **Local Importance (Higher Value)**.

Barn owl is only on the Red List for breeding populations in Ireland. There was evidence of barn owl during winter, but limited evidence during the breeding season. As such, the Proposed Wind Farm site is of **No Ecological Importance** to this species during the breeding season.

7.4.1.10 Curlew

Curlew recorded during the breeding and winter seasons. Almost all observations of curlew during the winter season were associated with waterbodies in the wider surroundings (the one exception was of curlew in farmland fields near, but not within, Barnaderg Turlough, over 2km from the Proposed Wind Farm site). Birds were not recorded within or travelling over the Proposed Wind Farm site. As such, the Proposed Wind Farm site is of **No Ecological Importance** to this species during the winter season.

Curlew was observed on one occasion during three breeding seasons. A single bird was recorded flying over forestry, which is not suitable breeding habitat, and was outside the Proposed Wind Farm site. As such, the Proposed Wind Farm site is of **No Ecological Importance** to this species during the breeding season.

7.4.1.11 Grey Wagtail

Grey wagtail was observed in the breeding and winter seasons. Grey wagtail is only on the Red List for breeding populations in Ireland. There was one record within the Proposed Wind Farm site during the survey period, and this record was during winter. Grey wagtail was not recorded in the Proposed Wind Farm site during the breeding season: there was evidence of breeding at waterbodies in the wider surroundings. As such, the Proposed Wind Farm site is of **No Ecological Importance** to this species during the winter season.

7.4.1.12 Kestrel

Kestrel was recorded during the breeding and winter seasons. The estimated national (ROI) population is 13,500 birds (Article 12 Reporting). Therefore, a regularly occurring population of 135 birds is required for classification as of National Importance. There are no published figures for the county Galway population. However, according to the distribution of kestrel across Ireland in the breeding bird atlas, 8.90% of the breeding population is found in Galway. Extrapolating this, the Galway population is estimated to be 1,202 birds. Therefore, a regularly occurring population of 12 birds is required for classification of County Importance.

Kestrel was resident at the Proposed Wind Farm site. Two breeding territories were identified, although these occurred in different years, and could have been the same birds (therefore between two and four adults are present). Thus, this species is considered to be a population of **Local Importance (Higher Value)**.

7.4.1.13 Lapwing

Lapwing was recorded during the breeding and winter seasons. These seasonal populations are discussed separately.

Winter

The estimated national (ROI) wintering population is 69,823 (Burke *et al.* 2018). Therefore, a regularly occurring population of 698 birds is required for classification as of National Importance. There are no published figures for the county Galway population. To estimate the county population, a review of all Galway I-WeBS sites was conducted. It should be noted that the population estimate based on I-WeBS figures alone is likely to be an underestimate of the county population. This is due to the foraging ecology of wintering lapwing that will utilise agricultural grasslands and other terrestrial habitats not typically surveyed during I-WeBS counts, as this is a survey of wetland habitats. The following mean count values have been recorded for I-WeBS sites over the most recent 5-season period (2016/17 – 2020/21). Note that sites with a mean of zero birds were excluded from this list:

- > Ballindeereen Turlough: 69
- > Ballinduff Turlough & Grassland: 34
- > Ballyboy: 49
- > Ballyconneely Bay: 17
- > Caherglassaun Lough: 74
- > Cahermore Turlough: 132
- > Caranavoodaun Turlough: 247
- > Coole Lough - Newtown Turlough: 30
- > Doolough Headford: Turloughcor: 20
- > Glenamaddy Turlough: 64
- > Inishmore, Aran Islands: 87
- > Inner Galway Bay: 1599
- > Kiltiernan Turlough: 113
- > L. Coy - Blackrock - Bullaunagh - Ballylee: 204
- > Lough Corrib: 113
- > Lough Rea: 200
- > Lydacan Castle Turlough: 106
- > North Central Galway Lakes: 300
- > Polleagh Turlough: 69
- > Pollnagarraugh Marshes: 12
- > Rahasane Turlough: 472
- > Termon Turloughs: 106
- > Tullaghnafrankagh Lough: 90

To account (partly) for the birds that occur in other wetland sites and terrestrial habitats that would not have been counted during I-WeBS, the lapwing that occurred at the Proposed Wind Farm site and other non-I-WeBS sites, as well as some I-WeBS sites where no data was available, were included in the county population estimate. It also included the peak counts from the I-WeBS North East Galway Lakes, which were excluded above because they were covered during field surveys (Levally Lough, Summerville Lough and Horseleap Lough). The following mean peak values have been recorded for such sites over the five winter seasons of field surveys:

- > Levally Lough: 508
- > Summerville Lough: 141
- > Gorteenlahard Turlough: 293
- > Carrownabo Turlough: 166
- > Horseleap Lough: 173
- > Barnaderg Turlough: 25
- > Derrinacrick Lough: 2
- > Templemoyle Turlough: 25

Based on the above, the mean wintering population from I-WeBS sites is 4,207 birds and the mean wintering population from other sites is 1,333 birds. Taken together, this is a Galway population of 5,540. Therefore, regularly occurring population of 55 birds is required for classification as County Importance.

Flocks of up to 1,000 lapwing were recorded during winter surveys. These flocks were using waterbodies in the wider surroundings and were not birds using the Proposed Wind Farm site. However, there were flocks recorded using and travelling over the Proposed Wind Farm site. These birds are likely to be associated with those from the wider surroundings. Thus, the lapwing population at the Proposed Wind Farm site is considered to be a wintering population of **National Importance**.

Breeding

Lapwing were recorded breeding at Horseleap Lough, south of the Proposed Wind Farm site. Adults and juveniles were also recorded at Levally Lough, north of the Proposed Wind Farm site. Lapwing

were not breeding in the Proposed Wind Farm site: they were not recorded within the Proposed Wind Farm site during the core breeding season months, and there were no records of juveniles using the Proposed Wind Farm site in the post-breeding period. As such, the Proposed Wind Farm site is of **No Ecological Importance** to this species during the breeding season.

7.4.1.14 Meadow Pipit

Meadow pipit was recorded in the breeding and winter seasons. Birds were resident at the Proposed Wind Farm site. 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, populations recorded at the Proposed Wind Farm site is considered to be of **Local Importance (Lower Value)**.

7.4.1.15 Redwing

Redwing was recorded in the winter season. Birds were foraging in the Proposed Wind Farm site. However, this species is a habitat generalist and is abundant (while estimates for the national wintering population are not available, the estimate for Europe is 26,300,000-40,300,000 birds, a proportion of which visit Ireland in winter) and widespread across Ireland (NBDC Biodiversity Maps). As such, populations recorded at the Proposed Wind Farm site is considered to be of **Local Importance (Lower Value)**.

7.4.1.16 Swift

Swift was recorded in the breeding season. A breeding colony was found at Barnaderry, ~3.8km west of the nearest proposed turbine location. There was one observation of a bird travelling through the Proposed Wind Farm site during three breeding seasons but, given the separation distance, this was unlikely to be a bird associated with the Barnaderry breeding colony. As such, the Proposed Wind Farm site is of **No Ecological Importance** to this species.

7.4.1.17 Snipe

Snipe was recorded during the breeding and winter seasons. The estimated national (ROI) population is 4,275 pairs (Article 12 Reporting). Therefore, a regularly occurring population of 43 pairs is required for classification as National Importance. There are no published figures for the county Galway population. However, according to the distribution of snipe across Ireland in the breeding bird atlas, 9.38% of the population is found in Galway. Extrapolating this, the Galway population is estimated to be 401 pairs. Therefore, a regularly occurring population of four pairs is required for classification of County Importance.

Snipe was resident at the Proposed Wind Farm site in both the winter and breeding season. During the core breeding season (April to July), peak counts of snipe ranged from 4-13 birds, with up to 6 birds chipping at once, indicating that more than four pairs could be present. These peak counts were recorded outside the Proposed Wind Farm site at Horseleap Lough and Cloondahamper (peak counts within the Proposed Wind Farm site were of three birds or less). However, these records were in proximity to the Proposed Wind Farm site and snipe were regularly observed within it, along with a probable breeding territory in the Cloonascragh area. Taking these observations together at the scale of the wider surroundings, the evidence suggests that there is a regularly occurring population of more than four pairs using the Proposed Wind Farm site and surrounds during the breeding season. Thus, this species is considered to be a population of **County Importance**.

7.4.1.18 Shoveler

Shoveler was recorded during the winter and passage season. All observations of shoveler were associated with waterbodies in the wider surroundings (Barnaderg Turlough, Horseleap Lough, Gorteenlahard Turlough, Carrownabo Turlough, Summerville Lough, Templemoyle Turlough and Levally Lough). Birds were not recorded within or travelling over the Proposed Wind Farm site. As such, the Proposed Wind Farm site is of **No Ecological Importance** to this species.

7.4.1.19 Woodcock

Woodcock is only on the Red List for breeding populations in Ireland. Woodcock was not observed during breeding season surveys. All observations were during the winter season, when the Irish population is bolstered by migrants from Eastern Europe and Russia. As such, the Proposed Wind Farm site is of **No Ecological Importance** to this species.

7.4.1.20 Buzzard

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

Buzzard is resident at the Proposed Wind Farm site. One breeding territory was recorded within the Proposed Wind Farm site, and three other territories were found in the wider surroundings. However, buzzard is on the BoCCI Green List, indicating it is of lower conservation priority. It is a habitat generalist and is widespread across Ireland (NBDC Biodiversity Maps). As such, it is considered to be a population of **Local Importance (Higher Value)**.

7.4.1.21 Long-eared Owl

Long-eared owl was recorded during the breeding season. The estimated national (ROI) population is 1,484-2,703 pairs (Article 12 Reporting). Therefore, a regularly occurring population of 15-27 pairs is required for classification as National Importance. There are no published figures for the county Galway population. However, according to the distribution of long-eared owl across Ireland in the breeding bird atlas, 6.1% of the population is found in Galway. Extrapolating this, the Galway population is estimated to be 90-165 pairs. Therefore, a regularly occurring population of one pair is required for classification of County Importance.

A breeding long-eared owl territory was found within the Proposed Wind Farm site. Long-eared owl is on the BoCCI Green List, indicating it is of lower conservation priority. It is not a habitat generalist, having specific habitat requirements of woodland, treelines or large hedgerows for breeding. However, this habitat is widespread in the Proposed Wind Farm site and wider surroundings and is not scarce in Galway. Thus, this species is considered to be a population of **Local Importance (Higher Value)**.

7.4.1.22 Sparrowhawk

Sparrowhawk was recorded during the breeding and winter season. The estimated national (ROI) population is 11,859 individuals (Article 12 Reporting). Therefore, a regularly occurring population of 119 birds is required for classification as of 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 the classification of County Importance.

Sparrowhawk is resident at the Proposed Wind Farm site. Breeding was not recorded, though it is possible that there was a territory outside the Proposed Wind Farm site at Derrybaun. However, sparrowhawk is on the BoCCI Green List, indicating it is of lower conservation priority. It is a habitat generalist and is widespread across Ireland (NBDC Biodiversity Maps). As such, it is considered to be a population of **Local Importance (Higher Value)**.

7.4.2 Identification of Key Ornithological Receptors

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

Table 7-11 Receptor evaluation and selection criteria rationale

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
Golden Plover	Annex I & Red List (breeding & wintering)	<u>Wintering and Passage</u> National Importance	Birds were recorded using the Proposed Wind Farm site for roosting and foraging. The potential for direct habitat loss cannot be excluded. Birds were recorded within 500m of the proposed turbine locations. The potential for disturbance/displacement cannot be excluded. Birds were recorded flying at PCH within 500m of the proposed turbine locations during vantage point surveys. The potential for collision risk cannot be excluded. As such, an assessment of direct habitat loss, disturbance/displacement and collision risk has been completed.	Yes
Hen Harrier	Annex I & Raptor	<u>Wintering and Post-breeding</u> Country Importance	Birds were recorded using the Proposed Wind Farm site for hunting. The potential for direct habitat loss cannot be excluded. Birds were recorded within 500m of the proposed turbine locations. The potential for disturbance/displacement cannot be excluded. Birds were recorded flying at PCH within 500m of the proposed turbine locations during vantage point surveys. The potential for collision risk cannot be excluded.	Yes

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
			As such, an assessment of direct habitat loss, disturbance/displacement and collision risk has been completed.	
Little egret	Annex I	<u>Wintering and Passage</u> County Importance	Birds were not recorded using habitats within the Proposed Wind Farm site. There is no potential for significant habitat loss for this species. The majority of little egret records were associated with waterbodies in the wider surroundings. Birds were rarely recorded within 500m of the proposed turbine locations – three times during five winter seasons of survey. This limits the potential for significant disturbance/displacement for this species. There were no birds recorded flying at PCH within 500m of the proposed turbine locations during vantage point surveys. The majority of flights were birds travelling around Horseleap Lough, which is south of the Proposed Wind Farm site. This limits the potential for significant collision risk for this species. No pathways for significant effects were identified.	No
Kingfisher	Annex I	<u>Wintering and Post-breeding</u> No Population of Ecological Importance	No population of ecological significance was recorded utilising the Proposed Wind Farm site during the extensive suite of surveys conducted. The majority of kingfisher records were associated with waterbodies in the wider surroundings. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Proposed Wind Farm site is of any significant value to this species.	No
Merlin	Annex I & Raptor	<u>Wintering</u> County Importance <u>Breeding</u>	Birds were recorded using the Proposed Wind Farm site for hunting during winter. The potential for direct habitat loss cannot be excluded. Birds were recorded within 500m of the proposed turbine locations. The majority of activity was in the winter season: there was a single observation of a merlin within 500m of	Yes

