

7. BIRDS

7.1 Introduction

This chapter assesses the likely significant impacts 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 potential impacts on avian receptors are identified, mitigation is described and the residual effects are assessed.

As detailed in Section 1.4 in Chapter 1, for the purposes of this EIAR, the various project components are described and assessed using the following references: 'Proposed Wind Farm', 'Proposed Grid Connection' and 'Proposed Project'.

- The 'Proposed Wind Farm' refers to the 8 no. turbines and supporting infrastructure which is the subject of this Section 37E application.
- The 'Proposed Grid Connection' refers to the 110kV substation and supporting infrastructure which will be the subject of a separate Section 182A application.
- The 'Proposed Project' comprises the Proposed Wind Farm and the Proposed Grid Connection, all of which are located within the EIAR Study Boundary (the 'Site') and assessed together within this EIAR.

This chapter is supported by Technical Appendices 7-1 to 7-7. Technical Appendix 7-2 which contain data from the surveys undertaken including full details of the survey times, weather conditions, and other relevant information together with the bird records themselves. Confidential Appendix 7-5 contains sensitive records of protected species breeding sites. Appendix 7-6 contains the Collision Risk Assessment (CRA) document which illustrates how the Collision Risk Modelling was undertaken for the Application Site. Appendix 7-7 contains the proposed Bird Monitoring Programme. The Proposed Wind Farm and survey radii are provided in Figures 7-1 to 7-6.

This chapter is structured as follows:

- The Introduction provides a description of the Proposed Project and the relevant legislation, guidance and policy context.
- The Assessment Approach and Methodology section is a comprehensive description of the ornithological surveys and impact assessment methodology used to inform a robust assessment of potential impacts of the Proposed Project on birds.
- The Baseline Ornithological Conditions section describes the existing bird population at the Proposed Wind Farm.
- The Receptor Evaluation section identifies key ornithological receptors and determines their sensitivity.
- The Potential Impacts section details the impact assessment (including direct habitat loss, disturbance/displacement and collision risk). Impacts are described with regard to each phase of the Proposed Project: construction, operation and decommissioning.
- The Mitigation and Best Practice Measures section describes proposed mitigation and best practice measures to ameliorate the identified impacts.
- The Monitoring section outlines a schedule for monitoring birds during each phase of the Proposed Project if planning permission is granted: Pre-construction and construction, operation and decommissioning.
- The Residual Effects section considers the implications of the proposed mitigation, best practice, enhancement measures and monitoring.
- Finally, the Cumulative Effects section fully assesses potential cumulative effects of the Proposed Project in combination with other projects and/or plans.
- The Conclusion provides a summary statement on the overall significance of predicted effects on birds.

The following other definitions are used in this chapter:

- The “Zone of Influence” (ZOI) for individual ornithological receptors refers to the area within which potential effects are anticipated. ZOIs differ depending on the sensitivities of particular species and were assigned in accordance with best available guidance (SNH, 2016 and McGuinness *et al.*, 2015), adopting a precautionary approach.
- “Key Ornithological Receptor” (KOR) is defined as a species occurring within the zone of influence of the Proposed Wind Farm upon which potential impacts are anticipated and assessed.

7.1.1 Description of the Proposed Project

A full description of the Proposed Project is provided in Chapter 4 of this EIAR. In brief, the applicant is seeking a 30-year planning permission for the Proposed Wind Farm, consisting of eight turbines and associated infrastructure. The proposed turbines will be 103.5m at hub height, with 3 blades of a rotor diameter of 163m, and an overall ground to tip height of 185m. The Proposed Wind Farm will have an operation life of 30 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 (formerly Scottish Natural Heritage [SNH]) 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>

The following Irish guidance documents were also consulted:

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

Furthermore, this assessment has been prepared with respect to the various planning policies and strategy guidance documents listed below and as detailed in Section 1.1.1 in Chapter 1 of this EIAR:

- EPA (2022). Guidelines on the information to be contained in Environmental Impact Statement reports. Environmental Protection Agency, Johnstown Castle Estate, Wexford.
- European Commission (2020). Guidance document on wind energy developments and EU nature legislation. Publications Office of the European Union, Luxembourg.
- European Commission (2002). Assessment of plans and projects significantly affecting Natura 2000 sites. 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.
- DoHPLG (2018). Guidelines for planning authorities and An Bord Pleanála on carrying out Environmental Impact Assessment. Department of Housing, Planning and Local Government, Government of Ireland, Dublin.
- Galway County Council (2022), Galway County Development Plan 2022-2028

Statement of Authority and Competence

This ornithology chapter has been prepared by Kathryn Sheridan (M.Sc., B.Sc.), Project Ornithologist of MKO and reviewed by Patrick Manley (B.Sc.), Senior Ornithologist. Kathryn holds an MSc in Wildlife Conservation and Management. She has over three years' experience in ecological consultancy and has worked on wind farm projects, residential developments, county council projects and conservation projects. Patrick holds a BSc in Geology. He has over seven years' experience in designing, executing and project management of ornithological assessment in the renewables sector. Both are suitably qualified ornithologists with experience in completing avifaunal assessments and competent experts for the purposes of the preparation of this EIAR.

The scope of works and survey methodology was devised by Padraig Cregg, Principal Ornithologist of MKO, and is fully compliant with recent NatureScot (formerly Scottish Natural Heritage) guidance (SNH, 2017). Padraig holds a MSc in Ecology. He has over 11 years' experience in environmental consultancy, and experience taking projects through their full lifecycle - from site selection through survey design, constraints studies, impact assessment and lodgement of the planning application. Field surveys were undertaken by Eilis Hogan, John Curtin, Jen Fisher, Jonah Gaine, Jack Kennedy, Louis de Vries, Marcus Hogan, Margeaux Pierrel, Nessa Lee, Peter Capsey, Patrick Manley, Paul Troake, Sarah Jorgensen, Tom Rea, Zuzana Erosova and Zak O'Connor. All surveyors are suitably qualified competent experts in the field of ornithological surveying.

7.2 Assessment Approach and Methodology

7.2.1 Desk Study

A comprehensive desk study was undertaken to search for any relevant information on species of conservation concern that may use the Proposed Wind Farm and its wider surroundings. The assessment included a thorough review of the available ornithological data including:

- Designated sites within the likely ZOI of the Proposed Project.
- Review of online web-mappers¹: National Parks and Wildlife Service (NPWS), National Biodiversity Data Centre (NBDC), Irish Wetland Bird Survey I-WeBS.
- Review of Bird Atlases: (Sharrock, 1976; Lack, 1986; Gibbons *et al.*, 1993; Balmer *et al.*, 2013).
- Review of Birds of Conservation Concern (BoCCI) in Ireland 2020 – 2026 (Gilbert *et al.*, 2021).
- Review of specially requested records from the National Parks and Wildlife Service (NPWS) Rare and Protected Species Database.

A desk study of the Proposed Grid Connection infrastructure is detailed within Chapter 6, Section 6.3.1 of this EIAR, and has been utilised within this assessment in Section 7.5.4.

7.2.2 Consultation

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

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

Table 7-1 Consultation responses

	Consultee	Response
01	An Taisce	Acknowledgement received 25 th May 2023
02	BirdWatch Ireland	No response to date
03	Department of Agriculture, Food and the Marine	Acknowledgement received 23 rd June 2023
04	Development Applications Unit (NPWS/NMS)	Acknowledgement received 30 th June 2023
05	Irish Peatland Conservation Council	No response to date
06	Irish Red Grouse Association	No response to date
07	Irish Raptor Study Group	No response to date
08	Irish Wildlife Trust	Acknowledgement received 25 th May 2023

¹ Accessed on 24th November 2023

7.2.3 Identification of Target Species and Key Ornithological Receptors

Following a comprehensive desk study, initial site visits and consultation, a list of “target species” likely to occur in the ZOI of the Proposed Wind Farm was compiled. Bird surveys conducted at the Proposed Wind Farm site and its wider surroundings were then specifically designed to survey for these target species, in accordance with SNH (2017). The target species list was drawn from:

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

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

7.2.4 Field Surveys

Field surveys were undertaken during the survey period April 2020 to March 2022 and from April 2023 to September 2023, consisting of three breeding seasons (April – September) and two non-breeding seasons (October – March). Based on the results of the desk study, consultation and reconnaissance site visits described in the previous sections (Section 7.2.1 to 7.2.3), the assemblage of bird species in the Proposed Wind Farm site and the likely importance of the Proposed Wind Farm site for these species was ascertained. Then, adopting a precautionary approach, a site-specific scope for ornithological surveys was devised. The data provided in the field surveys is robust and allows clear, precise and definitive conclusions to be made on the avian receptors identified within the site of the Proposed Wind Farm.

The survey work that was undertaken from April 2020 to March 2022 and from April 2023 to September 2023 forms the core dataset for the assessment of impacts on ornithology. In the absence of specific national bird survey guidelines, the ornithological surveys were designed and undertaken in full accordance with the guidance document ‘*Recommended bird survey methods to inform impact assessment of onshore wind farms*’ (SNH, 2017). The various ornithological surveys undertaken at the Proposed Wind Farm and hinterland are described in detail below. The Proposed Grid Connection underground cabling route was surveyed as part of a multidisciplinary walkover (details in Chapter 6 of this EIAR).

Field surveys, including a multidisciplinary walkover of the Proposed Grid Connection infrastructure is detailed within Chapter 6, Section 6.3.1 of this EIAR, and has been utilised within this assessment in Section 7.5.4.

7.2.4.1.1 Vantage Point Surveys

Vantage point (VP) surveys were undertaken in accordance with SNH (2017) to monitor flight activity within the Proposed Wind Farm and to a 500m radius of the proposed turbine locations. Surveys were conducted monthly from two fixed point vantage points to allow as comprehensive as possible coverage of the 500m survey radius surrounding the proposed turbines (Figure 7-1). 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 entirely covered.

Viewshed Analysis

Viewshed analysis was carried out to inform coverage of the Proposed Wind Farm site from the fixed vantage point location. A 500m buffer was applied to the outermost potential turbines, in line with SNH (2017). Viewsheds were calculated using Resoft Wind Farm ZTV (Zone of Theoretical Visibility) software in combination with QGIS (Version 3.22) using a notional layer suspended at 20m. Note that while the relevance of being able to view as much of the site to ground level is acknowledged, the NatureScot guidance emphasises the importance of visibility of the ‘collision risk volume’ when the data is to be used to estimate the risk of collision with turbines by birds. Therefore, the viewshed analysis aims to identify the most suitable locations to site vantage points such that the airspace of the turbine rotor swept area is in view using the fewest possible number of vantage points.

The viewshed analysis involved tested each VP location for its visibility coverage by creating a viewshed point 1.75m in height (to represent the height of observer) on a map using 10m contours terrain data. The relative height of any surrounding trees and its effects on visibility is also accounted for in the analysis. The visible viewshed is presented in Figure 7-1a.

Data Recording and Digitisation

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 from April to September (breeding season) and October to March (winter season) inclusive, and were scheduled to provide a minimum of 36 hours per winter or breeding season and spread over the full daylight period, including dawn and dusk watches, to coincide with the highest periods of bird activity (Table 7-2).

Table 7-2 Vantage point survey watch duration

Survey Season and Number of Vantage Points (VPs)	Effort per Vantage Point (VP)
Breeding Season 2020 (2 VPs)	36 hours per VP
Winter Season 2020/2021 (2 VPs)	36 hours per VP
Breeding Season 2021 (2 VPs)	36 hours per VP
Winter Season 2021/2022 (2 VPs)	36 hours per VP
Breeding Season 2023 (2 VPs)	36 hours per VP

Flight activity of target species was mapped and recorded as per defined flight bands which were chosen in relation to the dimensions of potential turbine models for the Site. Bands were split into 0-15m, 15-25m, 25-200m and >200m. All flight activity within height bands 15-25m and 25-200m is considered to be within the Potential Collision Height (PCH) with regard to the turbine swept area. In addition, the presence of any non-target species was recorded to inform the evaluation of supporting habitat. The survey effort is presented in Appendix 7-2, including full details of dates, times and weather conditions.