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
		No Population of Ecological Importance	the proposed turbine locations during three breeding seasons of survey. The potential for disturbance/displacement cannot be excluded for the wintering population; however, it is limited for the breeding season population. Birds were recorded flying at PCH within 500m of the proposed turbine locations during vantage point surveys. The potential for collision risk cannot be excluded. As such, an assessment of direct habitat loss, disturbance/displacement and collision risk has been completed for the wintering population. No pathways for significant effects on the breeding population were identified.	
Peregrine Falcon	Annex I & Raptor	<u>Breeding and Wintering</u> County Importance	Birds were recorded using the Proposed Wind Farm site for hunting during the breeding and wintering season. The potential for direct habitat loss cannot be excluded. Birds were recorded within 500m of the proposed turbine locations. The potential for disturbance/displacement cannot be excluded. Birds were recorded flying at PCH within 500m of the proposed turbine locations during vantage point surveys. The potential for collision risk cannot be excluded. As such, an assessment of direct habitat loss, disturbance/displacement and collision risk has been completed.	Yes
Whooper Swan	Annex I	<u>Wintering and Passage</u> County Importance	Birds were 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 turbine locations. The potential for disturbance/displacement cannot be excluded. Birds were recorded flying at PCH within 500m of the proposed turbine locations during vantage point surveys. The potential for collision risk cannot be excluded.	Yes

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
			As such, an assessment of direct habitat loss, disturbance/displacement and collision risk has been completed.	
Common Gull	Amber List	<u>Breeding</u> No Population of Ecological Importance <u>Wintering</u> No Population of Ecological Importance	No population of ecological significance was recorded utilising the Proposed Wind Farm site during the extensive suite of surveys conducted. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Proposed Wind Farm site is of any significant value to this species.	No
Barn Owl	Red List (breeding) & Raptor	<u>Breeding</u> No Population of Ecological Importance <u>Wintering</u> Local Importance (Higher Value)	Signs of a wintering barn owl were found in a derelict building in the Proposed Wind Farm site. On a precautionary basis, the potential for direct habitat loss cannot be excluded for the wintering population. Signs of a wintering barn owl were found in a derelict building within 500m of the proposed turbine locations. On a precautionary basis, the potential for disturbance/displacement cannot be excluded for wintering populations. Birds were not recorded flying at PCH within 500m of the proposed turbine locations during vantage point surveys. This limits the potential for significant collision risk for this species. As such, on a precautionary basis, an assessment of direct habitat loss and disturbance/displacement has been completed for the wintering population.	Yes

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
Curlew	Red List (breeding & wintering)	<u>Breeding and Wintering</u> No Population of Ecological Importance	No population of ecological significance was recorded utilising the Proposed Wind Farm site during the extensive suite of surveys conducted. The majority of curlew records were associated with waterbodies in the wider surroundings. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Proposed Wind Farm site is of significance to this species.	No
Grey Wagtail	Red List (breeding)	<u>Breeding and Wintering</u> No Population of Ecological Importance	No population of ecological significance was recorded utilising the Proposed Wind Farm site during the extensive suite of surveys conducted. The majority of grey wagtail records were associated with waterbodies in the wider surroundings. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Proposed Wind Farm site is of significance to this species.	No
Kestrel	Red List (breeding) & Raptor	<u>Breeding and Wintering</u> Local Importance (Higher Value)	Birds were 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 turbine locations. The potential for disturbance/displacement cannot be excluded. Birds were recorded flying at PCH within 500m of the proposed turbine locations during vantage point surveys. The potential for collision risk cannot be excluded. As such, an assessment of direct habitat loss, disturbance/displacement and collision risk has been completed.	Yes
Lapwing	Red List (breeding and wintering)	<u>Wintering</u> National Importance	Lapwing were recorded using the Proposed Wind Farm site for foraging and roosting during the winter season. Lapwing were also using habitat at Horseleap Lough, south of the Proposed Wind Farm site, for breeding. However, they were not recorded within the Proposed Wind Farm site during the core breeding season months. The potential for	Yes

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
		<u>Breeding</u> No Population of Ecological Importance	habitat loss cannot be excluded for the wintering population, however it is limited for the breeding season population. Birds were recorded within 500m of the proposed turbine locations during the winter season. The potential for disturbance/displacement cannot be excluded for the wintering population. It is limited for the breeding season population, however, on a precautionary basis, an assessment of disturbance/displacement has been completed for both populations. Birds were recorded flying at PCH within 500m of the proposed turbine locations during vantage point surveys in the winter season. Flights were not recorded at PCH within 500m of the proposed turbine locations during vantage point surveys in the breeding season. The potential for collision risk cannot be excluded for the wintering population, however it is limited for the breeding season population. As such, an assessment of direct habitat loss, disturbance/displacement and collision risk has been completed for the wintering population. An assessment of disturbance/displacement has also been completed for the breeding populations	
Meadow Pipit	Red List (breeding)	<u>Breeding and Wintering</u> Local Importance (Lower Value)	Meadow pipit is resident at 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 and large populations. 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
Redwing	Red List (wintering)	<u>Wintering</u> Local Importance (Lower Value)	Redwing were foraging in 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 and large populations. 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

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
Swift	Red List (breeding)	<u>Breeding</u> No Population of Ecological Importance	No population of ecological significance was recorded utilising the Proposed Wind Farm site during the extensive suite of surveys conducted. The majority of swift records were associated with a breeding colony at Barnaderg, ~3.8km west of the nearest proposed turbine location. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Proposed Wind Farm site is of significance to this species.	No
Snipe	Red List (breeding and wintering)	<u>Breeding and Wintering</u> County Importance	Birds were recorded using the Proposed Wind Farm site for breeding. The potential for direct habitat loss cannot be excluded. Birds were recorded within 500m of the proposed turbine locations. The potential for disturbance/displacement cannot be excluded. Birds were recorded flying at PCH within 500m of the proposed turbine locations during vantage point surveys. The potential for collision risk cannot be excluded. As such, an assessment of direct habitat loss, disturbance/displacement and collision risk has been completed.	Yes
Shoveler	Red List (breeding and wintering)	<u>Wintering and Passage</u> No Population of Ecological Importance	No population of ecological significance was recorded utilising the Proposed Wind Farm site during the extensive suite of surveys conducted. All observations of shoveler were associated with waterbodies in the wider surroundings. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Proposed Wind Farm site is of significance to this species.	No
Woodcock	Red List (breeding)	<u>Wintering</u>	No population of ecological significance was recorded utilising the Proposed Wind Farm site during the extensive suite of surveys conducted. Woodcock was not observed during breeding season surveys and were infrequently recorded during winter. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and	No

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
		No Population of Ecological Importance	there is no evidence to suggest that the Proposed Wind Farm site is of significance to this species.	
Buzzard	Raptor	<u>Breeding and Wintering</u> Local Importance (Higher Value)	Birds were 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 turbine locations. The potential for disturbance/displacement cannot be excluded. Birds were recorded flying at PCH within 500m of the proposed turbine locations during vantage point surveys. The potential for collision risk cannot be excluded. As such, an assessment of direct habitat loss, disturbance/displacement and collision risk has been completed.	Yes
Long-eared Owl	Raptor	<u>Breeding</u> Local Importance (Higher Value)	Birds were recorded using the Proposed Wind Farm site for breeding. The potential for direct habitat loss cannot be excluded. Birds were recorded within 500m of the proposed turbine locations. The potential for disturbance/displacement cannot be excluded. Birds were recorded flying at PCH within 500m of the proposed turbine locations during vantage point surveys. The potential for collision risk cannot be excluded. As such, an assessment of direct habitat loss, disturbance/displacement and collision risk has been completed.	Yes
Sparrowhawk	Raptor	<u>Breeding and Wintering</u>	Birds were recorded using the Proposed Wind Farm site for hunting. The potential for direct habitat loss cannot be excluded.	Yes

Species	Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
		Local Importance (Higher Value)	Birds were recorded within 500m of the proposed turbine locations. The potential for disturbance/displacement cannot be excluded. Birds were recorded flying at PCH within 500m of the proposed turbine locations during vantage point surveys. The potential for collision risk cannot be excluded. As such, an assessment of direct habitat loss, disturbance/displacement and collision risk has been completed.	

7.4.3 Determination of Sensitivity

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.

High Sensitivity KORs are:

- Golden Plover (wintering population only; present in nationally important numbers)
- Hen Harrier (wintering population only; ecologically sensitive species)
- Lapwing (wintering population only; present in nationally important numbers)

Medium Sensitivity KORs are:

- Merlin (wintering population only; Annex I)
- Peregrine Falcon (Annex I)
- Whooper Swan (Annex I)
- Kestrel (Red List)
- Snipe (Red List)

Low Sensitivity KORs are:

- Barn Owl (wintering population only; conservation interest)
- Buzzard (conservation interest)
- Long-eared Owl (breeding population only; conservation interest)
- Sparrowhawk (conservation interest)

7.5 Impact Assessment

All elements of the Proposed Wind Farm 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, it is unlikely that any changes would be made to the current land use practices. The majority of the lands within the Site would continue to be managed as they are now either as forestry or improved agricultural grassland and associated turbary activities. The other habitats identified within the Proposed Wind Farm site and Proposed Grid Connection, including stone walls, treelines, hedgerows, watercourses etc. would likely remain in a similar condition.

In some areas where scrub succession is establishing, this scrub may develop if not managed by the landowners and in time, this may undergo succession to small areas of woodland. The general biodiversity on the Proposed Wind Farm site and Proposed Grid Connection would likely remain similar to its current state as activity levels and land use would not change.

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 (wintering)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	Golden plover was recorded roosting in proximity to the Proposed Wind Farm site. There was a roosting area in a section of bog at Derrybaun that was used on multiple occasions (GP-1). The roost was outside the Proposed Wind Farm site and no infrastructure is proposed here. There was a second roosting area at Horseleap Lough (GP-2). This roost was also outside the Proposed Wind Farm site. Golden plover was also recorded foraging within the Proposed Wind Farm site and surrounds (though it is possible some birds in these flocks were roosting). Birds were foraging in the section of bog at Derrybaun mentioned above (GP-1), which is largely outside the Proposed Wind Farm site and where no infrastructure is proposed. Birds were also foraging on grassland at Leecarrow (GP-3). Flocks here were concentrated in the fields south of the Proposed Wind Farm site, however four were within the Proposed Wind Farm site itself. In addition, a flock was recorded foraging once at Cooloo, outside the Proposed Wind Farm site (GP-4). The footprint of the Proposed Wind Farm where golden plover was observed foraging at Leecarrow (GP-3) is small: a turbine and a section of new road is proposed in this area. No building, permanent or temporary, such as the substation and construction compound is proposed at this location. There are	The magnitude of the effect is assessed as low. The cross tabularisation of a high 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)
	no proposals in the Biodiversity Management and Enhancement Plan at this location. As such, a large area of the existing habitat (open farmland) will remain. In addition, farmland is the predominant habitat in the Proposed Wind Farm site and the wider landscape, therefore a large amount of foraging habitat will remain. Golden plover is not dependent on the Proposed Wind Farm site for roosting. In addition, golden plover is not regularly using or dependent on farmland within the Proposed Wind Farm site for foraging, and it is not a scarce resource in the wider area. No significant effects of direct habitat loss are anticipated at the county or national level.		
Disturbance	Golden plover was recorded roosting in proximity to the Proposed Wind Farm site. There was a roosting area in a section of bog at Derrybaun that was used on multiple occasions (GP-1) The nearest major construction activity (a turbine) will be ~390m from the section of bog at the closest point. However, birds were generally foraging further away than 390m as they were using the open centre of the section of bog rather than its nearest edge. There was a second roosting area at Horseleap Lough (GP-2). This roost was over 900m from the Proposed Wind Farm site. Golden plover was also recorded foraging within the Proposed Wind Farm site and in proximity to it (though it is possible some birds in these flocks were roosting). Birds were foraging in the section of bog at Derrybaun mentioned above (GP-1), outside the Proposed Wind Farm site. Birds were also foraging on grassland at Leecarrow (GP-3). Flocks here were concentrated in the fields south of the Proposed Wind Farm site, however some were within 500m of proposed construction activity. A flock was also recorded foraging once on improved grassland at Cooloo, adjacent to the Proposed Wind Farm site, but over 100m from the nearest proposed construction works (GP-4).	The magnitude of the effect is assessed as low. The cross tabularisation of a high sensitivity species and low impact corresponds to a Low effect significance.	Likely short-term frequent slight negative effect, which is not significant.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	Pearce-Higgins <i>et al.</i> (2012) did not find any significant negative effect of construction works on breeding golden plover populations (though it must be taken into account that the number of sites studied was low), while Goodship and Furness (2022) suggest golden plover could be disturbed up to 500m from humans. It is assumed that temporary disturbance will occur around the Site during construction works. However, a large area of the section of Derrybaun bog (GP-1) is greater than 500m from the nearest construction activity, including the open centre of the bog that birds were using for foraging and roosting. Similarly, a large area of the fields at Leecarrow (GP-3) is greater than 500m from the nearest construction activity. Horseleap Lough (GP-2) is over 900m from the Proposed Wind Farm site. Birds were observed foraging at Cooloo (GP-4) on just one occasion and are not considered to be dependent on this field. In addition, farmland is the predominant habitat in the Proposed Wind Farm site and the wider landscape, therefore there is a large amount of alternative foraging habitat greater than 500m from the construction works area that will be available to golden plover. Golden plover are not dependent on areas within the disturbance distance for construction works for foraging or roosting. In addition, farmland is not a scarce resource in the wider area. No significant effects of disturbance are anticipated at the county or national level.		
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated.	No Effect	No Effect
Displacement and Barrier Effect	Golden plover was recorded roosting in proximity to the Proposed Wind Farm site. There was a roosting area in a section of bog at Derrybaun that was used on multiple occasions (GP-1). This section of bog is ~390m from the nearest proposed turbine location at the closest point. However, the separation distance exceeds 390m as birds were generally using the open centre of the	The magnitude of the effect is assessed as low. The cross tabularisation of a high sensitivity species and low	Likely long-term constant slight negative effect, which is not significant .

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	bog (roughly 600m from the nearest proposed turbine location), rather than the nearest edge. There was a second roosting area at Horseleap Lough (GP-2). This roost was ~900m from the nearest proposed turbine location. Golden plover was also recorded foraging within the Proposed Wind Farm site and in proximity to it (though it is possible some birds in these flocks were roosting). Birds were foraging in the section of bog at Derrybaun mentioned above (GP-1), outside the Proposed Wind Farm site. Birds were also foraging on grassland at Leecarrow (GP-3). Flocks here were concentrated in the fields south of the Proposed Wind Farm site, however some were at a proposed turbine location. A flock was also recorded foraging once at Cooloo, ~270m from the nearest proposed turbine location (GP-4). Hötter <i>et al.</i> (2006) found golden plover was disturbed from wind farms at an average minimum distance of 175m during the winter season. The roosting and foraging areas at Derrybaun (GP-1) and Horseleap Lough (GP-2) are greater than this distance from the proposed turbine locations. Although birds were seen at a proposed turbine location, a large area of the fields at Leecarrow (GP-3) is greater than 175m from this turbine. The field at Cooloo (GP-4) is over 175m from the nearest proposed turbine location, however, it is towards the centre of the turbine layout, therefore it is unlikely that golden plover will fly into this area where they would be surrounded by operational turbines. However, birds were observed foraging here on just one occasion and are not considered to be dependent on this field. In addition, farmland is the predominant habitat in the wider landscape, therefore there is a large amount of foraging habitat greater than 175m from the proposed turbines providing alternative habitat that will be available to golden plover. Golden plover are not dependent on areas within the displacement distance from turbines for foraging or roosting. In addition, farmland is not a scarce	impact corresponds to a Low effect significance.	

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	resource in the wider area. No significant effects of displacement and barrier effects are anticipated at the county or national level.		
Collision Risk	This species was recorded flying within PCH during vantage point surveys. A 'Random' and a 'Regular' collision risk analysis has been undertaken for the three turbine dimension assessment scenarios (full details provided in Appendix 7-6). Flights recorded during the winter and passage season are included. The model used for the analysis assumes that waterbird species are active for 25% of dark hours, in addition to daylight hours. The highest collision risk has been calculated at 197.810 collisions per year (196.200 collisions associated with random flight activity, and 1.610 associated with regular flight activity of birds travelling to or from Horseleap Lough). Annual mortality of adult golden plover has been calculated at 27% per annum (Sandercock, 2003). If 197.810 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.5,895) by 12%. The magnitude of the predicted collision risk is medium. As the magnitude of the predicted collision risk is medium, a Bird Mitigation Plan with the objective of reducing golden plover flight activity in the turbine area has been prepared. This is described in Appendix 7-7. Following successful implementation of the mitigation plan, no significant effects of collision risk are anticipated.	The magnitude of the effect is assessed as medium. The cross tabularisation of a high sensitivity species and medium impact corresponds to a High effect significance, prior to mitigation measures.	Likely long-term constant significant negative effect, prior to mitigation measures.
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 Hen Harrier (wintering)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	A regularly used hen harrier roost was found at Cloonboo More (HH-1), ~700m north-east of the nearest proposed turbine location. Multiple birds were recorded here in multiple winters, and a merlin was also recorded roosting here (merlin can form communal roosts with hen harrier). A bird was recorded roosting within the Proposed Wind Farm site at Cloonascragh on one occasion, 420m from the nearest proposed turbine location. In addition, a bird was recorded roosting to the west of the Proposed Wind Farm site at Derrybaun, ~500m west of the nearest proposed turbine on one occasion. There were occasional sightings of hen harrier in these areas on other dates, but they were not recorded roosting. As these locations were infrequently used, they may be satellites to the regularly used roost at Cloonboo More. No (physical) habitat loss will occur at the regularly used roost at Cloonoo More, as it is outside the Proposed Wind Farm site. Hen harrier is not dependent on habitat at Cloonascragh and Derrybaun for roosting, as these are infrequently used, the primary roost being Cloonboo More. Nonetheless, no habitat loss will occur at the section of bog at Derrybaun, which is outside the Proposed Wind Farm site, and the infrastructure proposed in the section of bog at Cloonascragh is a new road, which is minor in scale. Hen harrier was also recorded hunting within the Proposed Wind Farm site. Birds were using bog, grassland and rushy fields during the winter and post-breeding season. Bog and farmland habitat such as grassland and rushy field is not a scarce resource locally, and farmland is one of the most abundant habitat types in East Galway. Extensive areas of similar hunting habitat will remain, as the footprint of the development accounts for a small proportion of the Proposed	The magnitude of the effect is assessed as low. The cross tabularisation of a high 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)
	Wind Farm (the permanent footprint of the Proposed Project measures approximately 10.6ha, which represents approximately 3% of the Site), and there is an abundance of farmland habitat in the surrounding area. As there will be no habitat loss at the primary roost in Cloonboo More, and because extensive areas of hunting habitat will remain after construction, no significant effects of direct habitat loss are anticipated at the county, national or international scale.		
Disturbance	A regularly used hen harrier roost was found at Cloonboo More (HH-1), ~650m north-east of the nearest proposed works (a new road). Multiple birds were recorded here in multiple winters, and a merlin was also recorded roosting here (merlin can form communal roosts with hen harrier). A bird was recorded roosting within the Proposed Wind Farm site at Cloonascragh on one occasion. In addition, a bird was recorded roosting to the west of the Proposed Wind Farm site at Derrybaun, ~500m west of the proposed works on one occasion. There were occasional sightings of hen harrier in these areas on other dates, but they were not recorded roosting. As these locations were infrequently used, they may be satellites to the regularly used roost at Cloonboo More. During wind farm construction, displacement has been suggested to potentially occur up to 500m around construction works, with some disruption up to 1km, depending on line of visibility (Madders, 2004, cited in Bright <i>et al.</i>, 2006; Ruddock and Whitfield, 2007). The regularly used roost at Cloonoo More is further 650m from the nearest works (a new road). Additionally, it is separated from the works by existing landscape features such as hedgerows and a public road. Hen harrier is not dependent on habitat at Cloonascragh and Derrybaun for roosting, as these are infrequently used, the primary roost being Cloonboo More. Furthermore, the section of bog at Derrybaun is greater than 500m from works.	The magnitude of the effect is assessed as low. The cross tabularisation of a high sensitivity species and low impact corresponds to a Low effect significance.	Likely short-term frequent slight negative effect, which is not significant.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	Hen harrier was also recorded hunting within the Proposed Wind Farm site. Birds were using bog, grassland and rushy fields during the winter and post-breeding season. It is assumed that temporary disturbance will occur around the Proposed Wind Farm during construction works. However, bog and farmland habitat such as grassland and rushy field is not a scarce resource locally and farmland is one of the most abundant habitat types in East Galway. Extensive areas of alternative similar hunting habitat will remain available to hen harrier during construction. As there will be no works within disturbance distance of the primary roost in Cloonboo More, and because extensive areas of alternative hunting habitat will be available during construction, no significant effects of disturbance are anticipated at the county, national or international scale.		
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated.	No Effect	No Effect
Displacement and Barrier Effect	A regularly used hen harrier roost was found at Cloonboo More (HH-1), ~700m north-east of the nearest proposed turbine location. Multiple birds were recorded here in multiple winters, and a merlin was also recorded roosting here (merlin can form communal roosts with hen harrier). A bird was recorded roosting within the Proposed Wind Farm site at Cloonascragh on one occasion, 420m from the nearest proposed turbine location. In addition, a bird was recorded roosting to the west of the Proposed Wind Farm site at Derrybaun, ~500m west of the nearest proposed turbine on one occasion. There were occasional sightings of hen harrier in these areas on other dates, but they were not recorded roosting. As these locations were infrequently used, they may be satellites to the regularly used roost at Cloonboo More.	The magnitude of the effect is assessed as low. The cross tabularisation of a high 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)
Pearce-Higgins <i>et al.</i> (2009) found significant avoidance of turbines by hen harrier within 250m, and reduced flight activity (52%) by hen harrier within 500m of turbines at operating wind farms. Ruddock and Whitfield (2007) also found that disturbance may occur between 500-750m. The regularly used roost at Cloonoo More is greater than 700m from the nearest proposed turbine. Additionally, it is separated from the works by existing landscape features such as hedgerows and a public road. Hen harrier is not dependent on habitat at Cloonascragh and Derrybaun for roosting, as these are infrequently used, the primary roost being Cloonboo More. Furthermore, the section of bog at Derrybaun is ~500m from the nearest proposed turbine. Hen harrier was also recorded hunting within the Proposed Wind Farm site. Birds were using bog, grassland and rushy fields during the winter and post-breeding season. The majority of hunting activity was concentrated in the bog at Cloonascragh. The turbine layout at Cloonascragh avoids siting turbines within the section of bog where the majority of hunting activity that was recorded within the Proposed Wind Farm site was concentrated. Some areas of the bog at Cloonascragh will still remain further than a 500m radius from the proposed turbine locations and as such could still be utilised by hen harrier for hunting. In addition, bog and farmland habitat such as grassland and rushy field is not a scarce resource locally and farmland is one of the most abundant habitat types in East Galway. Extensive areas of similar hunting habitat will remain at the Proposed Wind Farm site, and there is an abundance of farmland habitat in the surrounding area. As there will be no turbines sited within disturbance distance of the primary roost in Cloonboo More, and because extensive areas of hunting habitat will		

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	remain during operation, no significant effects of displacement are anticipated at the county, national or international scale.		
Collision Risk	This species was recorded flying within PCH during vantage point surveys. A 'Random' collision risk analysis has been undertaken for the three turbine dimension assessment scenarios (full details provided in Appendix 7-6). Flights recorded during the winter and post-breeding season observed, are included. The highest collision risk has been calculated at 0.005 collisions per year, or one bird every 186 years. The predicted collision risk is negligible.	The magnitude of the effect is assessed as negligible. The cross tabularisation of a high sensitivity species and negligible impact corresponds to a Very Low effect significance.	Likely long-term constant not significant negative 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 Merlin (wintering)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	Merlin was recorded hunting in the wider surroundings of the Proposed Wind Farm site, particularly the Cloondahamper/Tigreenaun area (north-west of the Proposed Wind Farm site), Horseleap Lough (south of the Proposed Wind Farm site) and Cloonboo More (north-east of the Proposed Wind Farm site). In addition, merlin was recorded roosting at Cloonboo More, communally in the hen harrier roost (HH-1). Merlin was occasionally recorded hunting within the Proposed Wind Farm site, in grassland, bog and woodland.	The magnitude of the effect is assessed as low. The cross tabularisation 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)
	No habitat loss will occur at the roost at Cloonboo More, as it is outside the Proposed Wind Farm site boundary. In addition, no habitat loss will occur in the bog at Cloondahamper/Tigreenaun, where merlin activity was concentrated, nor at Horseleap Lough, as these are outside the Proposed Wind Farm site boundary. Bog and farmland habitat such as grassland is not a scarce resource locally. Extensive areas of similar hunting habitat will remain, as the footprint of the development accounts for a small proportion of the Proposed Wind Farm (the permanent footprint of the Proposed Project measures approximately 10.6ha, which represents approximately 3% of the Site), and there is an abundance of bog and farmland habitat in the surrounding area. As there will be no habitat loss at the roost in Cloonboo More, and because extensive areas of hunting habitat will remain after construction, no significant effects of direct habitat loss are anticipated at the county, national or international scale.		
Disturbance	Merlin was recorded hunting in the wider surroundings of the Proposed Wind Farm site, particularly the Cloondahamper/Tigreenaun area (north-west of the Proposed Wind Farm site), Horseleap Lough (south of the Proposed Wind Farm site) and Cloonboo More (~650m north-east of the nearest proposed works [a new road]). In addition, merlin was recorded roosting at Cloonboo More, communally in the hen harrier roost (HH-1). Merlin was occasionally recorded hunting within the Proposed Wind Farm site, in grassland and woodland. Few studies have been done on the effects of disturbance on merlin during the winter. Goodship and Furness (2022) suggest disturbance up to 200m from humans can occur. The roost at Cloonoo More is further 650m from the nearest works (a new road). Additionally, it is separated from the works by existing landscape features such as hedgerows and a public road.	The magnitude of the effect is assessed as low. The cross tabularisation of a medium sensitivity species and low impact corresponds to a Low effect significance.	Likely short-term frequent slight negative effect, which is not significant.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	It is assumed that temporary disturbance will occur around the Proposed Wind Farm during construction works. However, the bog at Cloondahamper/Tigreenaun, where merlin activity was concentrated, and fields at Horseleap Lough that merlin were recorded hunting in are greater than 200m from the construction works. In addition, bog and farmland habitat such as grassland is not a scarce resource locally. Extensive areas of similar hunting habitat will remain available. As there will be no works within disturbance distance of the roost in Cloonboo More, and because extensive areas of alternative hunting habitat will be available during construction, no significant effects of disturbance are anticipated at the county, national or international scale.		
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated.	No Effect	No Effect
Displacement and Barrier Effect	Merlin was recorded hunting in the wider surroundings of the Proposed Wind Farm site, particularly the Cloondahamper/Tigreenaun area (north-west of the Proposed Wind Farm site), Horseleap Lough (south of the Proposed Wind Farm site) and Cloonboo More (700m north-east of the nearest proposed turbine). In addition, merlin was recorded roosting at Cloonboo More, communally in the hen harrier roost (HH-1). Merlin was occasionally recorded hunting within the Proposed Wind Farm site, in grassland and woodland. Few studies have been done on the effects of disturbance on merlin in wind farms during the winter. Goodship and Furness (2022) suggest disturbance up to 200m from humans can occur. The roost at Cloonboo More is greater than 700m from the nearest proposed turbine. Additionally, it is separated from the works by existing landscape features such as hedgerows and a public road. Bog and farmland habitat such as grassland is not a scarce resource locally.	The magnitude of the effect is assessed as low. The cross tabularisation 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)
	Extensive areas of similar hunting habitat will remain at the Proposed Wind Farm site, and there is an abundance of bog and farmland habitat in the surrounding area. As there will be no turbines sited within disturbance distance of the roost in Cloonboo More, and because extensive areas of hunting habitat will remain during operation, no significant effects of displacement are anticipated at the county, national or international scale.		
Collision Risk	This species was recorded flying within PCH during vantage point surveys. A 'Random' collision risk analysis has been undertaken for the three turbine dimension assessment scenarios (full details provided in Appendix 7-6). Flights recorded during the winter are included. Merlin was recorded on just one occasion during the breeding season and there is considered to be no population of ecological importance using the Proposed Wind Farm site during the breeding season, therefore this level of flight activity is not predicted to result in a significant collision risk effect and was excluded to provide a more targeted estimation of collision risk for the wintering population. The highest collision risk has been calculated at 0.003 collisions per year, or one bird every 348 years. The predicted collision risk is negligible.	The magnitude of the effect is assessed as negligible. The cross tabularisation of a medium sensitivity species and negligible impact corresponds to a Very Low effect significance.	Likely long-term constant not significant negative 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.