7.2.4.1.2 Winter Walkover Surveys

Winter walkover surveys were undertaken to record the presence of bird species within the Proposed Wind Farm site and to a 500m radius, including areas between vantage point locations. The methodology was broadly based on methods described in Bibby *et al.* (2000) and adapted Brown and Shepherd surveys’ (SNH, 2017). 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 2020/2021 and four visits in winter 2021/2022). Survey effort is presented in

Appendix 7-2, including full details of dates, times and weather conditions for each survey. Figure 7-2 shows the survey area.

7.2.4.1.3 Breeding Walkover Surveys

Breeding walkover surveys were undertaken to determine possible, probable or confirmed breeding bird activity within the Proposed Wind Farm site and to a 500m radius. The methodology was based on Brown and Shepherd (1993) and Calladine *et al.* (2009), combined with Common Bird Census methods (British Trust for Ornithology, 2021) for dense habitat. 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 codes². In addition, the presence of any non-target species was recorded to inform the evaluation of supporting habitat.

Breeding walkover surveys were conducted during daylight hours over four visits during the core breeding season months April to July (2020, 2021 and 2023). Survey effort is presented in Appendix 7-2, including full details of dates, times and weather conditions for each survey. Figure 7-3 shows the survey area.

7.2.4.1.4 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 (3 hours) were conducted during daylight at four breeding raptor locations. 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. Survey effort is presented in Appendix 7-2, including full details of dates, times and weather conditions. Figure 7-4 shows the breeding raptor locations.

7.2.4.1.5 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 8km of the Proposed Wind Farm site were surveyed for waterbirds during the 2020/2021 and 2021/2022 winter and passage seasons (August to May inclusive) to provide information on their distribution in relation to the Proposed Wind Farm. 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, is presented in Appendix 7-2. Figure 7-5 shows the surveyed area.

7.2.4.1.6 Hen Harrier Roost Surveys

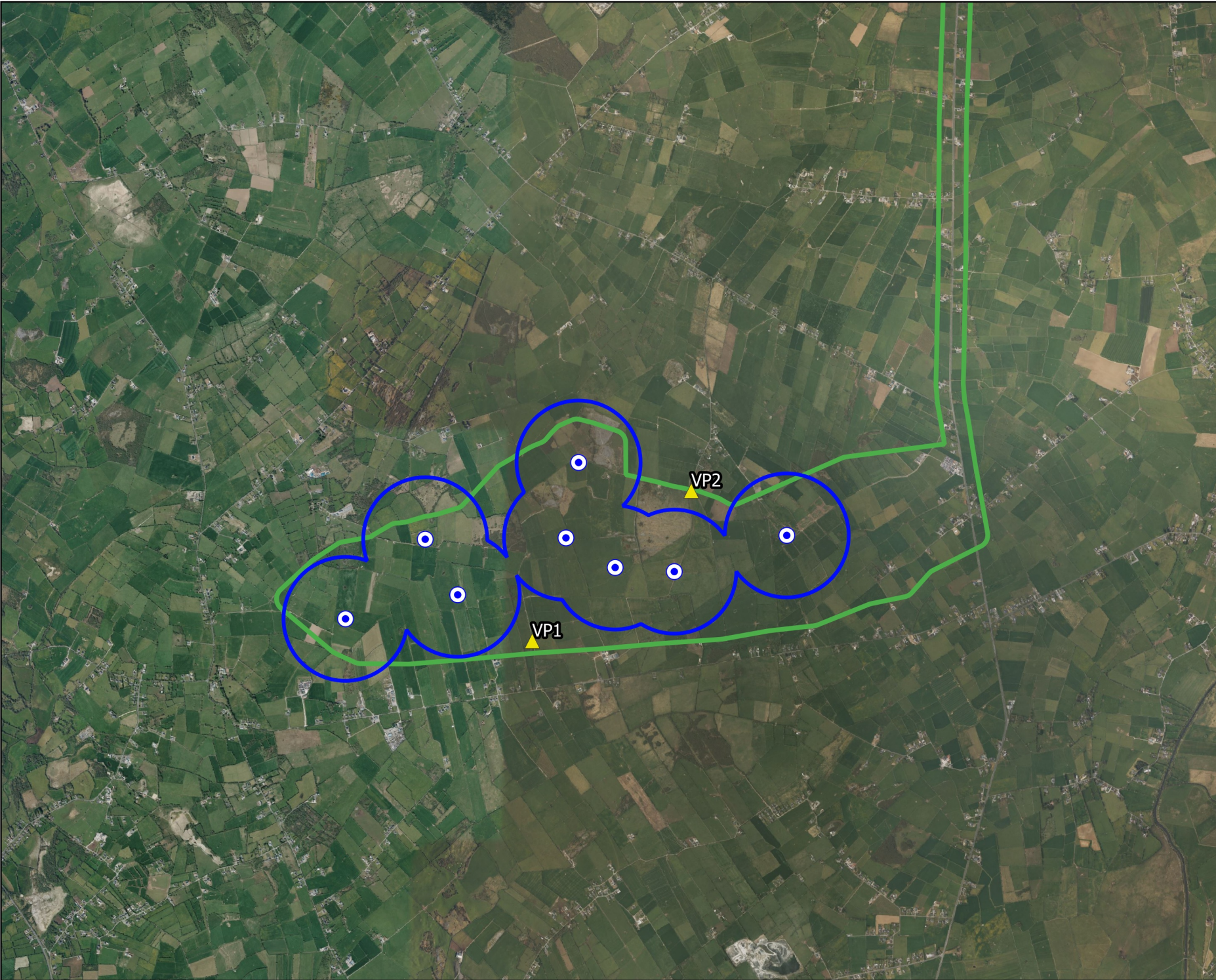
² <https://www.bto.org/our-science/projects/birdatlas/methods/breeding-evidence>

Hen harrier roost surveys were undertaken within areas of suitable roosting habitat at 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 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 2020/2021 and 2021/2022). Survey effort is presented in Appendix 7-2, including full details of dates, times and weather conditions. Figure 7-6 shows the hen harrier vantage point locations.

7.2.4.1.7 **Multidisciplinary Walkover Survey**

The Proposed Grid Connection route options were surveyed in August 2023 through a multidisciplinary walkover survey. The site was systematically walked, while the surveyor recorded a range of protected species, including birds. Further details on this survey are available in the Biodiversity Chapter (Chapter 6 of this EIAR).



Map Legend

-  EIAR Site Boundary
-  Proposed Turbine Locations
-  500m Radius of Turbines
-  Vantage Point Locations



Microsoft product screen shots reprinted with permission from Microsoft Corporation

Drawing Title:
Vantage Point Locations

Project Title:
Laurclavagh Renewable Energy Development

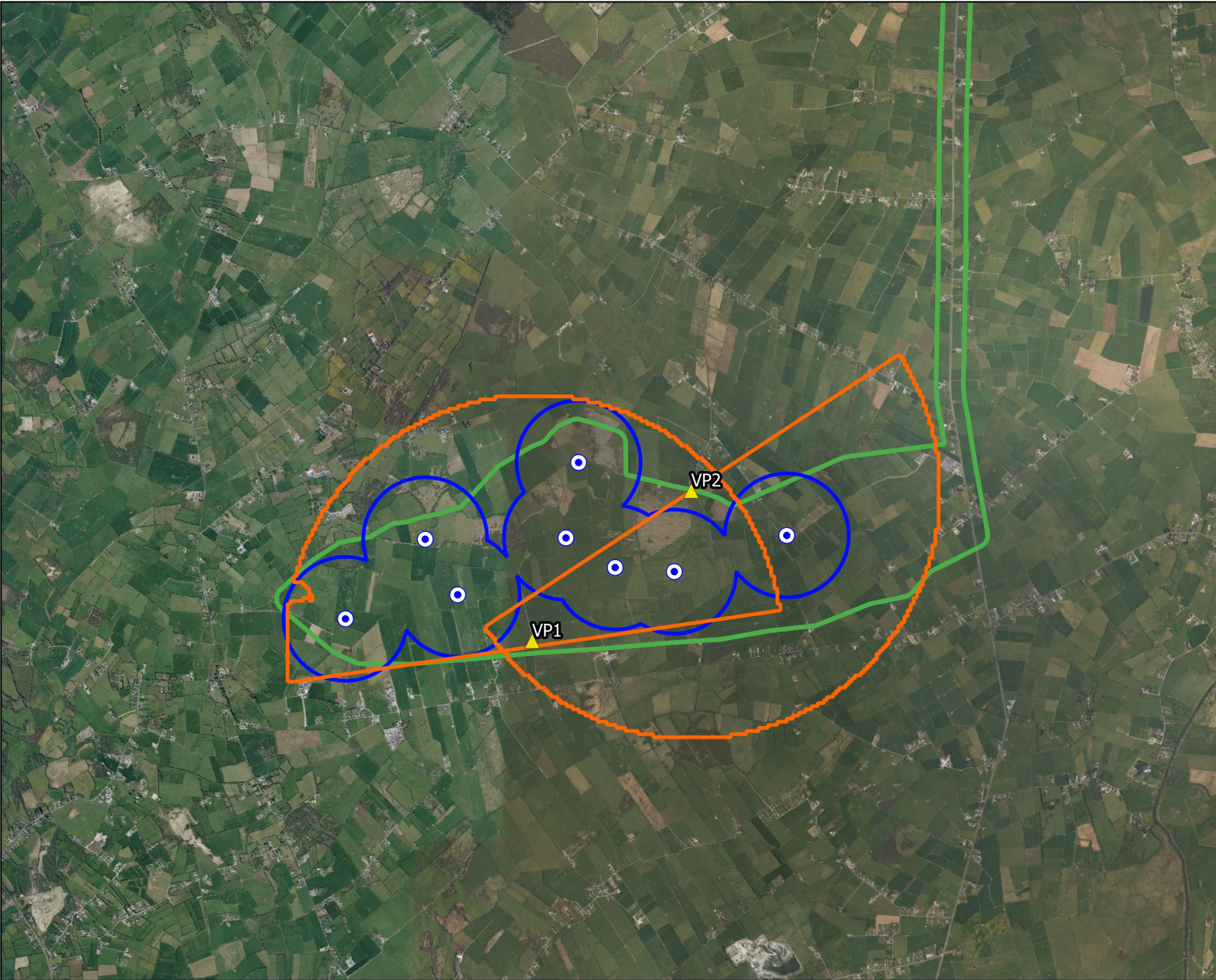
Drawn By: KS	Checked By: PM
------------------------	--------------------------

Project No.: 210627	Drawing No.: 7-1
-------------------------------	----------------------------

Scale: 1:40000	Date: 09.11.2023
--------------------------	----------------------------



MKO
 Planning and
 Environmental
 Consultants
 Tuam Road, Galway
 Ireland, H91 VW84
 +353 (0) 91 735611
 email: info@mkofireland.ie
 Website: www.mkofireland.ie



Map Legend

- EIAR Site Boundary
- Proposed Turbine Locations
- 500m Radius of Turbines
- Vantage Point Locations
- Viewshed



Microsoft product screen shots reprinted with permission from Microsoft Corporation