7.5.2.4 Peregrine Falcon (breeding and wintering)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	A breeding peregrine falcon territory was identified at a castle in Barnaderg (PE-1), over 2.4km west of the Proposed Wind Farm site. Peregrine falcon was observed using bog and grassland in the Proposed Wind Farm site for hunting on five occasions during three breeding seasons and five winter seasons of survey. Given the separation distance between the territory at Barnaderg and the Proposed Wind Farm site, these are unlikely to be the same birds. No habitat loss will occur at the breeding territory in Barnaderg, as it is outside the Proposed Wind Farm site boundary. Bog and farmland habitat such as grassland is not a scarce resource locally. Extensive areas of similar hunting habitat will remain, as the footprint of the development accounts for a small proportion of the Proposed Wind Farm (the permanent footprint of the Proposed Project measures approximately 10.6ha, which represents approximately 3% of the Site), and there is an abundance of bog and farmland habitat in the surrounding area. No significant effects of direct habitat loss are anticipated at the county, national or international scale based on the following rationale: there will be no habitat loss at the territory at Barnaderg, there was a low frequency of hunting peregrine falcon in the Proposed Wind Farm site, and extensive areas of hunting habitat will remain after construction.	The magnitude of the effect is assessed as low. The cross tabularisation 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	A breeding peregrine falcon territory was identified at a castle in Barnaderg (PE-1), over 2.4km from the nearest construction works. Peregrine falcon was observed using bog and grassland in the Proposed Wind Farm site for hunting on five occasions during three breeding seasons and five winter seasons of survey. Given the separation distance between the territory at Barnaderg and the Proposed Wind Farm site, these are unlikely to be the same birds.	The magnitude of the effect is assessed as low. The cross tabularisation of a medium sensitivity species and low impact corresponds to a Low effect significance.	Likely short-term frequent slight negative effect, which is not significant .

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	Ruddock and Whitfield (2007) found that peregrine falcons can be disturbed up to 750m from humans. The territory at Barnaderg is considerably greater than 750m from the nearest works (a new road). Additionally, it is separated from the works by existing landscape features such as houses, sports facilities, a school and public roads. It is assumed that temporary disturbance will occur around the Proposed Wind Farm during construction works. However, there was a low frequency of hunting peregrine falcon in the Proposed Wind Farm site. In addition, bog and farmland such as grassland is not a scarce resource locally. Extensive areas of similar hunting habitat will remain, as the footprint of the development accounts for a small proportion of the Proposed Wind Farm, and there is an abundance of bog and farmland habitat in the surrounding area will remain available. As there will be no works within disturbance distance of the territory in Barnaderg, and because extensive areas of alternative hunting habitat will be available during construction, no significant effects of disturbance are anticipated at the county, national or international scale.		
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated.	No Effect	No Effect
Displacement and Barrier Effect	A breeding peregrine falcon territory was identified at a castle in Barnaderg (PE-1), ~3.8km west of the nearest proposed turbine location. Peregrine falcon was observed using bog and grassland in the Proposed Wind Farm site for hunting on five occasions during three breeding seasons and five winter seasons of survey. Given the separation distance between the territory at Barnaderg and the Proposed Wind Farm site, these are unlikely to be the same birds.	The magnitude of the effect is assessed as low. The cross tabularisation 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)
	Ruddock and Whitfield (2007) found that peregrine falcon can be disturbed up to 750m from humans. The territory at Barnaderg is considerably greater than 750m from the nearest proposed turbine location. Additionally, it is separated from the turbines by existing landscape features such as houses, sports facilities, a school and public roads. There was a low frequency of hunting peregrine falcon in the Proposed Wind Farm site. Peregrine falcon has been documented to become accustomed to various sources of human disturbance over time (Ratcliffe, 1962 cited in Ruddock and Whitfield, 2007) and may become tolerant of hunting in the vicinity of the Proposed Wind Farm site. In addition, hog and farmland habitat such as grassland is not a scarce resource locally. Extensive areas of similar hunting habitat will remain at the Proposed Wind Farm site, and there is an abundance of bog and farmland habitat in the surrounding area. As there will be no turbines sited within disturbance distance of the territory at Barnaderg, and because extensive areas of hunting habitat will remain during operation, no significant effects of displacement are anticipated at the county, national or international scale.		
Collision Risk	This species was recorded flying within PCH during vantage point surveys. A 'Random' collision risk analysis has been undertaken for the three turbine dimension assessment scenarios (full details provided in Appendix 7-6). Flights recorded during the winter and breeding season are included. The highest collision risk has been calculated at 0.044 collisions per year. Annual mortality of adult peregrine falcon has been calculated at 19% per annum (Craig <i>et al.</i>, 2004). If 0.044 collisions were to occur per year, it would mean that the losses at the proposed wind farm would increase the annual	The magnitude of the effect is assessed as negligible. The cross tabularisation of a medium sensitivity species and negligible impact corresponds to a Very Low effect significance.	Likely long-term constant not significant negative effect.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	mortality of the county population (c.64 birds [32 pairs]) by 0.4%. The magnitude of the predicted collision risk is negligible.		
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.

7.5.2.5 Whooper Swan (wintering)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	The majority of whooper swan activity recorded during surveys was associated with waterbodies in the wider surroundings. In proximity to the Proposed Wind Farm site, whooper swan was recorded roosting at Horseleap Lough (WS-1), south of the Proposed Wind Farm site. Whooper swan was also recorded foraging, mainly at Horseleap Lough and in fields to the north of this wetland (WS-2). Landed flocks foraging/resting were recorded within the Proposed Wind Farm site on three occasions, at Leecarrow and Cooloo. The data suggests that whooper swan are dependent on waterbodies in the wider surroundings and, to a lesser extent, large open agricultural grassland fields. They were infrequently using habitats within the Proposed Wind Farm site. There will be no habitat loss at waterbodies in the wider surroundings, including Horseleap Lough, as these are outside the Proposed Wind Farm site boundary. The footprint of the Proposed Wind Farm where whooper swan was observed foraging at Leecarrow and Cooloo is small: a turbine and a section of new road is proposed in each of these areas. No building, permanent or temporary, such as the substation and construction compound is	The magnitude of the effect is assessed as low. The cross tabularisation 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)
	proposed at these location. As such, a large area of the existing habitat (open farmland) will remain. In addition, farmland is the predominant habitat in the Proposed Wind Farm site and the wider landscape, therefore a large amount of foraging habitat will remain. Whooper swan is not dependent on the Proposed Wind Farm site for roosting and foraging. In addition, the grassland habitat these birds were observed using in the Proposed Wind Farm site is not a scarce resource in the wider area. No significant effects of direct habitat loss are anticipated at the county or national level.		
Disturbance	The majority of whooper swan activity recorded during surveys was associated with waterbodies in the wider surroundings. In proximity to the Proposed Wind Farm site, whooper swan was recorded roosting at Horseleap Lough, south of the Proposed Wind Farm site (WS-1). Whooper swan was also recorded foraging, mainly at Horseleap Lough and in fields to the north of this wetland (WS-2). Landed flocks foraging/resting were recorded within the Proposed Wind Farm site on three occasions, at Leecarrow and Cooloo. The data suggests that whooper swan are dependent on waterbodies in the wider surroundings and, to a lesser extent, large open agricultural grassland fields. They were infrequently using habitats within the Proposed Wind Farm site. Few studies have been done on the effects of disturbance on whooper swan during the winter. Goodship and Furness (2022) suggest disturbance up to 600m from humans can occur, based on studies on geese, while McGuinness <i>et al.</i> (2015) also suggest 600m. The waterbodies in the surrounding area where whooper swan was regularly recorded are all greater than 600m from the nearest construction works at the Proposed Wind Farm site, and it is not expected that disturbance will occur at this distance.	The magnitude of the effect is assessed as low. The cross tabularisation of a medium sensitivity species and low impact corresponds to a Low effect significance.	Likely short-term frequent slight negative effect, which is not significant.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	Given the low frequency of occurrence of whooper swan within the Proposed Wind Farm site, and that they are not dependent on the Proposed Wind Farm site for roosting and foraging, and the separation distance of major construction to waterbodies in the surrounding area, no significant effects of disturbance are anticipated within the Proposed Wind Farm site.		
Operational Phase			
Direct Habitat Loss	Direct habiat loss effects are not anticipated.	No Effect	No Effect
Displacement and Barrier Effect	The majority of whooper swan activity recorded during surveys was associated with waterbodies in the wider surroundings. In proximity to the Proposed Wind Farm site, whooper swan were recorded roosting at Horseleap Lough, south of the Proposed Wind Farm site boundary (WS-1). Whooper swan were also recorded foraging, mainly at Horseleap Lough and in fields to the north of this wetland (WS-2). Landed flocks foraging/resting were recorded within the Proposed Wind Farm site on three occasions, at Leecarrow and Cooloo. The data suggests that whooper swan are dependent on waterbodies in the wider surroundings and, to a lesser extent, large open agricultural grassland fields. They were infrequently using habitats within the Proposed Wind Farm site. Few studies have been done on the effects of disturbance on whooper swan during the winter. Goodship and Furness (2022) suggest disturbance up to 600m from humans can occur, based on studies on geese, while McGuinness <i>et al.</i> (2015) also suggest 600m. The waterbodies in the surrounding area where whooper swan were regularly recorded are all greater than 600m from the nearest proposed turbine locations. A proportion of the fields north of Horseleap Lough where whooper swan were recorded foraging (WS-2) are within 400m of one turbine. However, an extensive area of fields greater than 600m will remain available to foraging birds.	The magnitude of the effect is assessed as low. The cross tabularisation 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)
	Whooper swan are not dependent areas within the displacement distance from turbines for foraging or roosting. Some displacement of foraging flocks from fields north of Horseleap Lough (WS-2) is likely to occur, but a large area of fields in WS-2 will remain available to foraging birds and, in addition, farmland is not a scarce resource in the wider area. No significant effects of displacement are anticipated at the county or national level.		
Collision Risk	This species was recorded flying within PCH during vantage point surveys. A 'Random' and a 'Regular' collision risk analysis has been undertaken for the three turbine dimension assessment scenarios (full details provided in Appendix 7-6). Flights recorded during the winter and passage season are included. The model used for the analysis assumes that waterbird species are active for 25% of dark hours, in addition to daylight hours. The highest collision risk has been calculated at 1.897 collisions per year (0.488 collisions associated with random flight activity, and 1.409 associated with regular flight activity of birds travelling to or from Horseleap Lough and the surrounding agricultural fields). Annual mortality of adult whooper swan has been calculated at 20% per annum (Brazil, 2003). If 1.897 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. 1,485 birds) by 0.6%. The magnitude of the predicted collision risk is negligible.	The magnitude of the effect is assessed as negligible. The cross tabularisation of a medium sensitivity species and negligible impact corresponds to a Very Low effect significance.	Likely long-term constant not significant negative 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.

7.5.2.6 Barn Owl (wintering)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	There were three records of barn owl in the wider surroundings in winter, and no observations of birds within the Proposed Wind Farm site over the entire survey period. This limits the potential for an effect of direct habitat loss. During a dedicated survey of structures that may hold barn owl nests or roosting birds, some evidence of previous wintering barn owl occupation was found in a derelict building in Cooloo in the Proposed Wind Farm site (BO-1) in the month of May. It is possible that barn owl were roosting here previously, but there were no signs of breeding. This building will be demolished as part of the Proposed Wind Farm, leading to a loss of a feature used by barn owl. The effect of direct habitat loss is assessed as medium. Although the significance of the effect of direct habitat is Very Low, enhancement measures with the objective of providing roosting structures for barn owl in this area will be included at the Proposed Wind Farm. This is described in Section 7.6.	The magnitude of the effect is assessed as medium. The cross tabularisation of a low sensitivity species and medium impact corresponds to a Very Low effect significance.	Likely long-term constant not significant negative effect.
Disturbance	There were three records of barn owl in the wider surroundings over five winter seasons, and no observations of birds within the Proposed Wind Farm site over the entire survey period. This limits the potential for an effect of disturbance. There was also some evidence of previous barn owl occupation in a derelict building in Cooloo in the Proposed Wind Farm site (BO-1), although it does not appear to be regularly used. This building will be demolished as part of the Proposed Wind Farm during construction. The effect of disturbance is assessed as medium.	The magnitude of the effect is assessed as medium. The cross tabularisation of a low sensitivity species and medium impact corresponds to a Very Low effect significance.	Likely long-term constant not significant negative effect.
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	There were three records of barn owl in the wider surroundings over five winter seasons, and no observations of birds within the Proposed Wind Farm site over the entire survey period. This limits the potential for an effect of displacement. There was also some evidence of previous barn owl occupation in a derelict building in Cooloo in the Proposed Wind Farm site (BO-1). This building will be demolished as part of the Proposed Wind Farm. As such, barn owl will not be present at this building. Although the significance of the effect of direct habitat loss is Very Low, enhancement measures with the objective of providing roosting structures for barn owl in this area will be included at the Proposed Wind Farm. Goodship and Furnace (2022) have reported disturbance of barn owl up to 100m during the breeding season and 50m during the winter season. This enhancement measure will be at least 100m from the nearest proposed turbine location to avoid displacement effects. No significant effects of displacement are anticipated.	The magnitude of the effect is assessed as negligible. The cross tabularisation of a low sensitivity species and negligible impact corresponds to a Very Low effect significance.	Likely long-term constant not significant negative effect.
Collision Risk	This species was not recorded within the Proposed Wind Farm site during the extensive vantage point survey work undertaken. No significant effects of collision risk are anticipated.	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.

7.5.2.7 Kestrel (breeding and wintering)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	Kestrel was using the Proposed Wind Farm site for breeding. Two breeding territories were identified (K-1 and K-2) that overlap with the Proposed Wind Farm site. Territories were used in different years, and could, with a maximum of one pair recorded each year. Kestrel was also regularly using the Proposed Wind Farm site and wider surroundings for hunting in farmland and bog in both the breeding and winter seasons. This species is a wide-ranging generalist, and was using farmland and bog within the Proposed Wind Farm site. Extensive areas of similar hunting and breeding habitat will remain, as the footprint of the development accounts for a small proportion of the Proposed Wind Farm site (the permanent footprint of the Proposed Project measures approximately 10.6ha, which represents approximately 3% of the Site), and there is an abundance of similar suitable habitat in the surrounding area. However, given the presence of a breeding territory in the Proposed Wind Farm site, the magnitude of the effect of direct habitat loss is assessed as medium.	The magnitude of the effect is assessed as medium. The cross tabularisation of a medium sensitivity species and medium impact corresponds to a Low effect significance.	Likely long-term constant slight negative effect, which is not significant .
Disturbance	Kestrel was using the Proposed Wind Farm site for breeding. Two breeding territories were identified (K-1 and K-2) that overlap with the Proposed Wind Farm site. Kestrel were also regularly using the Proposed Wind Farm site and wider surroundings for hunting in farmland and bog in both the breeding and winter season. Few studies have been done on the effects of disturbance around construction areas on kestrel. Goodship and Furness (2022) suggest disturbance from humans up to 200m during the breeding season can occur. It is assumed that temporary disturbance will occur around the Proposed Wind Farm site during construction works. Kestrel is a wide-ranging generalist species and, as	The magnitude of the effect is assessed as medium. The cross tabularisation of a medium sensitivity species and medium impact corresponds to a Low effect significance.	Likely short-term frequent slight negative effect, which is not significant .

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	farmland and bog is not a scarce resource locally, there is an abundance of similar suitable habitat in the surrounding area. However, given the presence of a breeding territory in the Proposed Wind Farm site, the magnitude of the effect of disturbance is assessed as medium.		
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated.	No Effect	No Effect
Displacement and Barrier Effect	Kestrel was using the Proposed Wind Farm site for breeding. Two breeding territories were identified (K-1 and K-2) that overlap with the Proposed Wind Farm site. Kestrel were also regularly using the Proposed Wind Farm site and wider surroundings for hunting in farmland and bog in both the breeding and winter season. Studies have generally found low levels of turbine avoidance among kestrels (Hötter <i>et al.</i>, 2006; Madders and Whitfield, 2006; Pearce Higgins <i>et al.</i>, 2009). In addition, kestrel is a wide-ranging generalist species and, as farmland and bog is not a scarce resource locally, there is an abundance of similar suitable habitat in the surrounding area. However, given the presence of a breeding territory in the Proposed Wind Farm site, the magnitude of the effect of displacement is assessed as medium.	The magnitude of the effect is assessed as medium. The cross tabularisation of a medium sensitivity species and medium impact corresponds to a Low effect significance.	Likely long-term constant slight negative effect, which is not significant .
Collision Risk	This species was recorded flying within PCH during vantage point surveys. A 'Random' collision risk analysis has been undertaken for the three turbine dimension assessment scenarios (full details provided in Appendix 7-6). Flights recorded during the winter and breeding season are included. The highest collision risk has been calculated at 1.235 collisions per year. Annual mortality of adult kestrel has been calculated at an average of 35% per annum (Orta <i>et al.</i>, 2020). If 1.235 collisions were to occur per year, it would mean that the losses at the Proposed Wind Farm would increase the annual	The magnitude of the effect is assessed as negligible. The cross tabularisation of a medium sensitivity species and negligible impact corresponds to a Very Low effect significance.	Likely long-term constant not significant negative effect.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	mortality of the county population (c. 1,202 birds) by 0.3%. The magnitude of the predicted collision risk is negligible.		
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 Lapwing (wintering)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	Roosting and foraging activity was recorded at and around Horseleap Lough (L-2 and L-3) and wider surroundings. Birds were only recorded foraging and roosting within the Proposed Wind Farm site on one occasion, in Dangan Eighter (L-4). There will be no habitat loss at waterbodies in the wider surroundings, including Horseleap Lough, as these are outside the Proposed Wind Farm site. In addition, lapwing are not dependent on the Proposed Wind Farm site for roosting or foraging, as they were only recorded using habitats within the Proposed Wind Farm site on one occasion during five winter seasons and three breeding seasons of survey. In addition, the bog habitat these birds were observed using in the Proposed Wind Farm site is not a scarce resource in the wider area. No significant effects of direct habitat loss are anticipated at the county or national level.	The magnitude of the effect is assessed as low. The cross tabularisation of a high 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)
Disturbance	Lapwing was recorded nesting at Horseleap Lough (L-1), approximately 760m from the Proposed Wind Farm site. Roosting and foraging activity was also recorded at and around Horseleap Lough (L-2 and L-3) and wider surroundings. Birds were only recorded foraging and roosting within the Proposed Wind Farm site on one occasion, in Dangan Eighter (L-4). Pearce-Higgins <i>et al.</i> (2012) did not find any significant negative effect of construction works on breeding lapwing populations, although the number of sites studied was low. Horseleap Lough is over 800m from the nearest proposed works within the Proposed Wind Farm site, and it is not expected that disturbance during construction at the Proposed Wind Farm site will occur at this distance. No significant effects of disturbance are anticipated at the county, national or international scale.	The magnitude of the effect is assessed as low. The cross tabularisation of a high sensitivity species and low impact corresponds to a Low effect significance.	Likely short-term frequent 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	Lapwing was recorded nesting at Horseleap Lough (L-1), approximately 760m from the Proposed Wind Farm site boundary. Roosting and foraging activity was also recorded at and around Horseleap Lough (L-2 and L-3) and the wider surroundings. Birds were only recorded foraging and roosting within the Proposed Wind Farm site on one occasion, in Dangan Eighter (L-4). Hötter <i>et al.</i> (2006) found lapwing was disturbed from wind farms at an average minimum distance of 108m during the breeding season, and 260m during the winter season. Pearce-Higgins <i>et al.</i> (2009) found that proximity to wind farms did not have a significant negative effect on breeding lapwing populations. Horseleap Lough is over 900m from the nearest proposed turbine location. No significant effects of displacement are anticipated at the county, national or international scale.	The magnitude of the effect is assessed as low. The cross tabularisation of a high 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)
Collision Risk	This species was recorded flying within PCH during vantage point surveys. A 'Random' and a 'Regular' collision risk analysis has been undertaken for the three turbine dimension assessment scenarios (full details provided in Appendix 7-6). As only the wintering population is being assessed (as breeding season activity occurred outside of the Proposed Wind Farm site), flights recorded during the winter season are included. The model used for the analysis assumes that waterbird species are active for 25% of dark hours, in addition to daylight hours. The highest collision risk during the winter season has been calculated at 31.863 collisions per year (8.448 collisions associated with random flight activity, and 23.415 associated with regular flight activity of birds travelling to or from Horseleap Lough and the surrounding agricultural fields). Annual mortality of adult lapwing has been calculated at 29.5% per annum (Peach <i>et al.</i>, 1994). If 31.863 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.5,540) by 1.9%. The magnitude of the predicted collision risk is low.	The magnitude of the effect is assessed as low. The cross tabularisation of a high sensitivity species and low impact corresponds to a Low effect significance.	Likely long-term constant slight 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.

7.5.2.9 Snipe (breeding and wintering)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	Snipe was using the Proposed Wind Farm site for breeding. A breeding territory were identified (SN-1) that overlaps with the Proposed Wind Farm site. Snipe were also regularly using bog in the Proposed Wind Farm site and wider surroundings in the winter season. Bog is not a scarce resource locally. Extensive areas of similar habitat will remain, as the footprint of the development accounts for a small proportion of the Proposed Wind Farm site (the permanent footprint of the Proposed Project measures approximately 10.6ha, which represents approximately 3% of the Site), and there is an abundance of similar habitat in the surrounding area. However, given the presence of a breeding territory in the Proposed Wind Farm site, the magnitude of the effect of direct habitat loss is assessed as medium.	The magnitude of the effect is assessed as low. The cross tabularisation of a medium sensitivity species and medium impact corresponds to a Low effect significance.	Likely long-term constant slight negative effect, which is not significant .
Disturbance	Snipe was using the Proposed Wind Farm site for breeding. A breeding territory were identified (SN-1) that overlaps with the Proposed Wind Farm site. Snipe were also regularly using bog in the Proposed Wind Farm site and wider surroundings in the winter season. Pearce-Higgins <i>et al.</i> (2009) found that breeding snipe showed significant avoidance of turbines extending to a distance of 400m, and there is also evidence of avoidance of access tracks. It is assumed that temporary disturbance will occur around the Proposed Wind Farm site during construction works. Bog is not a scarce resource locally. Extensive areas of similar habitat will remain, as the footprint of the development accounts for a small proportion of the Proposed Wind Farm site, and there is an abundance of similar suitable habitat in the surrounding area. However, given the	The magnitude of the effect is assessed as medium. The cross tabularisation of a medium sensitivity species and low impact corresponds to a Low effect significance.	Likely short-term frequent slight negative effect, which is not significant .