Drawing Title
Viewshed Coverage at 20m

Project Title
Laurclavagh Renewable Energy Development

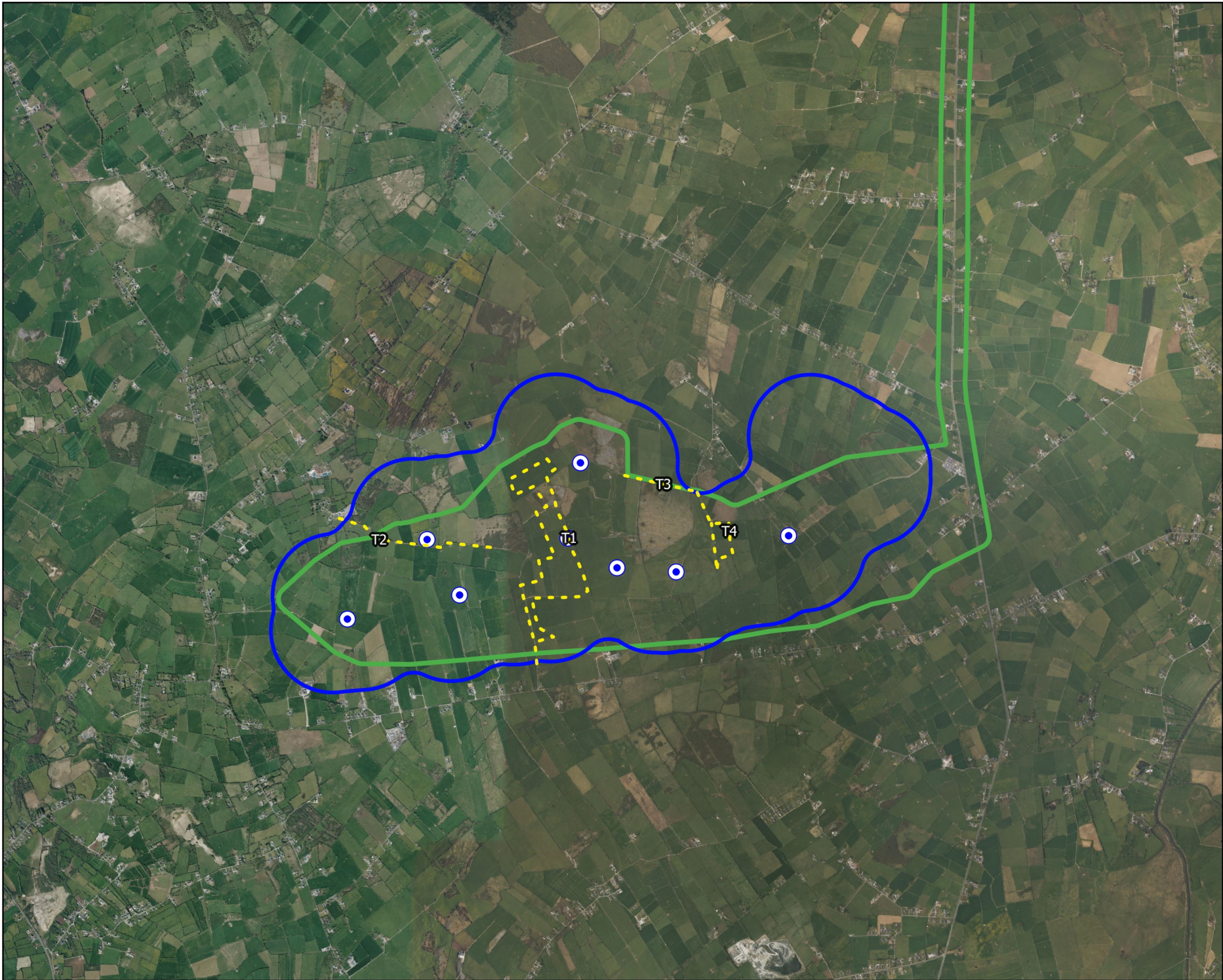
Drawn By KS	Checked By PM
-----------------------	-------------------------

Project No. 210627	Drawing No. 7-1a
------------------------------	----------------------------





Scale 1:40,000	Date 09.11.2023
--------------------------	---------------------------

MKO
Planning and
Environmental
Consultants

Tuam Road, Galway
Ireland, H91 VV84
+353 (0) 91 735611
email: info@mkofireland.ie
Website: ww.mkofireland.ie



Map Legend

-  EIAR Site Boundary
-  Proposed Turbine Locations
-  500m Survey Area
-  Walkover Transects



Microsoft product screen shots reprinted with permission from Microsoft Corporation

Drawing Title:

Winter Walkover Survey

Project Title:

Laurclavagh Renewable Energy Development

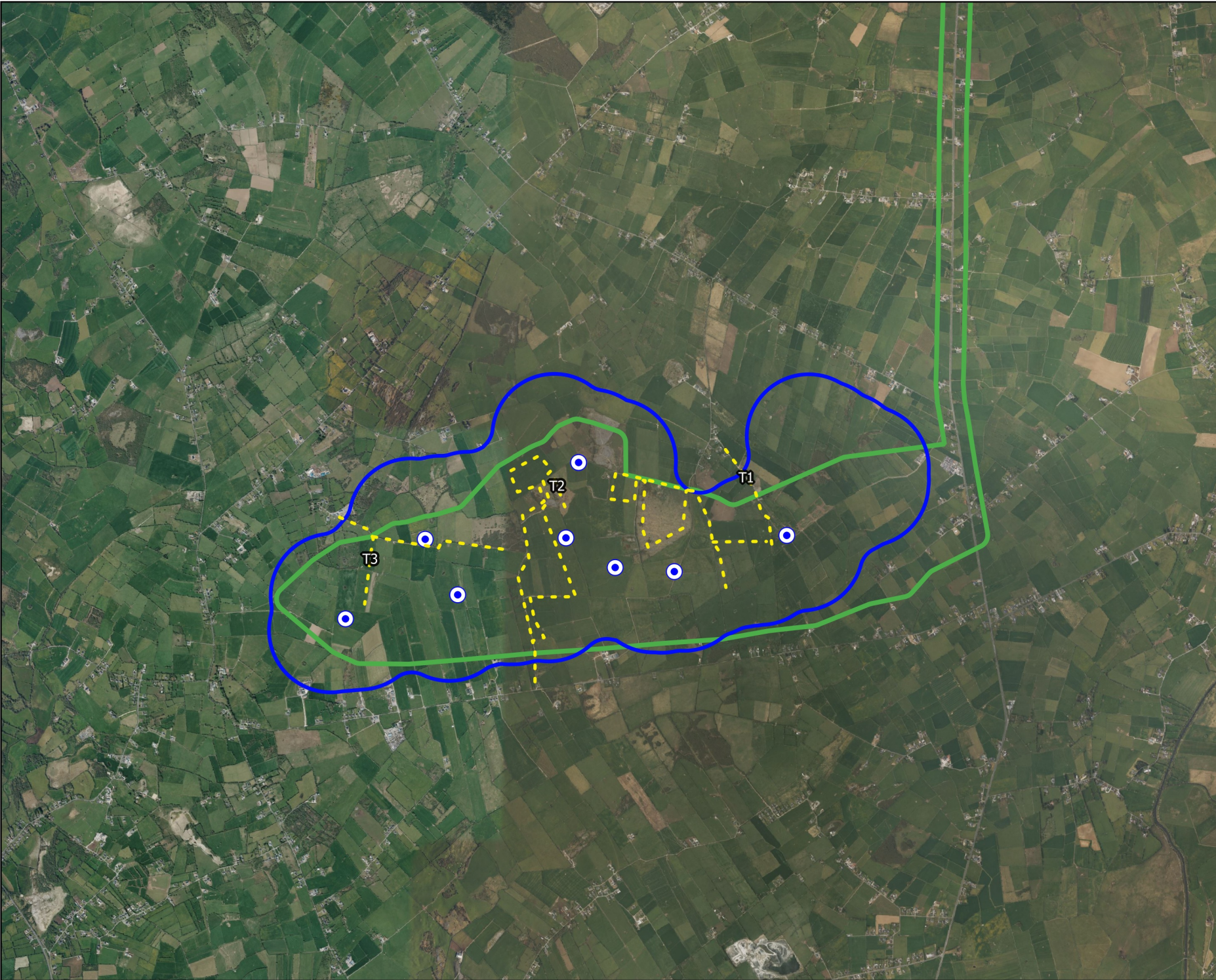
Drawn By	Checked By
KS	PM

Project No.	Drawing No.
210627	7-2





Scale	Date
1:40000	09.11.2023



MKO
 Planning and
 Environmental
 Consultants
 Tuam Road, Galway
 Ireland, H91 VW84
 +353 (0) 91 735611
 email: info@mkofireland.ie
 Website: www.mkofireland.ie



Map Legend

-  EIAR Site Boundary
-  Proposed Turbine Locations
-  500m Survey Area
-  Walkover Transects



Microsoft product screen shots reprinted with permission from Microsoft Corporation

Drawing Title:

Breeding Walkover Survey

Project Title:

Laurclavagh Renewable Energy Development

Drawn By: KS Checked By: PM

Project No.: 210627 Drawing No.: 7-3





Scale: 1:40000 Date: 09.11.2023



MKO
 Planning and Environmental Consultants
 Tuam Road, Galway
 Ireland, H91 VW84
 +353 (0) 91 735611
 email: info@mkofireland.ie
 Website: www.mkofireland.ie



Map Legend

-  EIA Site Boundary
-  Proposed Turbine Locations
-  2km Survey Area
-  BRVP Locations



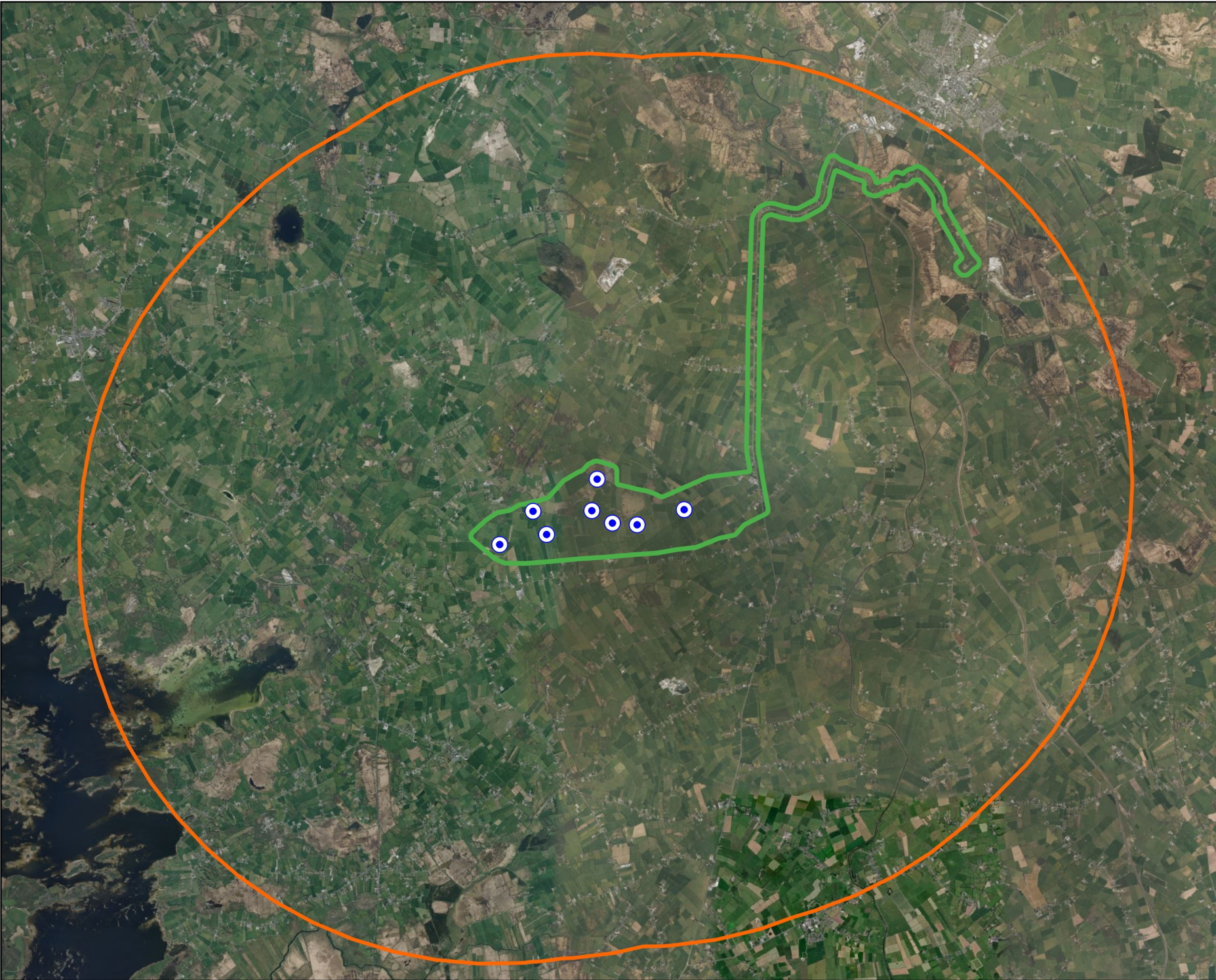
Microsoft product screen shots reprinted with permission from Microsoft Corporation

Drawing Title:
Breeding Raptor Survey




Project Title:
Laurclavagh Renewable Energy Development

Drawn By: KS	Checked By: PM
Project No.: 210627	Drawing No.: 7-4
Scale: 1:40000	Date: 09.11.2023

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email: info@mkofireland.ie
Website: www.mkofireland.ie



Map Legend

-  EIAR Site Boundary
-  Proposed Turbine Locations
-  8km Survey Area



Drawing Title:
Waterbird Distribution and Abundance Survey

Project Title:
Laurclavagh Renewable Energy Development

Drawn By	Checked By
KS	PM

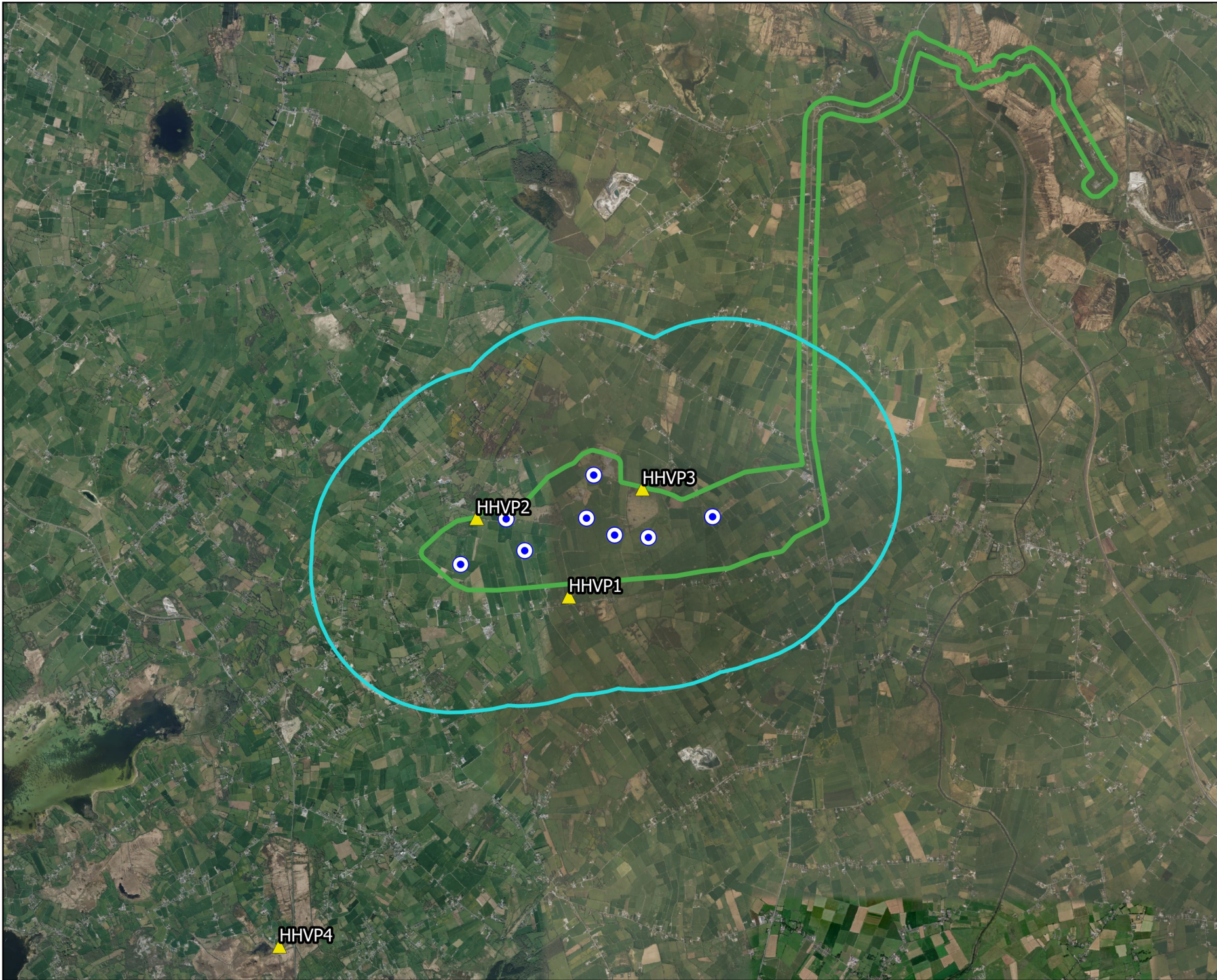
Project No.	Drawing No.
210627	7-5

Scale	Date
1:95700	09.11.2023







MKO
 Planning and Environmental Consultants
 Tuam Road, Galway
 Ireland, H91 VV84
 +353 (0) 91 735611
 email: info@mkofireland.ie
 Website: www.mkofireland.ie

Microsoft product screen shots reprinted with permission from Microsoft Corporation



Map Legend

-  EIAR Site Boundary
-  Proposed Turbine Locations
-  2km Survey Area
-  HHVP Locations



Drawing Title:

Hen Harrier Roost Survey

Project Title:

Laurclavagh Renewable Energy Development

Drawn By	Checked By
KS	PM
Project No.	Drawing No.
210627	7-6
Scale	Date
1:70000	09.11.2023



MKO
 Planning and
 Environmental
 Consultants
 Tuam Road, Galway
 Ireland, H91 VV84
 +353 (0) 91 735611
 email: info@mkofireland.ie
 Website: www.mkofireland.ie

Microsoft product screen shots reprinted with permission from Microsoft Corporation

7.2.5 Receptor Evaluation and Impact Assessment

7.2.5.1 Potential Impacts Associated with Proposed Project

As per SNH Guidance (2017), wind farms present three potential risks to birds (Drewitt and Langston 2006, 2008; *Band et al.*, 2007):

- **Direct habitat loss** through the construction of 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 flight activity within and surrounding the Proposed Wind Farm has been used to predict potential impacts of the Proposed Project on birds. These impacts are also assessed cumulatively with other projects. The geographical framework and description of impacts are described below.

7.2.5.2 Geographical Framework

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

7.2.5.3 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 impacts. EPA impact assessment criteria has been used for consistency between the Biodiversity and Ornithology chapters of this EIAR, while Percival (2003) has also been followed given its specific focus on birds.

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
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

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

EPA (2022) Criteria

EPA 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. Further details are available in the Chapter 1, Section 1.7.2 of this EIAR.

7.2.5.4 Collision Risk Assessment

Collision risk is calculated using a mathematical model to predict the number of individual birds of a particular species that may be killed by collision with moving wind turbine rotor blades. The modelling method used in this collision risk calculation follows the Band Model (Band *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.

7.2.6 Assessment Justification

7.2.6.1 Survey Data

A comprehensive suite of bird surveys was undertaken for the Proposed Project from April 2020 to March 2022 and from April 2023 to September 2023. Results derived from a continuous two years and one additional breeding season of surveying at the Proposed Wind Farm site and hinterland, undertaken in line with NatureScot guidance, are analysed to inform this assessment. As such, the surveys undertaken provide the information necessary to allow a complete, comprehensive and robust assessment of the potential impacts of the Proposed Project on avian receptors.

7.2.6.2 Mitigation

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

7.2.6.3 Limitations

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

7.3 Baseline Ornithological Conditions

7.3.1 Designated Sites within the Likely ZOI of the Development

A screening assessment and Natura Impact Statement (NIS) were prepared to provide the competent authority with the information necessary to complete an Appropriate Assessment for the Proposed Project in compliance with Article 6(3) of the EU Habitats Directive (92/43/EEC). According to EPA (2022) “A biodiversity section of an EIAR ... should not repeat the detailed assessment of potential effects on European sites contained in documentation prepared as part of the Appropriate Assessment process, but it should refer to the findings of that separate assessment”. Therefore, this section provides a summary of the key findings regarding SPAs and nationally designated sites. For a detailed assessment of any potential impacts on SPAs, refer to the Appropriate Assessment and NIS associated with Chapter 6 of this EIAR.

Sites designated for nature conservation within the potential ZOI of the Proposed Project were identified using GIS software. The ZOI is derived utilising a precautionary approach. Initially, sites within a 15km radius of the proposed works are identified. Then designated sites located outside the 15km buffer zone are accounted for and assessed for pathways for impacts. In this case, the potential for direct or indirect impacts for species listed as SCIs of Lough Corrib SPA (located 3.9km from the Proposed Project) was identified.

In addition (and in the absence of any specific European or Irish guidance), the guidance document ‘Assessing Connectivity with Special Protection Areas’ (SNH, 2016) was consulted. This document provides guidance on identifying of connectivity between the Proposed Project and SPAs. It considers the distances some species may travel beyond the boundary of their SPAs and outlines dispersal and foraging ranges. Potential effects on wetlands and supporting habitats associated with SPAs and potential indirect pathways in the form of surface water pollution are considered in the Appropriate Assessment and NIS and summarised below.

One SPA was located within 15km of the EIAR Site Boundary of the Proposed Wind Farm site. The SPAs are listed and summarised in Table 7-6. Apart from sites which are encompassed by these SPAs, no other nationally designated sites of ornithological significance occur within the potential ZOI.

Table 7-6 Designated sites in the Zone of Influence

Site Name	Distance from proposed works	Special Conservation Interests for which the site has been designated	Conservation Objectives	Zone of Influence Determination and Identification of Pathways for Effect
Special Protection Area				
Lough Corrib SPA	3.9km from the Proposed Wind Farm Site	<ul style="list-style-type: none"> > Gadwall (<i>Anas strepera</i>) [A051] > Shoveler (<i>Anas clypeata</i>) [A056] > Pochard (<i>Aythya ferina</i>) [A059] > Tufted Duck (<i>Aythya fuligula</i>) [A061] > Common Scoter (<i>Melanitta nigra</i>) [A065] > Hen Harrier (<i>Circus cyaneus</i>) [A082] > Coot (<i>Fulica atra</i>) [A125] > Golden Plover (<i>Pluvialis apricaria</i>) [A140] > Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] > Common Gull (<i>Larus canus</i>) [A182] > Common Tern (<i>Sterna hirundo</i>) [A193] > Arctic Tern (<i>Sterna paradisaea</i>) [A194] > Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395] 	Detailed conservation objectives for this site (Version 1, January 2023) were reviewed as part of the assessment and are available at www.npws.ie	This SPA is within the Likely Zone of Impact and further assessment will be provided in the NIS.