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	presence of a breeding territory in the Proposed Wind Farm site, the magnitude of the effect of disturbance is assessed as medium.		
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated.	No Effect	No Effect
Displacement and Barrier Effect	Snipe was using the Proposed Wind Farm site for breeding. A breeding territory were identified (SN-1) that overlaps with the Proposed Wind Farm site boundary. Snipe were also regularly using bog in the Proposed Wind Farm site and wider surroundings in the winter season. Pearce-Higgins <i>et al.</i> (2009) found that breeding snipe showed significant avoidance of turbines extending to a distance of 400m, and there is also evidence of avoidance of access tracks. Bog is not a scarce resource locally. Extensive areas of similar habitat will remain, as the footprint of the development accounts for a small proportion of the Proposed Wind Farm site, and there is an abundance of similar suitable habitat in the surrounding area. However, given the presence of a breeding territory in the Proposed Wind Farm site, the magnitude of the effect of displacement is assessed as medium.	The magnitude of the effect is assessed as medium. The cross tabularisation of a medium sensitivity species and medium impact corresponds to a Low effect significance.	Likely long-term constant slight negative effect, which is not significant .
Collision Risk	This species was recorded flying within PCH during vantage point surveys. A 'Random' collision risk analysis has been undertaken for the three turbine dimension assessment scenarios (full details provided in Appendix 7-6). Flights recorded during the winter and breeding season, when snipe were observed, are included. The model used for the analysis assumes that waterbird species are active for 25% of dark hours, in addition to daylight hours. The highest collision risk has been calculated at 3.066 collisions per year. Annual mortality of adult snipe has been calculated at 37.5% per annum (Spence, 1998). If 3.066 collisions were to occur per year, it would mean that the losses at the Proposed Wind Farm would increase the annual mortality of	The magnitude of the effect is assessed as low. The cross tabularisation 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)
	the county population (c.802 birds [401 pairs]) by 1%. The magnitude of the predicted collision risk is low.		
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 Buzzard (breeding and wintering)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	Buzzard was using the Proposed Wind Farm site for breeding. One breeding territory was identified (BZ-1) that is within the Proposed Wind Farm site. Buzzard was also regularly using the Proposed Wind Farm site and wider surroundings for hunting in farmland and bog in both the breeding and winter season. This species is a wide-ranging generalist, and was using farmland and bog within the Proposed Wind Farm site. Extensive areas of similar hunting and breeding habitat will remain, as the footprint of the development accounts for a small proportion of the Proposed Wind Farm site (the permanent footprint of the Proposed Project measures approximately 10.6ha, which represents approximately 3% of the Site), and there is an abundance of similar suitable habitat in the surrounding area. However, given the presence of a breeding territory in the Proposed Wind Farm site, the magnitude of the effect of direct habitat loss is assessed as medium.	The magnitude of the effect is assessed as medium. The cross tabularisation of a low sensitivity species and medium impact corresponds to a Very Low effect significance.	Likely long-term constant not significant negative effect.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Disturbance	Buzzard was using the Proposed Wind Farm site for breeding. One breeding territory was identified (BZ-1) that is within the Proposed Wind Farm site boundary. Buzzard was also regularly using the Proposed Wind Farm site and wider surroundings for hunting in farmland and bog in both the breeding and winter seasons. Three further breeding territories were identified in the wider area (BZ-2, BZ-3 and BZ-4). Goodship and Furness (2022) suggest disturbance of buzzard up to 450m from large scale works can occur, based on a study of forestry. The breeding territories BZ-2, BZ-3 and BZ-4 are over 1.5km from the nearest large scale proposed works within the Proposed Wind Farm site, and it is not expected that disturbance during construction at the Proposed Wind Farm site will occur at this distance. It is assumed that temporary disturbance will occur around the Proposed Wind Farm site during construction works including at the breeding territory BZ-1. Buzzard is a wide-ranging generalist species and, as farmland and bog is not a scarce resource locally, there is an abundance of similar suitable habitat in the surrounding area. However, given the presence of a breeding territory in the Proposed Wind Farm site (BZ-1), the magnitude of the effect of disturbance is assessed as medium.	The magnitude of the effect is assessed as medium. The cross tabularisation of a low sensitivity species and medium impact corresponds to a Very Low effect significance.	Likely short-term frequent not significant negative effect.
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated.	No Effect	No Effect
Displacement and Barrier Effect	Buzzard was using the Proposed Wind Farm site for breeding. One breeding territory was identified (BZ-1) that is within the Proposed Wind Farm site boundary. Buzzard was also regularly using the Proposed Wind Farm site and wider surroundings for hunting in farmland and bog in both the breeding and winter season. Three further breeding territories were identified in the wider area (BZ-2, BZ-3 and BZ-4).	The magnitude of the effect is assessed as medium. The cross tabularisation of a low sensitivity species and medium impact corresponds to a Very Low effect significance.	Likely long-term constant not significant negative effect.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	Pierce-Higgins <i>et al.</i> (2009) found that breeding buzzards avoided turbines at a distance of at least 500m. The breeding territories BZ-2, BZ-3 and BZ-4 are greater than this distance from the nearest proposed turbine locations, but there is the potential for displacement at breeding territory BZ-1. Buzzard is a wide-ranging generalist species and, as farmland and bog is not a scarce resource locally, there is an abundance of similar suitable habitat in the surrounding area. However, given the presence of a breeding territory in the Proposed Wind Farm site (BZ-1), the magnitude of the effect of displacement is assessed as medium.		
Collision Risk	This species was recorded flying within PCH during vantage point surveys. A 'Random' collision risk analysis has been undertaken for the three turbine dimension assessment scenarios (full details provided in Appendix 7-6). Flights recorded during the winter and breeding season, when buzzard were observed, are included. The highest collision risk has been calculated at 2.118 collisions per year. Annual mortality of adult buzzard has been calculated at an average of 10% per annum (Kenward <i>et al.</i>, 2000). Buzzard has recently undergone range expansion westwards in Ireland and it is likely that the population has increased considerably since the most recent official count was made under Article 12 Reporting. Based on the only available official figures, if two 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 (taken to be c.150 birds) by 14%. However, given that the current population size is much larger than 150 birds, the magnitude of the effect of collision risk is assessed to be low.	The magnitude of the effect is assessed as low. The cross tabularisation of a low sensitivity species and low impact corresponds to a Very Low effect significance.	Likely long-term constant not significant negative effect.
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.

7.5.2.11 Long-eared Owl (breeding)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	Long-eared owl was using the Proposed Wind Farm site for breeding. A breeding territory was identified in trees near Cloonascragh (LE-1). These trees will be felled as part of the Proposed Wind Farm. Habitat containing suitable nesting trees is elsewhere in the Proposed Wind Farm site, including in proximity to LE-1, and in the wider surroundings. In addition, biodiversity enhancement measures as part of the Proposed Project (further details in Chapter 6 of this EIAR) will include broadleaf woodland replanting, which may benefit long-eared owl. However, given the removal of the breeding territory in the Proposed Wind Farm site, the magnitude of the effect of direct habitat loss is assessed as medium.	The magnitude of the effect is assessed as medium. The cross tabularisation of a low sensitivity species and medium impact corresponds to a Very Low effect significance.	Likely long-term constant not significant negative effect.
Disturbance	Long-eared owl was using the Proposed Wind Farm site for breeding. A breeding territory was identified in trees near Cloonascragh (LE-1). These trees will be felled as part of the Proposed Wind Farm. Ruddock and Whitfield (2007) found that long-eared owl have a limit of disturbance at 50-100m during incubation and 150-300m during chick rearing. Habitat containing suitable nesting trees is available elsewhere in the Proposed Wind Farm site, some of which is greater than this disturbance distance. However, it is assumed that temporary disturbance will occur around the Proposed Wind Farm site during construction works that may limit some of the nesting opportunities for long-eared owl during construction, in addition to	The magnitude of the effect is assessed as medium. The cross tabularisation of a low sensitivity species and medium impact corresponds to a Very Low effect significance.	Likely long-term constant not significant negative effect.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	disturbance in the area of felling. The magnitude of the effect of disturbance is assessed as medium.		
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated.	No Effect	No Effect
Displacement and Barrier Effect	Long-eared owl was using the Proposed Wind Farm site for breeding. A breeding territory was identified in trees near Cloonascragh (LE-1). These trees will be felled as part of the Proposed Wind Farm. As such, long-eared owl will not be present in these trees, and the potential for an effect of displacement does not apply. Few studies have been done on the effects of displacement on long-eared owl in wind farms. Habitat containing suitable nesting trees will remain elsewhere in the Proposed Wind Farm site, as the footprint of the development accounts for a small proportion of the Proposed Wind Farm site (the permanent footprint of the Proposed Project measures approximately 10.6ha, which represents approximately 3% of the Site), and there is similar suitable habitat in the surrounding area. However, it is assumed that displacement from operational turbines may limit some of the nesting opportunities for long-eared owl within the wind farm. The magnitude of the effect of displacement is assessed as medium.	The magnitude of the effect is assessed as medium. The cross tabularisation of a low sensitivity species and medium impact corresponds to a Very Low effect significance.	Likely long-term constant not significant negative effect.
Collision Risk	This species was recorded flying within PCH during vantage point surveys. A 'Random' collision risk analysis has been undertaken for the three turbine dimension assessment scenarios (full details provided in Appendix 7-6). Flights recorded during the winter and post-breeding season, when hen harrier were observed, are included. The highest collision risk has been calculated at 0.002 collisions per year, or one bird every 581 years. The predicted collision risk is negligible.	The magnitude of the effect is assessed as negligible. The cross tabularisation of a low sensitivity species and negligible impact corresponds to a Very Low effect significance.	Likely long-term constant not significant negative effect.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
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.

7.5.2.12 Sparrowhawk (breeding and wintering)

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	Sparrowhawk was using the Proposed Wind Farm site for hunting. There was a possible breeding territory near Derrybaun, outside the Proposed Wind Farm site. No habitat loss will occur at Derrybaun, as it is outside the Proposed Wind Farm site. This species is a wide-ranging generalist, and was using grassland, bog and treelines/hedgerows within the Proposed Wind Farm site. Extensive areas of similar hunting habitat will remain, as the footprint of the development accounts for a small proportion of the Proposed Wind Farm site (the permanent footprint of the Proposed Project measures approximately 10.6ha, which represents approximately 3% of the Site), and there is an abundance of similar suitable habitat in the surrounding area. No significant effects of direct habitat loss are anticipated at the county, national or international scale.	The magnitude of the effect is assessed as low. The cross tabularisation of a low sensitivity species and low impact corresponds to a Very Low effect significance.	Likely long-term constant not significant negative effect.
Disturbance	Sparrowhawk was using the Proposed Wind Farm site for hunting. There was a possible breeding territory near Derrybaun over 450m from the Proposed Wind Farm site.	The magnitude of the effect is assessed as low. The cross tabularisation of a low sensitivity species and low impact	Likely short-term frequent not significant negative effect.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	Few studies have been done on the effects of disturbance on sparrowhawk, but it is not expected that disturbance in Derrybaun during construction at the Proposed Wind Farm site will occur at this distance. It is assumed that temporary disturbance will occur around the Proposed Wind Farm site during construction works. However, sparrowhawk is a wide-ranging generalist species and, as grassland, bog and hedgerow/treeline is not a scarce resource locally, there is an abundance of similar suitable habitat in the surrounding area. No significant effects of disturbance are anticipated at the county, national or international scale.	corresponds to a Very Low effect significance.	
Operational Phase			
Direct Habitat Loss	Direct habitat loss effects are not anticipated.	No Effect	No Effect
Displacement and Barrier Effect	Sparrowhawk was using the Proposed Wind Farm site for hunting. There was a possible breeding territory near Derrybaun over 800m from the nearest proposed turbine location. Few studies have been done on the effects of wind farms on sparrowhawk, but it is not expected that displacement in Derrybaun will occur at this distance. In addition, sparrowhawk is a wide-ranging generalist species and, as grassland, bog and hedgerow/treeline is not a scarce resource locally, there is an abundance of similar suitable habitat in the surrounding area. No significant effects of displacement are anticipated at the county, national or international scale.	The magnitude of the effect is assessed as low. The cross tabularisation of a low sensitivity species and low impact corresponds to a Very Low effect significance.	Likely long-term constant not significant negative effect.
Collision Risk	This species was recorded flying within PCH during vantage point surveys. A 'Random' collision risk analysis has been undertaken for the three turbine dimension assessment scenarios (full details provided in Appendix 7-6). Flights recorded during the winter and breeding season, when sparrowhawk were observed, are included.	The magnitude of the effect is assessed as negligible. The cross tabularisation of a low sensitivity species and negligible impact	Likely long-term constant not significant negative effect.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	The highest collision risk has been calculated at 0.034 collisions per year. Annual mortality of adult sparrowhawk has been calculated at an average of 31% per annum (Newton, 1986). If 0.034 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.456 birds) by 0.02%. The magnitude of the predicted collision risk is negligible.	corresponds to a Very Low effect significance.	
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.

7.5.3

Likely Effects Associated with the Proposed Grid Connection

The Proposed Grid Connection will commence from the proposed onsite substation in the townland of Dangan Eighter and will run along existing roads to the existing 110kV Cloon substation in the townland of Cloonascragh. Required works are minor and are all located within existing road corridors (full details in Chapter 4 of this EIAR).

Works for the Proposed Grid Connection will occur on the public road running adjacent to Horseleap Lough. Horseleap Lough was visited during surveys. Whooper swan and lapwing use Horseleap Lough for roosting, foraging and (in the case of lapwing) nesting. It is assumed that temporary disturbance will occur here during construction of the Proposed Grid Connection. These works will be minor in nature and short in duration, and will occur in an area where there is already anthropogenic disturbance from traffic. However, given their proximity to Horseleap Lough, there is potential for disturbance to whooper swan and lapwing during works. The effect significance for whooper swan and lapwing is assessed as **Low** and **High** (Percival, 2003) respectively or a **likely short-term slight negative effect** and **likely short-term moderate negative effect** (EPA, 2022) respectively, prior to mitigation measures.

The existing habitats (i.e. existing roads) along the remainder of the route do not have the potential to support other species of conservation interest in the area. On a precautionary basis, it is assumed that some temporary disturbance may occur along other sections of the route during works. However, given the extent of suitable habitat in the wider surroundings, significant disturbance effects are not predicted. The effect significance for all other KORs (excluding lapwing) is assessed as no greater than **Low** (Percival, 2003) or a **likely short-term slight negative effect** (EPA, 2022).