Site Name	Distance from proposed works	Special Conservation Interests for which the site has been designated	Conservation Objectives	Zone of Influence Determination and Identification of Pathways for Effect
Special Protection Area				
Inner Galway Bay SPA	17.5km from the Proposed Wind Farm Site	<ul style="list-style-type: none"> > Black-throated Diver (<i>Gavia arctica</i>) [A002] > Great Northern Diver (<i>Gavia immer</i>) [A003] > Cormorant (<i>Phalacrocorax carbo</i>) [A017] > Grey Heron (<i>Ardea cinerea</i>) [A028] > Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] > Wigeon (<i>Anas penelope</i>) [A050] > Teal (<i>Anas crecca</i>) [A052] > Red-breasted Merganser (<i>Mergus serrator</i>) [A069] > Ringed Plover (<i>Charadrius hiaticula</i>) [A137] > Golden Plover (<i>Pluvialis apricaria</i>) [A140] > Lapwing (<i>Vanellus vanellus</i>) [A142] > Dunlin (<i>Calidris alpina</i>) [A149] > Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] > Curlew (<i>Numenius arquata</i>) [A160] > Redshank (<i>Tringa totanus</i>) [A162] 	Detailed conservation objectives for this site (Version 1, May 2013) were reviewed as part of the assessment and are available at www.npws.ie	This site is not within the Likely Zone of Impact and no further assessment is required.

Site Name	Distance from proposed works	Special Conservation Interests for which the site has been designated	Conservation Objectives	Zone of Influence Determination and Identification of Pathways for Effect
Special Protection Area				
		<ul style="list-style-type: none"> > Turnstone (<i>Arenaria interpres</i>) [A169] > Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] > Common Gull (<i>Larus canus</i>) [A182] > Sandwich Tern (<i>Sterna sandvicensis</i>) [A191] > Common Tern (<i>Sterna hirundo</i>) [A193] 		
Lough Mask SPA	26.5km from the Proposed Wind Farm Site	<ul style="list-style-type: none"> > Tufted Duck (<i>Aythya fuligula</i>) [A061] > Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] > Common Gull (<i>Larus canus</i>) [A182] > Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183] > Common Tern (<i>Sterna hirundo</i>) [A193] > Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395] 	<p>This site has the conservation objective:</p> <p>“To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA”</p> <p>This site also has a second conservation objective:</p> <p>“To maintain or restore the favourable conservation condition of the wetland habitat at Lough Mask SPA as a resource for the regularly-</p>	This site is not within the Likely Zone of Impact and no further assessment is required.



Site Name	Distance from proposed works	Special Conservation Interests for which the site has been designated	Conservation Objectives	Zone of Influence Determination and Identification of Pathways for Effect
Special Protection Area				
			occurring migratory waterbirds that utilise it.” (NPWS, Version 1, 2022)	

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 M34, while the Proposed Grid Connection underground cabling route lies within hectads M44 and M45. Table 7-7 and Table 7-8 present a list of species of conservation interest recorded from the relevant hectads, with regard to breeding and wintering respectively.

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

Species Name	Breeding Atlas 1968-1972			Breeding Atlas 1988-1991			Breeding Atlas 2007-2011		
	M34	M44	M45	M34	M44	M45	M34	M44	M45
Barn Owl	Poss	Poss	-	-	Seen	Seen	-	Poss	Prob
Common Tern	Prob	-	-	-	-	-	-	-	-
Corncrake	Poss	Conf	Conf	-	-	Seen	-	-	-
Curlew	Prob	Conf	Conf	-	Seen	Bred	-	-	Poss
Dunlin	-	Conf	-	-	-	-	-	-	-
Grey Partridge	-	Conf	-	-	-	-	-	-	-
Grey Wagtail	Conf	Conf	Conf	Bred	Bred	Bred	Poss	Prob	Conf
Hen Harrier	-	-	-	-	Seen	-	-	-	-
Kestrel	Conf	Conf	Conf	-	Seen	Bred	Poss	Poss	Conf
Kingfisher	-	Conf	Poss	-	Seen	Bred	-	Conf	-
Lapwing	Conf	Conf	Prob	Seen	Bred	Bred	-	Conf	-
Meadow Pipit	Conf	Conf	Conf	Bred	Bred	Bred	Conf	Conf	Conf
Merlin	Poss	-	-	-	-	-	-	-	-
Pochard	Poss	-	-	-	-	-	-	-	-
Red Grouse	-	Poss	Conf	-	-	-	-	-	-
Redshank	Poss	Conf	Prob	-	Seen	Bred	-	-	-
Snipe	Conf	Conf	Conf	Seen	Seen	Bred	Poss	-	Poss
Stock Dove	Conf	Conf	Conf	-	Seen	Bred	-	-	Poss
Swift	Conf	Conf	Conf	-	-	Bred	-	Conf	Conf
Whooper Swan	-	-	-	Seen	-	-	-	-	-
Woodcock	-	Conf	-	-	-	-	-	-	-
Yellowhammer	Conf	Conf	Conf	Seen	-	Bred	Poss	-	-

Seen = recorded; Poss = possible breeding; Prob = probable breeding; Conf = confirmed breeding; - = not-recorded; Bred = Breeding Record.

Table 7-8 Wintering Bird Atlas data. The following applies to conservation status: Annex I of the Birds Directive, Red List species on the BoCCI.

Species Name	Wintering Atlas 1981-1984			Wintering Atlas 2007-2011		
	M34	M44	M45	M34	M44	M45
Barn Owl	-	-	-	-	Pres	-
Bar-tailed Godwit	Pres	-	-	-	-	-
Curlew	Pres	Pres	Pres	Pres	Pres	Pres
Dunlin	-	Pres	-	Pres	Pres	-
Golden Plover	Pres	-	-	Pres	Pres	-
Greenland White-fronted Goose	-	-	-	Pres	-	-
Grey Wagtail	-	Pres	-	Pres	Pres	Pres
Hen Harrier	-	-	-	Pres	-	-
Kestrel	-	Pres	-	Pres	Pres	Pres
Lapwing	Pres	Pres	Pres	Pres	Pres	-
Marsh Harrier	-	-	-	Pres	-	-
Meadow Pipit	Pres	Pres	Pres	Pres	Pres	Pres
Merlin	-	Pres	-	-	-	-
Peregrine Falcon	-	-	Pres	Pres	-	Pres
Pochard	Pres	-	-	-	-	-
Redshank	Pres	-	Pres	Pres	-	-
Redwing	Pres	Pres	Pres	Pres	Pres	-
Shoveler	Pres	-	-	-	-	-
Snipe	Pres	Pres	Pres	-	Pres	Pres
Stock Dove	Pres	Pres	Pres	-	-	-
Whooper Swan	Pres	Pres	-	Pres	Pres	Pres
Woodcock	-	-	-	-	-	Pres
Yellowhammer	Pres	Pres	Pres	Pres	-	-

Pres = present in hectad

7.3.3 Bird Sensitivity Mapping Tool

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

The Proposed Wind Farm site is not located within an area identified as sensitive to birds from wind energy developments (i.e., there is no data available). The Proposed Wind Farm site is 4km from the nearest area of high sensitivity. The Proposed Grid Connection underground cabling route is within areas of low sensitivity and is 9.2km from the nearest area of high sensitivity.

7.3.4 National Biodiversity Data Centre Records

The National Biodiversity Data Centre (NBDC) Biodiversity Maps provide records of flora and fauna within 10km hectads across Ireland. Data is available from the map viewer on the NBDC website³. The

³ <https://maps.biodiversityireland.ie/Map>

Proposed Wind Farm site lies within hectad M34. Table 7-9 lists the bird species that have been recorded in these 10km Grids.

Table 7-9 National Biodiversity Data Centre records

Common Name	NBDC Dataset
American Golden Plover	Rare Birds of Ireland (2009)
Barn Owl	Birds of Ireland
Curlew	Birds of Ireland
Grey Wagtail	Birds of Ireland
Lesser Yellowlegs	Rare Birds of Ireland (2006)
Hen Harrier	Birds of Ireland
Pochard	Birds of Ireland
Red Kite	Birds of Ireland

7.3.5 Irish Wetland Bird Survey Records

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

- > Ballindeereen Turlough
- > Ballinduff Turlough & Grassland
- > Ballyboy
- > Ballyconneely Bay
- > Ballynakill Harbour
- > Ballynakill Lough (Gorumna Isl.)
- > Bertraghboy Bay
- > Caherglassaun Lough
- > Cahermore Turlough
- > Camus Bay, Connemara
- > Caranavoodaun Turlough
- > Coole Lough – Newtown Turlough
- > Dogs & Gorteen Bay
- > Doolough Headford (Turloughcor)
- > Glenamaddy Turlough
- > Inishbofin
- > Inishmore, Aran Islands
- > Inner Galway Bay
- > Inner Streamstown Bay
- > Kiltieman Turlough
- > Kiltullagh Lough
- > L. Coy – Blackrock – Bullaunagh – Ballylee
- > Lisravis & Pollshask Turloughs
- > Lough Adrehid
- > Lough Aughawoolia
- > Lough Corrib
- > Lough Cutra – Ballynakill L.
- > Lough Poll
- > Lough Rea

- > Lydacan Castle Turlough
- > Mannin Bay
- > Murvey Machair Beach
- > Mweenish Island
- > North Central Galway Lakes
- > North East Galway Lakes
- > Omev Strand
- > Polleagh Turlough
- > Pollnagarragh Marshes
- > Rahasane Turlough
- > Rossadillisk
- > Termon Turloughs

7.3.6 Rare and Protected Species Dataset

An information request was sent to NPWS requesting records from the Rare and Protected Species Database. The following records were obtained from the NPWS on the 22nd September 2023:

Barn Owl

The NPWS held one record for barn owl. This was recorded in hectad M44 and the record came from the Barn Owl Project in 2010.

Coot

The NPWS held one record for coot. There was one recorded in hectad M44 during the 2010 Kingfisher Assessment.

Curlew

The NPWS held one record for curlew. There was one recorded in hectad M44 during the 2010 Kingfisher Assessment.

Golden Plover

The NPWS held one record for curlew. There was one recorded in hectad M44 during the 2010 Kingfisher Assessment.

Greenland White-fronted Goose

The NPWS held 63 records for Greenland white-fronted goose. There were records in both hectad M34 and M44 during the 1985 and 2019. No flocks were recorded within the Proposed Wind Farm site among these records.

Grey Wagtail

The NPWS held two records for grey wagtail. Both were recorded in hectad M44 during the 2010 Kingfisher Assessment.

Kingfisher

The NPWS held 18 records for kingfisher. All were recorded in hectad M44 during the 2010 Kingfisher Assessment.

Lapwing

The NPWS held one record for lapwing. There was one recorded in hectad M44 during the 2010 Kingfisher Assessment.

Meadow Pipit

The NPWS held three records for meadow pipit. All were recorded in hectad M44 during the 2010 Kingfisher Assessment.

Peregrine Falcon

The NPWS held two records for peregrine falcon. Both were recorded in hectad M34 during the 2017 National Peregrine Survey, recording one occupied nest site and one unoccupied nest site.

Snipe

The NPWS held four records for snipe. All were recorded in hectad M44 during the 2010 Kingfisher Assessment.

Swift

The NPWS held one record for swift. There was one recorded in hectad M44 during the 2010 Kingfisher Assessment.

7.3.7 Field Survey Results

There were observations of thirteen SCI species recorded within 8km of the viable area of the Proposed Wind Farm during surveys. Of these, significant populations (national importance or county importance) of black-headed gull and golden plover were observed. There were observations of 10 Annex I species, 12 BOCCI Red list species and two raptor species.

The target species recorded within the potential ZOI of the Proposed Wind Farm during field surveys are listed in Table 7-10, along with a summary of breeding and roosting status. The following sections describe the records of each target species under the individual survey headings.

Table 7-10 Target species recorded in the Potential ZOI of the Proposed Wind Farm

Species	Overall breeding status	Overall wintering status
Golden Plover	Non-breeding.	No regularly used roosts identified. Birds were observed landing/roosting in arable fields within 500m of the proposed turbine layout, however no single location was regularly used.
Hen Harrier	Non-breeding.	No regularly used roosts identified.
Little Egret	Non-breeding.	No regularly used roosts identified.
Merlin	Non-breeding.	No regularly used roosts identified.
Peregrine falcon	Confirmed Breeding. There was a breeding territory	No regularly used roosts identified.

Species	Overall breeding status	Overall wintering status
	identified 3km from the Proposed Wind Farm site. Chick calls were heard from an active quarry in May 2021, confirming breeding in this location.	
Whooper Swan	Non-breeding..	No regularly used roosts identified.
Black-Headed Gull	Non-breeding.	No regularly used roosts identified.
Common Gull	Non-breeding.	No regularly used roosts identified.
Coot	Non-breeding..	No regularly used roosts identified.
Lesser Black-backed Gull	Non-breeding..	No regularly used roosts identified.
Curlew	Non-breeding.	No regularly used roosts identified.
Kestrel	Confirmed Breeding. There were two confirmed and two probable territories located within, or partially within, the Proposed Wind Farm site.	No regularly used roosts identified.
Lapwing	Non-breeding.	No regularly used roosts identified.
Snipe	Non-breeding.	No regularly used roosts identified.
Woodcock	Non-breeding.	No regularly used roosts identified.
Buzzard	Confirmed Breeding. There was one confirmed breeding territory identified in the 2020 breeding season and one probable territory identified within the Proposed Wind Farm site in the 2023 breeding season.	No regularly used roosts identified.
Sparrowhawk	Probable Breeding. There was one probable breeding territory identified in the 2021 breeding season and one probable territory identified in the 2022 breeding season.	No regularly used roosts identified.

The target species listed below were recorded during wildfowl distribution and abundance surveys, up to 8km from the Proposed Wind Farm site. These species were not observed on or near the Proposed Wind Farm site and therefore, there is no potential for impact from the Proposed Wind Farm site. The list is ordered in accordance with conservation significance: Annex I species, SCIs of designated sites, Red listed species and raptors:

- > Kingfisher
- > Common Scoter

- > Common Tern
- > Dunlin
- > Gadwall
- > Greenland White-fronted Goose
- > Pochard
- > Shoveler
- > Tufted Duck
- > Black-tailed Godwit
- > Grey Plover

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

- > Summary of vantage point survey records
 - > Summary of winter walkover survey records
 - > Summary of breeding walkover survey records
- Summary of waterbird distribution and abundance survey records
- > Summary of hen harrier roost survey records
 - > Summary of breeding raptor survey records
 - > Summary of breeding grouse survey records
 - > Summary of breeding woodcock survey records
 - > Summary of non-target species recorded

7.3.7.1 Golden Plover

Golden plover was recorded during the winter and passage season. Raw survey data and maps are provided in Appendix 7-4.

Vantage Point Surveys

Golden plover were observed on 23 occasions during the vantage point surveys (see Appendix 7-4, Figure 7-1-1). Observations ranged from an individual to 110 birds and were of birds commuting, circling or landing/roosting over grassland fields. Birds were observed landing or roosting in field within 500m of the proposed turbine layout on 5 no. occasions. There were 17 no. observations within 500m of the proposed turbine layout and 19 no. observations within the potential collision height. All observations were in the non-breeding/migratory season (October to April).

Waterbird Distribution and Abundance Surveys

Golden plover were observed on 7 no. occasions during waterbird distribution and abundance surveys (Figure 7-4-2). Observations ranged from 10 to 65 birds, and were of birds circling, feeding, roosting or travelling. Observations were between 3.4km and 9.5km from the nearest proposed turbine.

Incidental Observations

There were 5 no. incidental observations of golden plover during hen harrier roost surveys (see Appendix 7-4, Figure 7-4-3). The observation ranged from an individual calling to 14 birds travelling or circling over grassland. 4 no. of these observations were within 500m of the proposed turbine layout. One of these observations was of three birds landing in grassland fields within 500m of the proposed turbine layout.

7.3.7.2 Hen Harrier

Hen harrier was recorded during the winter season. Raw survey data and maps are provided in Appendix 7-4.

Vantage Point Surveys

Hen harrier was observed on 5 no. occasions during the vantage point surveys (see Appendix 7-4, Figure 7-4-4). All observations were of an individual bird and comprised the bird hunting or travelling over grassland fields. There were 4 no. observations within 500m of the proposed turbine layout and one observation was within the potential collision height. All observations were during the non-breeding season.

There were no further observations of this species during any of the other comprehensive surveys and no roosts were identified.

7.3.7.3 Little Egret

Little egret was recorded during the breeding and winter season. Raw survey data and maps are provided in Appendix 7-4.

Vantage Point Surveys

Little egret was observed on 1 no. occasion during the vantage point surveys (see Appendix 7-4, Figure 7-4-5). This observation was of an individual commuting within 500m of the proposed turbine layout and within the potential collision height.

Waterbird Distribution and Abundance Surveys

Little egret was observed on 12 no. occasions during waterbird distribution and abundance surveys (see Appendix 7-4, Figure 7-4-6). Observations ranged from an individual to 3 no. birds and were of birds foraging, travelling or roosting. Observations were between 5.5km and 8.3km from the nearest proposed turbine locations.

Incidental Observations

There were 2 no. incidental observations of little egret during hen harrier roost surveys and breeding raptor surveys (see Appendix 7-4, Figure 7-4-7). Both observations were of an individual bird travelling. One of these observations was within 500m of the proposed turbine layout.

7.3.7.4 Merlin

Merlin was recorded during the winter season. Raw survey data and maps are provided in Appendix 7-4.

Vantage Point Surveys

Merlin was observed on 1 no. occasion during the vantage point surveys (see Appendix 7-4, Figure 7-4-8). This observation was of an individual bird commuting within 500m of the proposed turbine layout, below the potential collision height.

There were no further observations of this species during any of the other comprehensive surveys.

7.3.7.5 Peregrine Falcon

Peregrine falcon was recorded during the breeding and winter season. Raw survey data and maps are provided in Appendix 7-4.

Vantage Point Surveys

Peregrine falcon was observed on 6 no. occasions during the vantage point surveys (see Appendix 7-4, Figure 7-4-9). All observations were of an individual bird travelling, hunting or circling. There were 4 no. observations within, or partially within, 500m of the proposed turbine layout and 5 no. observations were within the potential collision height. There were 4 no. observations during the breeding season; 1 no. in September 2020 and 3 no. in June/July 2021. No evidence of breeding behaviour was observed during these surveys. 2 no. observations occurred during the 2020/2021 winter season.

Breeding Raptor Surveys

Peregrine falcon was observed on two occasions during breeding raptor surveys (see Appendix 7-4, Figure 7-4-10). Both observations occurred in May 2021.

One observation was of an individual hunting and soaring 1.6km from the proposed turbine layout. The other observations related to breeding behaviour. A peregrine chick call was heard from an active quarry in May 2021, confirming a breeding territory in this area (see Confidential Appendix 7-5, Figure 7-5-1). The identified breeding territory was located approximately 3.2km from the proposed turbine layout.

Incidental Observations

There were 5 no. incidental observations of peregrine falcon during waterbird distribution and abundance surveys and hen harrier roost surveys (see Appendix 7-4, Figure 7-4-11). Observations were of individuals travelling, perched or hunting. One of these observations was within 500m of the proposed turbine layout. All incidental observations were during the non-breeding season.

Breeding Summary

In summary, there was one confirmed breeding territory approximately 3.2km from the proposed turbine layout in 2021 (see breeding territory in Confidential Appendix 7-5, Figure 7-5-2). No breeding activity was observed during the 2020 or 2023 breeding seasons.

7.3.7.6 Whooper Swan

Whooper swan was recorded during the winter season. Raw survey data and maps are provided in Appendix 7-4.

Vantage Point Surveys

Whooper swan was observed on 3 no. occasions during the vantage point surveys (see Appendix 7-4, Figure 7-4-12). Observations ranged from an individual bird to 8 no. birds travelling. All observations were within 500m of the proposed turbine layout and all observations were within the potential collision height.

Waterbird Distribution and Abundance Surveys

Whooper swan was observed on 24 no. occasions during waterbird distribution and abundance surveys (see Appendix 7-4, Figure 7-4-13). Observations ranged from an individual to 36 no. birds and were of birds foraging, travelling or resting on water. Observations were between 3.7km and 7.7km from the nearest proposed turbine location.

Incidental Observations

There was one incidental observation of whooper swan during a hen harrier roost survey (see Appendix 7-4, Figure 7-4-14). This observation was of 2 no. birds travelling approximately 6.5km from the nearest proposed turbine.

7.3.7.7 Black-headed Gull

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

Vantage Point Surveys

Black-headed gull were observed on 42 occasions during the vantage point (see Appendix 7-4, Figure 7-4-15). Observations ranged from an individual to 75 birds and were of birds commuting or foraging/landing in grassland fields. There were 36 no. observations within 500m of the proposed turbine layout and 33 no. observations within the potential collision height. There were 17 no. observations in the core breeding season (April – August) and the remaining observations were in the non-breeding season (September to March).

Breeding Walkover Surveys

Black-headed gull were observed on two occasions during breeding walkover surveys (see Appendix 7-4, Figure 7-4-16). Observations ranged from an individual to six birds travelling over grasslands. Both observations were within 500m of the proposed turbine layout.

Waterbird Distribution and Abundance Surveys

Black-headed gull were observed on 72 no. occasions during waterbird distribution and abundance surveys (see Appendix 7-4, Figure 7-4-17). Observations ranged from an individual to 300 no. birds, and were of birds feeding, roosting, circling or travelling. Observations were between 3.3km and 8.5km from the nearest proposed turbine location.

Incidental Observations

There were 11 no. incidental observations of black-headed during surveys (see Appendix 7-4, Figure 7-4-18). Observations ranged from an individual to 14 no. birds and were of birds travelling and circling. Four of these observations were within 500m of the proposed turbine layout.

7.3.7.8 Common Gull

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

Vantage Point Surveys

Common gull were observed on 4 no. occasions during vantage point surveys (see Appendix 7-4, Figure 7-4-19). Observations ranged from 40 to 250 birds and were of birds commuting over grassland fields. There were 3 no. observations within 500m of the proposed turbine layout and 3 no. observations within the potential collision height. All observations were on the same day, in March 2022.

Winter Walkover Surveys

Common gull were observed on 1 no. occasion during winter walkover surveys (see Appendix 7-4, Figure 7-4-20). This observation comprised of 50 no. birds travelling over grasslands and was greater than 500m from the proposed turbine layout.

Waterbird Distribution and Abundance Surveys

Common gull were observed on 12 no. occasions during waterbird distribution and abundance surveys (see Appendix 7-4, Figure 7-4-21). Observations ranged from an individual to 60 no. birds, and were of birds feeding, roosting, circling or travelling. Observations were between 5.7km and 8.3km from the nearest proposed turbine location.

7.3.7.9 Coot

Coot was recorded during the breeding and winter season. Raw survey data and maps are provided in Appendix 7-4.

Waterbird Distribution and Abundance Surveys

Coot were observed on 16 no. occasions during waterbird distribution and abundance surveys (see Appendix 7-4, Figure 7-4-22). Observations ranged from an individual to 13 no. birds, and were of birds feeding, swimming or roosting. Observations were between 3.6km and 7.6km from the nearest proposed turbine locations.

Incidental Observations

There was one incidental observation of coot during hen harrier roost surveys in February 2022 (see Appendix 7-4, Figure 7-4-23). The observation was of an individual bird travelling over grassland, greater than 500m from the proposed turbine layout.

7.3.7.10 Lesser Black-backed Gull

Lesser black-backed gull was recorded during the breeding and winter season. Raw survey data and maps are provided in Appendix 7-4.