7.5.4

Likely Effects Associated with the Turbine Delivery Route

The proposed turbine delivery route will require temporary junction accommodation for abnormal loads, therefore required works are also minor and are located within the existing road corridor (full details in Chapter 4 of this EIAR). Upon completion of the turbine delivery phase, the route delivery temporary accommodation works location will revert back to its existing condition.

In addition, a section of hedge will be removed from fields south of Horseleap Cross, which is in proximity to Horseleap Lough, to accommodate the turbine overrun area. Whooper swan and lapwing use Horseleap Lough for roosting, foraging and (in the case of lapwing) nesting. However, works to remove this hedge will be minor in nature and transient in duration, and will be separated from the Lough by an existing public road.

The existing habitats (i.e. existing roads) on the turbine delivery route do not have the potential to support other species of conservation interest in the area. On a precautionary basis, it is assumed that some temporary disturbance may occur during works. However, given the extent of suitable habitat in the wider surroundings, significant disturbance effects are not predicted. An effect of the removal of the hedge near Horseleap Lough is not anticipated as neither lapwing nor whooper swan use this habitat or depend on it for food. The effect significance for all KORs is classed as no greater than **Low** (Percival, 2003) or a **likely short-term slight negative effect** (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 the Lough Corrib SPA. Following the screening, a Natura Impact Statement was prepared which concluded that:

This NIS has provided an assessment of all potential direct or indirect adverse effects on European Sites.

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

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 Wind Farm on avian receptors. Effects on avian receptors have been addressed in three ways: the design of the Proposed Wind Farm, a Construction and Environmental Management Plan, and targeted mitigation and enhancement measures. These are discussed below.

7.6.1

Design of the Proposed Wind Farm

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

- The turbine layout has been designed to avoid siting turbines in proximity to Horseleap Lough, which is utilised by many bird species. The nearest turbine is over 800m from the wetland. This avoids habitat loss, ameliorates disturbance during construction and displacement during operation, and reduces the potential for collisions as birds fly to and from the Lough.
- The turbine layout has been designed to avoid siting turbines in proximity to the regularly used hen harrier roost at Cloonboo More. The nearest turbine is over 700m from the section of bog habitat in which hen harrier are roosting. This avoids habitat loss at the bog, ameliorates disturbance during construction and displacement during operation, and reduces the potential for collisions as hen harrier enter and leave the roost. This also benefits merlin, which has been observed roosting communally with hen harrier
- Hard standing areas have been designed to the minimum size necessary to accommodate the turbine model that is selected, reducing the footprint of the development.
- The Proposed Grid Connection route 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 Construction and Environmental Management Plan has been prepared and will be in place prior to the start of the construction phase. Full details are available in Chapter 4 and Appendix 4-5 of this EIAR. Note that the majority of these measures are proposed as industry best practice rather than to mitigate any identified significant effect and will be updated as required to address any conditions of a permission or findings of any pre-construction survey results. Measures specific to birds are detailed below:

- Works will commence outside the bird nesting season (1st of March to 31st of August inclusive).
- 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.
- Noise limits, noise control measures, hours of operation (i.e. dusk and dawn is high faunal activity time) and selection of plant items will be considered in relation to disturbance of birds. All plant and equipment for use will comply with the European Communities (Noise Emission By Equipment For Use Outdoors) Regulations, 2001, as amended (SI 632/2001). Plant machinery will also be turned off when not in use.
- Silt fences will be installed as an additional water protection measure around existing waterbodies.
- A pre-construction bird survey at the Proposed Wind Farm site will be organised to ensure that any sensitive roost or nest sites in the works area are identified and disturbance to these are avoided. Further details are provided in Appendix 7-8.
- If winter roosting or breeding activity of raptors of high conservation concern is identified, no works shall be undertaken within a species-specific disturbance buffer of the roost/nest, in line with industry best practice (e.g., Goodship and Furness, 2022). No works shall be permitted within the buffer until it can be demonstrated that the roost/nest is no longer occupied.
- Works in proximity to Horseleap Lough will be conducted outside the lapwing breeding season. The preferred month for works in proximity to Horseleap Lough is late-August and September.
- During works adjacent to Horseleap Lough, temporary screening or hoarding will be erected between the works and the Lough. This should be high and wide enough to screen birds within the Lough from the majority of disturbances (e.g., moving people or machinery and lights). Screening should be removed immediately when works adjacent to the Lough are complete.
- A pre-demolition survey of the derelict structure at BO-1 will be organised to check if barn owl is currently using the building.
- A pre-felling survey of the trees at LE-1 will be organised to check that long-eared owl are not currently nesting within the trees.

7.6.3

Mitigation and Enhancement Measures

Mitigation or enhancement measures are proposed for golden plover and barn owl. These are assessed separately below.

Golden Plover

As the significance of the predicted collision risk for golden plover is high, a Bird Mitigation Plan with the objective to reduce the significance of the effect of collision risk for golden plover has been prepared. This is fully described in Appendix 7-7. Following successful implementation of the mitigation plan, no significant effects of collision risk are anticipated.

Barn Owl

During field surveys, barn owl were recorded using a derelict building in the Proposed Wind Farm site. Although the significance of the effect of the removal of this building was assessed to be Very Low, enhancement measures with the objective of providing roosting structures for barn owl in this area will be included at the Proposed Wind Farm.

A barn owl box will be erected at Cooloo, close to the location of the derelict building that will be removed. This location will be a minimum of 100m from the nearest proposed turbine location, as disturbance of barn owl up to 100m during the breeding season, and up to 50m during the winter season has been reported by Goodship and Furnace (2022). The materials and design of the box will conform with the standards of the Barn Owl Trust. The box will be erected following guidance from the Barn Owl Trust (i.e., 3m+ from the ground, access hole avoiding the prevailing weather).

7.6.4 Residual Effects

Following the measures described in Section 7.6, no effect significance greater than **Low**, as per Percival (2003) criteria, was identified for any KOR. No effect significance greater than **Slight**, 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:

- Galway County Development Plan 2022-2028;
- 4th National Biodiversity Action Plan 2023-2027.

7.7.2 Projects Considered in the Assessment

7.7.2.1 Developments and Land Uses

A review of the relevant planning registers was undertaken to document relevant general development planning applications in the vicinity of the Site, as described in Chapter 2 of this EIAR. The majority of these relate to the provision and/or alteration of one-off rural housing and the provision and/or alteration of agricultural buildings. 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 primarily consist of land managed for agriculture in the form of livestock grazing and commercial conifer plantations, both of low ecological value. The forestry works (felling/planting) associated with the forestry in the wider surroundings of the Proposed Wind Farm site will be subject to relevant licencing and guidance from the Forestry Service. These land-uses have been taken into account in this cumulative assessment.

7.7.2.3 Other Wind Farm Developments

Wind farm projects within 25km of the Proposed Wind Farm are summarised in Table 7-12. This table includes 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 7-12 Wind energy applications within 25km of the Proposed Wind Farm site

Wind Farm	Planning Status	Number of Turbines	Separation Distance (turbine to turbine)
Clonberne Wind Farm	Proposed	11	~5.2km
Cloonascragh Single Turbine	Permitted	1	~10.4km
Clooncon East Single Turbine	Existing	1	~16.2kmm
Cloonlusk Wind Turbines	Existing	2	~7.8km
Gannow Wind Farm	Proposed	8	~18.4km
Laurclavagh Wind Farm	Proposed	8	~17.4km
Park Athenry Single Turbine	Existing	1	~18.6km
Shancloon Wind Farm	Proposed	11	~21.3km

Clonberne Wind Farm

The EIAR⁴ was reviewed on An CoimisúnPleanála Register. The KORs discussed in this document were hen harrier, golden plover, merlin, peregrine falcon, whooper swan, kestrel, lapwing, snipe, buzzard and sparrowhawk. The magnitude of the effect of direct habitat loss during construction was assessed as low for golden plover, hen harrier, kestrel and snipe, and as very low for peregrine falcon, whooper swan, lapwing, buzzard and sparrowhawk. The magnitude of the effect of displacement and barrier effect during operation was assessed as low for golden plover, hen harrier, merlin, kestrel, lapwing and snipe, and as very low for merlin, whooper swan, lapwing, buzzard and sparrowhawk. Finally, the magnitude of the effect of collision risk during operation was assessed as low for peregrine falcon and snipe, and as very low for golden plover, hen harrier, peregrine falcon, whooper swan, kestrel, buzzard and sparrowhawk, while there was no effect for merlin. It was concluded that the development would not have an adverse impact on any SPAs, either alone or in combination with other plans or projects.

Cloonascragh Single Turbine

The Environmental Report and Ecological Impact Assessment were reviewed on the Galway County Council Planning Register⁵. The following species were assessed: lapwing, sand martin and skylark. The document concluded that, with the implication of the outlined mitigation measures, 'the proposed development will not have the potential to result in significant negative residual impacts to habitats or fauna.' Furthermore, the nature of the habitat on site, i.e., cutover bog, were widespread and abundant within the surrounding areas resulting in a predicted low, or very low, effect significance for both displacement and collision risk for species within the development site and no effect for habitat loss.

⁴ <https://www.pleanala.ie/en-ie/case/320089>

⁵ <https://www.eplanning.ie/GalwayCC/AppFileRefDetails/221175/0>

Clooncon East Single Turbine

The Environmental Report was reviewed on the Galway County Council Planning Register ⁶. No target species were discussed in this document. The Environmental Report concluded that the development ‘will have no long term negative impacts on the local environment provided that all mitigation measures are implemented.’

The planning file for amendments to this development⁷ were also reviewed on the Galway County Council Planning Register. Due to the nature of the amendments, an Environmental Impact Assessment Report was not required for this application. The Appropriate Assessment Screening Report was consulted. The screening report concluded that ‘the proposed amendments, individually or in combination with other plans or projects, will not have a significant effect on any European (Natura 2000) sites’.

Cloonlusk Wind Turbines

The planning file⁸ was reviewed on the Galway County Council Planning Register and a response to further information on flora and fauna was reviewed. The target species discussed in this document were meadow pipit, snipe (probable occasional occurrence), buzzard, peregrine falcon, kestrel, sparrowhawk (occasional occurrence) and red grouse (probable occurrence). No known records of roosting hen harrier were recorded for this site. The site was considered generally unsuitable for foraging winter populations of lapwing, golden plover, curlew, swans, geese or ducks. There were no known migration routes for whooper swan over the area. In addition, the predicted effects of the Cloonlusk turbines on avifauna was predicted to be minimal. It was concluded that peregrine falcon, long-eared owl, hen harrier, merlin, kestrel or sparrowhawk would not be expected to come into contact with the rotor blades.

Gannow Wind Farm

The proposed Gannow Wind Farm is at the pre-planning stage and therefore no planning application has been lodged and no impact assessment has been completed. The development is located in bog and farmland, with some areas of forestry. These habitats are likely to host many of the KORs recorded at the Proposed Wind Farm including golden plover, hen harrier, merlin, peregrine falcon, whooper swan, kestrel, lapwing, snipe, barn owl, buzzard and sparrowhawk, and long-eared owl may utilise forestry.

Laurclavagh Wind Farm

The EIAR⁹ was reviewed on the An Coimisiún Pleanála Register. The KORs discussed in this document were golden plover, hen harrier, peregrine falcon, whooper swan, black-headed gull, common gull, lesser black-backed gull, kestrel, lapwing, snipe, buzzard and sparrowhawk. The magnitude of the effect of direct habitat loss during construction was assessed as low for golden plover, hen harrier and black-headed gull (breeding), and as very low for peregrine falcon, whooper swan, black-headed gull (winter), common gull, lesser black-backed gull, kestrel, lapwing, snipe, buzzard and sparrowhawk. The magnitude of the effect of displacement and barrier effect during operation was assessed as low for golden plover, hen harrier, whooper swan and black-headed gull (breeding), and as very low for peregrine falcon, black-headed gull (winter), common gull, lesser black-backed gull, kestrel, lapwing, snipe, buzzard and sparrowhawk. Finally, the magnitude of the effect of collision risk during operation was assessed as low for golden plover, hen harrier, whooper swan, black-headed gull (breeding) and lesser black-backed gull, and as very low for peregrine falcon, black-headed gull (winter), common gull,

⁶ <https://www.eplanning.ie/GalwayCC/AppFileRefDetails/131139/0>

⁷ <https://www.eplanning.ie/GalwayCC/AppFileRefDetails/201617/0>

⁸ <https://www.eplanning.ie/GalwayCC/AppFileRefDetails/082407/0>

⁹ <https://www.pleanala.ie/en-ie/case/319307>

kestrel, lapwing, snipe, buzzard and sparrowhawk. It was concluded that the development would not have an adverse impact on any SPAs, either alone or in combination with other plans or projects.

Park Athenry Wind Turbine Wind farm

The planning file was reviewed on the Galway County Council Planning Register¹⁰. The existing Athenry Park Turbine is a 20kw domestic wind turbine and therefore an environmental assessment was not required. This turbine is in a garden adjacent to a house, this limits the potential for KOR species of the Proposed Project to occur at this location due to the habitat and proximity to a house. As such, this turbine is not considered further in the cumulative assessment.