Vantage Point Surveys

Lesser black-backed gull were observed on 221 no. occasions during vantage point surveys (see Appendix 7-4, Figure 7-4-24.1 and 7-4-24.2). Observations ranged from an individual bird to 50 no. birds and were of birds travelling, circling or landing over grassland and arable fields. There were 166 no. observations within 500m of the proposed turbine layout and 187 no. observations were within the potential collision height. There were 10 no. observations up to 19 no. birds landing in fields, 3 no. of which were within 500m of the proposed turbine layout.

Winter Walkover Surveys

Lesser black-backed gull were observed on one occasion during winter walkover surveys (see Appendix 7-4, Figure 7-4-25). This observation comprised of 43 no. birds circling over grasslands, within 500m of the proposed turbine layout.

Breeding Walkover Surveys

Lesser black-backed gull were observed on 13 no. occasions during breeding walkover surveys (see Appendix 7-4, Figure 7-4-26). Observations ranged from an individual to four birds travelling over grasslands. 10 no. observations were within 500m of the proposed turbine layout.

Waterbird Distribution and Abundance Surveys

Lesser black-backed gull were observed on 47 no. occasions during waterbird distribution and abundance surveys (see Appendix 7-4, Figure 7-4-27). Observations ranged from an individual to 41 no. birds, and were of birds roosting or travelling. Observations were between 4.9km and 8.7km from the nearest proposed turbine.

Incidental Observations

There were 62 no. incidental observations of lesser black-backed gull during hen harrier roost surveys, breeding raptor surveys and breeding red grouse surveys (see Appendix 7-4, Figure 7-4-28). The observations ranged from an individual to 30 no. birds travelling, circling or foraging. 19 no. of these observations were within 500m of the proposed turbine layout.

7.3.7.11 Curlew

Curlew was recorded during the breeding and winter season. Raw survey data and maps are provided in Appendix 7-4.

Vantage Point Surveys

Curlew was observed on only 1 no. occasion during vantage point surveys (see Appendix 7-4, Figure 7-4-29). Observation was of an individual bird travelling during the winter season. The observation was partially within 500m of the proposed turbine layout and within the potential collision height.

Waterbird Distribution and Abundance Survey

Curlew were observed on 41 no. occasions during waterbird distribution and abundance surveys (see Appendix 7-4, Figure 7-4-30). Observations ranged from an individual to 124 no. birds and were of birds foraging, travelling, calling or roosting. Observations were between 3.4km and 7.7km from the nearest proposed turbine. There were 4 no. observations towards the end of the breeding season (August/September) and all other observations were within the winter season.

Incidental Observations

There were 3 no. incidental observation of curlew during hen harrier roost surveys and breeding raptor surveys (see Appendix 7-4, Figure 7-4-31). The observations ranged from an individual to 3 no. birds and observations were of birds travelling or calling. One of these observations were within 500m of the proposed turbine layout.

7.3.7.12 Kestrel

Kestrel was recorded during the breeding and winter season. Raw survey data and maps are provided in Appendix 7-4.

Vantage Point Surveys

Kestrel were recorded on 92 no. occasions during vantage point surveys (see Appendix 7-4, Figure 7-4-32.1 and 7-4-32.2). 46 no. of these observations occurred during the core breeding season months for kestrel (April and August) (Hardey *et al.*, 2013), while there were 46 no. observations of kestrel outside of the core breeding season months (September – March). 18 no. occurred during the 2020 breeding season, 21 no. observations occurred during the 2021 breeding season and seven observations occurred during the 2023 breeding season. 19 no. observations occurred during the 2020/21 non-breeding season and 21 no. observations occurred during the 2021/22 non-breeding season. In addition, there were 6 no. observations of kestrel during surveys in September 2023, outside of the core breeding season for kestrel.

66 no. observations occurred within, or partially within 500m of, the proposed turbine layout. 60 no. of the observed flights occurred within, or partially within, the potential collision height. Most observations were of birds hunting, commuting, soaring or perched. There was one observation of territorial display behaviour between two males in February 2021. Additionally, there was an observation close to this area of a bird carrying prey to a nest site in 2021, confirming breeding at this location, approximately 900m from the nearest proposed turbine location.

There was an observation of a bird chasing crows in May 2023, indicating probable breeding at this location. This is also the same location of the confirmed territory in 2021, approximately 900m from the nearest turbine. In summary, there was one confirmed territory in 2021 and one probable territory in 2023 identified during the vantage point surveys (see Confidential Appendix 7-5, Figure 7-5-3).

Winter Walkover Surveys

Kestrel were recorded on 4 no. occasions during winter walkover surveys (see Appendix 7-4, Figure 7-4-33). All observations were of between one and two birds hunting or perched. All observations were within, or partially within, 500m of the proposed turbine layout.

Breeding Walkover Surveys

Kestrel were observed on 11 no. occasions during breeding walkover surveys (see Appendix 7-4, Figure 7-4-34). Most observations were of individuals hunting, commuting or perched. 5 no. observations were within 500m of the proposed turbine layout. There was one observation of an adult bird calling from a probable nest site in June 2020, approximately 700m from the nearest proposed turbine location. There was an observation of two fledged birds practicing flights and flying into a nest site in June 2021 (see Confidential Appendix 7-5, Figure 7-5-4), which confirmed breeding in this location. This also confirmed breeding territory is the same nest as the one identified during the vantage point surveys (see Confidential Appendix 7-5, Figure 7-5-3). A pair of birds were observed hunting together during 2023 breeding season walkover surveys. It is likely that these were the same birds associated with a nearby confirmed nest in 2023 (see Confidential Appendix 7-5, Figure 7-5-5). The remaining observations were of birds commuting or hunting.

Breeding Raptor Surveys

Kestrel were recorded on 7 no. occasions during breeding raptor surveys, up to 2km from the Proposed Wind Farm (see Appendix 7-4, Figure 7-4-35). 3 no. observations occurring during the 2020 breeding

season, two during the 2021 breeding season and two during the 2023 breeding season. Most observations were of individuals hunting or commuting. 3 no. observations were within 500m of the proposed turbine layout. There was 1 no. observation of a bird carrying prey in 2023, confirming breeding at this location, approximately 90m from the nearest proposed turbine location (see Confidential Appendix 7-5, Figure 7-5-5). In summary, there was 1 no. confirmed territory identified in 2023 and no territories identified in 2020 or 2021 during the breeding raptor surveys (see Confidential Appendix 7-5, Figure 7-5-7).

Incidental Observations

There were 13 no. incidental observations of kestrel during surveys (see Appendix 7-4, Figure 7-4-36). Most observations were of birds commuting, calling, perched or hunting. There were 5 no. observations of birds within, or partially within, 500m of the proposed turbine layout. A pair were observed showing agitated behaviour in May 2023, indicating a probable breeding territories, in the same location as the probable breeding territory identified during vantage point surveys. Observations relating to this breeding territory are presented in Confidential Appendix 7-5, Figure 7-5-6 and the breeding territory is presented in Confidential Appendix 7-5, Figure 7-5-7.

Breeding Summary

In summary, there were 2 no. confirmed breeding territories, one in 2021 and one in 2023. Additionally, there was one probable territory identified in both 2020 and 2023, both of which were in the same location as the 2021 confirmed breeding territory. There was a maximum of 1 no. confirmed and one probable territory within, or partially within, the Proposed Wind Farm site. See Confidential Appendix 7-5, Figure 7-5-7 for locations of all breeding territory locations.

7.3.7.13 Lapwing

Lapwing was recorded during the breeding and winter season. Raw survey data and maps are provided in Appendix 7-4.

Vantage Point Surveys

Lapwing were observed on 4 no. occasions during vantage point surveys (see Appendix 7-4, Figure 7-4-37). All observations occurred during the 2021/2022 winter season. The observations ranged from 5 no. birds to 43 no. birds commuting. 2 no. observations were within, or partially within, 500m of the proposed turbine layout and all observations were within the potential collision height.

Waterbird Distribution and Abundance Surveys

Lapwing were observed on 35 no. occasions during waterbird distribution and abundance surveys (see Appendix 7-4, Figure 7-4-38). Observations ranged from an individual to 200 no. birds and were of birds foraging, commuting, calling or roosting. Observations were between 3.7km and 8.4km from the nearest proposed turbine. There were 5 no. observations during the autumn passage season for waterbirds (August/September), one during the core breeding season (April-July) and all other observations were within the winter season. There were 2 no. observations relating to breeding behaviour (display flights in April, juvenile calls in August), at Lough Hacket (approximately 7.2km from the nearest proposed turbine).

Incidental Observations

There were 2 no. incidental observations of lapwing during hen harrier roost surveys and vantage point surveys (see Appendix 7-4, Figure 7-4-39). The observations ranged from 7 no. birds, and to 28 no.

birds and were of birds commuting. Both observations were greater than 500m from the proposed turbine layout.

7.3.7.14 Snipe

Snipe was recorded during the breeding and winter season. Raw survey data and maps are provided in Appendix 7-4.

Vantage Point Surveys

Snipe were observed on 15 no. occasions during vantage point (see Appendix 7-4, Figure 7-4-40). All observations occurred during the winter season. There were 2 no. observations during the 2020/2021 winter season and 13 no. during the 2021/2022 winter season. The observations ranged from an individual to 5 no. birds and were of birds calling, flushed or commuting. There were 8 no. observations within, or partially within, 500m of the proposed turbine layout and there were 5 no. observations within the potential collision height.

Winter Walkover Surveys

Snipe were recorded on 6 no. occasions during winter walkover surveys (see Appendix 7-4, Figure 7-4-41). All observations were of birds commuting or flushed by the surveyor. 4 no. observations were within 500m of the proposed turbine layout.

Breeding Walkover Surveys

Snipe were observed on 3 no. occasions during breeding walkover surveys (see Appendix 7-4, Figure 7-4-42). All observations were recorded during the 2023 breeding season and were of up to 2 no. birds flushed by the surveyor. All observations were within 500m of the proposed turbine layout. There was no evidence of breeding observed during the breeding walkover surveys.

Waterbird Distribution and Abundance Surveys

Snipe were observed on 2 no. occasions during waterbird distribution and abundance surveys (see Appendix 7-4, Figure 7-4-43). Observations were of an individual and were of birds commuting. Observations were between 6.6km and 7.3km from the nearest proposed turbine location.

Incidental Observations

There were 12 no. incidental observations of snipe during hen harrier roost surveys and breeding raptor surveys (see Appendix 7-4, Figure 7-4-44). The observations ranged from an individual to 6 no. birds and observations were of birds commuting, calling or flushed. There were 3 no. observations within, or partially within, 500m of the proposed turbine layout.

7.3.7.15 Woodcock

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

Vantage Point Survey

Woodcock were observed on only 1 no. occasion during vantage point surveys (see Appendix 7-4, Figure 7-4-45). This observation was of an individual bird commuting after dusk. The observation was within 500m of the proposed turbine layout and below the potential collision height.

There were no further observations of this species during any of the other comprehensive surveys.

7.3.7.16 Buzzard

Buzzard was recorded during the breeding and winter season. Raw survey data and maps are provided in Appendix 7-4.

Vantage Point Survey

Buzzard were observed on 67 no. occasions during vantage point surveys (see Appendix 7-4, Figure 7-4-46). 36 no. of these observations occurred during the core breeding season months between April and August, while there were 31 no. observations of buzzard during non-breeding season months (September – March). 4 no. observations occurred during the 2020 breeding season, 8 no. during the 2021 breeding season and 24 no. during the 2023 breeding period for this species (April - August).

There were 12 no. observations during the 2020/21 non-breeding season and 18 no. observations during the 2021/22 non-breeding season (September – March), while the remaining one observation occurred in September 2023. 58 no. observations occurred within, or partially within, 500m of the proposed turbine layout. 54 no. observations occurred within, or partially within, the potential collision height.

The majority of observations were of birds commuting, hunting, soaring, perched or calling. There were 2 no. observations of breeding activity during these surveys. In 2023, there were 2 no. observations of birds displaying (both of which were on the same day), indicating probable breeding at this location, within 500m of the proposed turbine layout (See Confidential Appendix 7-5, Figure 7-5-8).