Shancloon Wind Farm

The EIAR¹¹ was reviewed on the RWE document depository. The key receptors discussed in this document were black-headed gull, buzzard, common gull, cormorant, curlew, golden plover, great black-backed gull, Greenland white-fronted goose, greylag goose, hen harrier, herring gull, kestrel, kingfisher, lapwing, lesser black-backed gull, linnet, little egret, mallard, meadow pipit, merlin, mute swan, peregrine falcon, shoveler, skylark, snipe, sparrowhawk, swallow, teal, whimbrel, whooper swan, wigeon, willow warbler and woodcock. The magnitude of the effect of both direct and indirect habitat loss during construction was assessed as low for golden plover, greylag goose, mallard, merlin, mute swan, shoveler, snipe, sparrowhawk and teal, and very low for black-headed gull, buzzard, common gull, cormorant, curlew, great black-backed gull, Greenland white-fronted goose, hen harrier, herring gull, kestrel, kingfisher, lapwing, lesser black-backed gull, little egret, peregrine falcon, whooper swan, whimbrel, wigeon and woodcock. The magnitude of the effect of displacement and barrier effect during operation was assessed as low for buzzard, golden plover, greylag goose, little egret, mallard, shoveler and teal, and very low for black-headed gull, common gull, cormorant, curlew, great black-backed gull, Greenland white-fronted goose, hen harrier, herring gull, kestrel, kingfisher, lapwing, lesser black-backed gull, merlin, mute swan, peregrine falcon, snipe, sparrowhawk, whooper swan, whimbrel, wigeon and woodcock. Finally, the magnitude of the effect of collision risk during operation was assessed as low for lesser black-backed gull (local population), mallard, snipe (local population) and whimbrel, and very low for buzzard, cormorant, curlew, golden plover, great black-backed gull, herring gull, kestrel, lapwing, lesser black-backed gull (national population), snipe (national population), sparrowhawk and whooper swan. It was concluded that the development would not have an adverse impact on any SPAs, either alone or in combination with other plans or projects.

¹⁰ <https://www.eplanning.ie/GalwayCC/AppFileRefDetails/2374/0>

¹¹ <https://shancloonwindfarmsid.ie/>

7.7.3 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.

7.7.3.1 Golden Plover

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
County Scale (25km)	The Proposed Wind Farm site contains agricultural grassland and bog habitats which are suitable for foraging and roosting golden plover. Clonberne Wind Farm, Cloonascragh Single Turbine, Clooncon East Single Turbine, Cloonlusk Wind Turbines, Gannow Wind Farm, Laurclavagh Wind Farm and Shancloon Wind Farm are located within, or partially within, grassland and bog habitats. However, these habitats are not a scarce resource in the area. Agricultural grassland in particular (which is favoured by golden plover) is abundant locally and is one of the most abundant habitat types within the county. This abundance limits the potential for significant habitat loss effects to result on an individual project basis or cumulatively. Furthermore, not only the quantity of the habitat but also the quality is important. Improved agricultural grassland is typically considered of low ecological value and there is little conservation value within the areas of improved agricultural grassland. In the context of the abundance of grassland in East Galway significant cumulative habitat loss effect are highly unlikely. There is a low density of turbines within 25km of the Proposed Wind Farm site (43 proposed, permitted or existing), and extensive areas of suitable foraging and roosting habitat will remain in the surrounding area after construction of the wind farm. No significant cumulative effects are anticipated at the county, national or international scale.	The magnitude of the effect is assessed as low. The cross tabularisation of a high sensitivity species and low impact corresponds to a Low effect significance.	Likely long-term constant slight negative effect, which is not significant .

7.7.3.2 Hen Harrier

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
County Scale (25km)	The Proposed Wind Farm site contains agricultural grassland and bog habitats which are suitable for hunting hen harrier. Clonberne Wind Farm, Cloonascragh Single Turbine, Clooncon East Single Turbine, Cloonlusk Wind Turbines, Gannow Wind Farm, Laurclavagh Wind Farm Farm and Shancloon Wind Farm are located within, or partially within, grassland and bog habitats. However, these habitats are not a scarce resource in the area. Farmland in particular (which may be used by hunting hen harrier) is abundant locally and is one of the most abundant habitat types within the county. This abundance limits the potential for significant habitat loss effects to result on an individual project basis or cumulatively. There is a low density of turbines within 25km of the Proposed Wind Farm site (43 proposed, permitted or existing), and extensive areas of suitable hunting habitat will remain in the surrounding area after construction of the wind farm. No significant cumulative effects are anticipated at the county, national or international scale.	The magnitude of the effect is assessed as low. The cross tabularisation of a high sensitivity species and low impact corresponds to a Low effect significance.	Likely long-term constant slight negative effect, which is not significant .

7.7.3.3 Merlin

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
County Scale (25km)	The Proposed Wind Farm site contains agricultural grassland, bog and some woodland habitats which are suitable for hunting merlin. Clonberne Wind Farm, Cloonascragh Single Turbine, Clooncon East Single Turbine, Cloonlusk Wind Turbines, Gannow Wind Farm, Laurclavagh Wind Farm and Shancloon Wind Farm are located within, or partially within, grassland, bog and forestry habitats. However, these habitats are not a scarce resource in the area. Farmland in particular (which may be used by hunting merlin) is abundant locally and is one of the most abundant habitat types within the county. This	The magnitude of the effect is assessed as low. The cross tabularisation 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)
	abundance limits the potential for significant habitat loss effects to result on an individual project basis or cumulatively There is a low density of turbines within 25km of the Proposed Wind Farm site (43 proposed, permitted or existing), and extensive areas of suitable hunting habitat will remain in the surrounding area after construction of the wind farm. No significant cumulative effects are anticipated at the county, national or international scale.		

7.7.3.4 Peregrine Falcon

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
County Scale (25km)	The Proposed Wind Farm site contains agricultural grassland and bog habitats which are suitable for hunting peregrine falcon. Clonberne Wind Farm, Cloonascragh Single Turbine, Clooncon East Single Turbine, Cloonlusk Wind Turbines, Gannow Wind Farm, Laurclavagh Wind Farm and Shancloon Wind Farm are located within, or partially within, grassland and bog habitats. However, these habitats are not a scarce resource in the area. Grassland in farms is abundant locally and is one of the most abundant habitat types within the county. This abundance limits the potential for significant habitat loss effects to result on an individual project basis or cumulatively. There is a low density of turbines within 25km of the Proposed Wind Farm site (43 proposed, permitted or existing), and extensive areas of suitable hunting habitat will remain in the surrounding area after construction of the wind farm. No significant cumulative effects are anticipated at the county, national or international scale.	The magnitude of the effect is assessed as low. The cross tabularisation 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.

7.7.3.5 Whooper Swan

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
County Scale (25km)	The Proposed Wind Farm site contains agricultural grassland habitats which are suitable for foraging whooper swan. Clonberne Wind Farm, Clooncon East Single Turbine, Cloonlusk Wind Turbines, Gannow Wind Farm, Laurclavagh Wind Farm and Shancloon Wind Farm are located within, or partially within, grassland habitats. However, these habitats are not a scarce resource in the area. Agricultural grassland in particular (which is favoured by whooper swan) is abundant locally and is one of the most abundant habitat types within the county. This abundance limits the potential for significant habitat loss effects to result on an individual project basis or cumulatively. Furthermore, not only the quantity of the habitat but also the quality is important. Improved agricultural grassland is typically considered of low ecological value and there is little conservation value within the areas of improved agricultural grassland. In the context of the abundance of grassland in East Galway significant cumulative habitat loss effect are highly unlikely. There is a low density of turbines within 25km of the Proposed Wind Farm site (43 proposed, permitted or existing), and extensive areas of suitable foraging habitat will remain in the surrounding area after construction of the wind farm. No significant cumulative effects are anticipated at the county, national or international scale.	The magnitude of the effect is assessed as low. The cross tabularisation 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 .

7.7.3.6 Barn Owl

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Local Scale (5km)	No significant impacts on this species were identified, given there are no turbines within 5km of the proposed turbines at the Proposed Wind Farm site. Furthermore, no significant effects on sparrowhawk were reported for any of	The magnitude of the effect is assessed as negligible. The cross tabularisation of a low sensitivity species and negligible impact	Likely long-term constant not significant negative effect.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	the wind farms located within a 25km radius of the Proposed Wind Farm site. No significant cumulative effects are anticipated.	corresponds to a Very Low effect significance.	

7.7.3.7 Kestrel

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Local Scale (5km)	No significant impacts on this species were identified, given there are no turbines within 5km of the proposed turbines at the Proposed Wind Farm site. Furthermore, no significant effects on kestrel were reported for any of the wind farms located within a 25km radius of the Proposed Wind Farm site. No significant cumulative effects are anticipated at the county, national or international scale.	The magnitude of the effect is assessed as negligible. The cross tabularisation of a medium sensitivity species and negligible impact corresponds to a Very Low effect significance.	Likely long-term constant not significant negative effect.

7.7.3.8 Lapwing

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
County Scale (25km)	The Proposed Wind Farm site contains agricultural grassland and bog habitats which are suitable for foraging and roosting lapwing. Clonberne Wind Farm, Cloonascragh Single Turbine, Clooncon East Single Turbine, Cloonlusk Wind Turbines, Gannow Wind Farm, Laurclavagh Wind Farm and Shancloon Wind Farm are located within, or partially within, grassland and bog habitats. However, these habitats are not a scarce resource in the area. Agricultural grassland in particular (which is favoured by lapwing) is abundant locally and is one of the most abundant habitat types within the county. This abundance limits the potential for significant habitat loss effects to result on an individual project basis or cumulatively. Furthermore, not only the quantity of the habitat but also the quality is important. Improved agricultural grassland is typically considered of low ecological value and there is little conservation value within	The magnitude of the effect is assessed as low. The cross tabularisation of a high 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)
	the areas of improved agricultural grassland. In the context of the abundance of grassland in East Galway significant cumulative habitat loss effect are highly unlikely. There is a low density of turbines within 25km of the Proposed Wind Farm site (43 proposed, permitted or existing), and extensive areas of suitable foraging and roosting habitat will remain in the surrounding area after construction of the wind farm. No significant cumulative effects are anticipated at the county, national or international scale.		

7.7.3.9 Snipe

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
County Scale (25km)	The Proposed Wind Farm site contains bog habitats which are suitable for foraging and roosting snipe. Clonberne Wind Farm, Cloonascragh Single Turbine, Gannow Wind Farm and Shanclon Wind Farm are located within, or partially within bog habitats. However, these habitats are not a scarce resource in the area. There is a low density of turbines within 25km of the Proposed Wind Farm site (43 proposed, permitted or existing), and extensive areas of suitable foraging and roosting habitat will remain in the surrounding area after construction of the wind farm. No significant cumulative effects are anticipated at the county, national or international scale.	The magnitude of the effect is assessed as low. The cross tabularisation 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.

7.7.3.10 Buzzard

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Local Scale (5km)	No significant impacts on this species were identified, given there are no turbines within 5km of the proposed turbines at the Proposed Wind Farm site. Furthermore, no significant effects on buzzard were reported for any of the	The magnitude of the effect is assessed as negligible. The cross tabularisation of a low sensitivity	Likely long-term constant not significant negative effect.

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
	wind farms located within a 25km radius of the Proposed Wind Farm site. No significant cumulative effects are anticipated.	species and negligible impact corresponds to a Very Low effect significance.	

7.7.3.11 Long-eared Owl

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
Local Scale (5km)	No significant impacts on this species were identified, given there are no turbines within 5km of the proposed turbines at the Proposed Wind Farm site. Furthermore, no significant effects on long-eared owl were reported for any of the wind farms located within a 25km radius of the Proposed Wind Farm site. No significant cumulative effects are anticipated.	The magnitude of the effect is assessed as negligible. The cross tabularisation of a low sensitivity species and negligible impact corresponds to a Very Low effect significance.	Likely long-term constant not significant negative effect.

7.7.3.12 Sparrowhawk

Potential effects		Significance (Percival, 2003)	Significance (EPA, 2022)
Local Scale (5km)	No significant impacts on this species were identified, given there are no turbines within 5km of the proposed turbines at the Proposed Wind Farm site. Furthermore, no significant effects on sparrowhawk were reported for any of the wind farms located within a 25km radius of the Proposed Wind Farm site. No significant cumulative effects are anticipated.	The magnitude of the effect is assessed as negligible. The cross tabularisation of a low sensitivity species and negligible impact corresponds to a Very Low effect significance.	Likely long-term constant not significant negative effect.

7.8 Monitoring

7.8.1 Construction Phase

A Bird Monitoring Plan with the objective of monitoring the avian community at the Proposed Wind Farm site during construction works has been prepared. This is presented fully in Appendix 7-8. It includes for pre-commencement and construction monitoring to identify sensitive nests or roosts in proximity to the works.

7.8.2 Operational Phase

A Bird Monitoring Plan with the objective of monitoring the response of the avian community at the Proposed Wind Farm site to the operating turbines has been prepared. This is presented fully in Appendix 7-8. It includes for vantage point surveys, barn owl nest box visits and collision monitoring surveys.

7.8.3 Decommissioning Phase

A Bird Monitoring Plan with the objective of monitoring the avian community at the Proposed Wind Farm site during decommissioning works has been prepared. This is presented fully in Appendix 7-8. 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: Data relevant to biodiversity and ecosystems, including conservation needs, is widely accessible and standardised.

7.9 Conclusion

Following consideration of the residual effects (post-mitigation), it is concluded that the Proposed Wind Farm 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 Wind Farm is constructed, operated and decommissioned in accordance with the design, best practice mitigation measures and Bird Mitigation Plan that are described within this application, significant individual or cumulative effects on the identified KORs are not anticipated.