Winter Walkover Surveys

Buzzard was recorded on one occasion during winter walkover surveys (see Appendix 7-4, Figure 7-4-47). This observation was of 1 no. bird soaring partially within 500m of the proposed turbine layout.

Breeding Walkover Survey

Buzzard were observed on 10 no. occasions during breeding walkover surveys (see Appendix 7.4, Figure 7-4-48). There were 3 no. observations in the 2020 breeding seasons, three in 2021 and 4 no. observations during the 2023 breeding season. There were seven observations within, or partially within, 500m of the proposed turbine layout.

The majority of observations were of birds commuting, hunting, perched or soaring. 3 no. buzzards were observed soaring together in July 2023, however no breeding evidence was observed during these surveys.

Breeding Raptor Survey

Buzzard were observed on 28 no. occasions during breeding raptor surveys (see Appendix 7-4, Figure 7-4-49). 6 no. observations occurred during the 2020 breeding season, one observation occurred during the 2021 breeding season and 21 no. observations during the 2023 core breeding season for this species (April – July).

Most observations were of birds commuting, hunting or soaring. 15 no. of these observations were within 500m of the proposed turbine layout. There was one observation of juvenile birds chasing and soaring together. This confirms a breeding territory in the surrounding area in 2020 (see Confidential Appendix 7-5, Figure 7-5-9). The identified breeding territory was located within 500m of the proposed turbine layout.

Incidental Observations

There were 8 no. incidental observations of buzzard during surveys (see Appendix 7-4, Figure 7-4-50). One of these were within 500m of the proposed turbine layout. The remaining observations were during surveys up to 8km from the site of the Proposed Wind Farm. Observations ranged from an individual to four birds and were of birds commuting, soaring, calling or perched. A juvenile bird was observed perched in September 2021 at Luimnagh Pier, approximately 6.5km from the Proposed Wind Farm site, confirming successful breeding in the wider area surrounding this observation. There was one observation of a display flight in March 2022 at Belclare Turlough, approximately 4km from the proposed turbine layout, indicating probable breeding at this location (see Confidential Appendix 7-5, Figure 7-5-10).

Breeding Summary

In summary, there was one confirmed breeding territory identified in the 2020 breeding season and one probable territory identified in the 2023 breeding season within, or partially within, 500m of the proposed turbine layout. A probable breeding territory was identified approximately 5km from the proposed turbine layout during the 2021 breeding season. A probable breeding territory was also identified approximately 4.7km from the proposed turbine layout during the 2022 breeding season. All breeding territories are presented in Confidential Appendix 7-5, Figure 7-5-11. Additionally, there were two probable breeding territories identified approximately 0.3km and 3km respectively from the proposed turbine layout during the 2023 breeding season.

7.3.7.17 Sparrowhawk

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

Vantage Point Survey

Sparrowhawk were observed on 14 no occasions during vantage point surveys (see Appendix 7-4, Figure 7-4-51). 6 no. of these observations occurred during the core breeding season months for this species (April-August), while there were 8 no. observations of sparrowhawk during non-breeding season months (September – March). 2 no. observations occurred during the 2021 breeding season and four during the 2023 breeding season (April - August).

There were 3 no. observations during the 2020/21 non-breeding season and 5 no. observations during the 2021/22 non-breeding season (September – March). Four observations occurred within, or partially within, 500m of the proposed turbine layout. 3 no. observations occurred within, or partially within, the potential collision height.

The majority of observations were of birds commuting, hunting or perched. There were 2 no. observations of breeding activity during these surveys (see Confidential Appendix 7-5, Figure 7-5-12. In 2021, a pair were observed displaying/sky-dancing. This indicates a probable breeding territory and was located approximately 0.8km from the proposed turbine layout. In January 2022, a pair were observed displaying indicating a probable breeding territory within the proposed turbine layout. The locations of these territories are presented in Confidential Appendix 7-5, Figure 7-5-13.

Winter Walkover Surveys

Sparrowhawk was recorded on 1 no. occasion during winter walkover surveys (see Appendix 7-4, Figure 7-4-52). This observation was of a bird soaring greater than 500m of the proposed turbine layout.

Breeding Raptor Surveys

Sparrowhawk were observed on 3 no. occasions during breeding raptor surveys (see Appendix 7-4, Figure 7-4-53). There was 1 no. observation in each breeding season (2020, 2021 and 2023). All observations were of individuals hunting or soaring. There were no observations relating to breeding behaviour. There was one observation within 500m of the proposed turbine layout.

Incidental Observations

There were 3 no. incidental observations of sparrowhawk during hen harrier roost and waterbird distribution and abundance surveys (see Appendix 7-4, Figure 7-4-54). All observations were greater than 500m from the proposed turbine layout and were up to 8km from the Proposed Wind Farm. All observations were of an individual hunting, soaring or perched.

Breeding Summary

In summary, there was one probable breeding territory identified in the 2021 breeding season and 1 no. probable territory identified in the 2022 breeding season. The 2022 territory was within the proposed turbine layout and the 2021 territory was approximately 800m from the proposed turbine layout. No breeding territories were identified during the 2020 or 2023 breeding season. All breeding territories are presented in Confidential Appendix 7-5, Figure 7-5-13.

7.3.7.18 Passerines

The BoCCI Red listed species grey wagtail, meadow pipit, redwing, swift and yellowhammer were recorded during the surveys. Grey wagtail were observed on 11 no. occasions, with up to 2 no. birds being recorded. Meadow pipit were observed on 38 no. occasions, with up to 17 no. birds being recorded. Redwing were observed on 16 no. occasions, with up to 400 no. birds being recorded. Swift were observed on 7 no. occasions, with up to 2 no. birds being recorded. Yellowhammer were observed on 17 no. occasions, with up to 2 no. birds being recorded.

7.3.7.19 Proposed Grid Connection

As detailed in Chapter 6, Section 6.4.1.5, multidisciplinary surveys were undertaken to determine habitats along the underground cable route. The underground cable route will be located entirely within the existing road, starting within the L61461 as it leaves the Proposed Wind Farm site and continuing east along a smaller local road. Habitats found in the wider areas adjacent to the road include stone walls (BL1), dry meadows and grassy verges (GS2), agricultural grasslands (GA1), wet grasslands (GS4) and peatlands further east along the route. Hedgerows (WL1) and treelines (WL2) also border the road. There are four water crossings along the route which are detailed further in Chapter 6.

7.4 Receptor Evaluation

7.4.1 Determination of Population Importance

A determination of population importance for birds within the likely ZOI is provided below, following criteria described in Section 7.2.5. Estimates of national population sizes were obtained from the most recent species-specific national survey, or national surveys by Burke *et al.* (2018), Lewis *et al.* (2019a) 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 Galway⁴, or derived from national estimates, according to what literature was available.

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

7.4.1.1 Golden Plover

The national population of golden plover is estimated to be 80,707 for the Republic of Ireland (ROI) (Burke *et al.* (2018)). Therefore, a regularly occurring population of 807 birds is required for classification as National Importance.

To estimate the county population, a review of all County Galway I-WeBS sites was conducted. It should be noted that the population estimate based on I-WeBS figures below is likely to be an underestimate of the county population⁵. This is due to the foraging ecology of wintering golden plover that will utilise agricultural grasslands and other habitats not typically surveyed during I-WeBS counts. To account (partly) for the birds that occur in terrestrial habitats that would not have been counted by I-WeBS surveyors, the golden plover that occur at terrestrial locations outside of any I-WeBS sites within the 8km survey radius of the Waterbird Distribution and Abundance Survey were added to the county population estimate.

Below are the mean count values recorded for I-WeBS sites over the most recent 5-season period, i.e., for the period 2016/17 – 2020/21 (note that sites with a mean of zero birds were excluded from this list) and the mean peak count from the 8km survey radius of the Waterbird Distribution and Abundance Surveys for the two winter seasons (2020/21 – 2021/22):

- Ballindeereen Turlough (mean = 43)
- Ballinduff Turlough & Grassland (mean = 7)
- Ballyboy (mean = 21)
- Ballyconneely Bay (mean = 22)
- Caherglassaun Lough (mean = 67)
- Cahermore Turlough (mean = 37)
- Ballindeereen Turlough (mean = 44)
- Ballyconneely Bay (mean = 13)
- Caranavoodaun Turlough (mean = 124)
- Doolough Headford (Turloughcor) (mean = 140)

⁴ Please note that these figures are estimates based on the best available information but should be interpreted with a degree of caution.

⁵ As per Burke *et al.*, (2018) in relation to the golden plover count, "these estimate must be treated as conservative on the bases that they are widely disturbed in a variety of wetland and non-wetland habitats that are under-sampled during I-WeBS."

- > Inner Galway Bay (mean = 1628)
- > Kiltiernan Turlough (mean = 41)
- > Lough Corrib (mean = 240)
- > Mannin Bay (mean = 97)
- > North Central Galway Lakes (mean = 200)
- > North East Galway Lakes (mean = 57)
- > Omev Strand (mean = 78)
- > Polleagh Turlough (mean = 47)
- > Pollnagarragh Marshes (mean = 93)
- > Rahasane Turlough (mean = 1420)
- > Termon Turloughs (mean = 44)
- > Terrestrial habitats⁶ (mean = 157)

Based on the above, the mean wintering population⁷ from Galway sites is 4,620 birds. However, as previously stated this likely remains an underestimate. Therefore, a regularly occurring population of 46 or more birds (>1% of the county population, as per NRA (2009)) is required to be classified as County Importance. This species is wide ranging in the winter months that utilise habitats, such as those present on site (agricultural grassland), that are common throughout the county.

Golden plover were observed within, or partially within, the Proposed Wind Farm on 25 occasions. Birds of county importance were seen on 6 no. occasions. The maximum number of birds recorded within the Proposed Wind Farm site from the winter seasons surveyed was 110 birds. Taking a precautionary approach, this species is considered to be a population of **County Importance**.

7.4.1.2 Hen Harrier

The national population of hen harrier is estimated to be 314 individual birds for the Republic of Ireland (ROI) (108 – 157 breeding pairs) (Ruddock *et al.* (2016)). There are no published figures for the County Galway population of hen harrier. Taking a precautionary approach, a regularly occurring population of just one bird is required for classification of County Importance. Therefore, a regularly occurring population of three birds is required for classification as National Importance and of one bird for classification as County Importance. It should be noted that wintering hen harrier are an SCI species of the nearby Lough Corrib SPA. On a precautionary basis, it is assumed that birds observed at the Proposed Wind Farm site are associated with the wintering population at this SPA.

Hen harrier were observed within, or partially within, the Proposed Wind Farm site on 5 no. occasions. The maximum number of birds recorded within the Proposed Wind Farm from the winter seasons surveyed was one bird. No roosts or nest sites were identified despite undertaking a comprehensive suite of surveys over two and a half years. Taking a precautionary approach, the birds observed at the Proposed Wind Farm site are likely associated with a winter population of **County Importance**.

7.4.1.3 Little Egret

Little Egret is an Annex I species. The national population of little egret is estimated to be 1,274 for the Republic of Ireland (ROI) (Burke *et al.* (2018)) and the county population is estimated to be 115 (mean populations from I-WeBS sites in Galway (2016-2021)). Therefore, a regularly occurring population of 12 birds is required for classification as National Importance, and of a single bird for classification as County Importance.

⁶ From terrestrial areas within the 8km radius of the Waterbird Distribution and Abundance Surveys outside of any I-WeBS sites. Flocks in flight not included in counts.

⁷ Please note that these figures are estimates based on the best available information and should be interpreted with a degree of caution.

Little egret were observed within the Proposed Wind Farm on only one occasion despite undertaking a comprehensive suite of surveys over two and a half years. The Proposed Wind Farm site is of **No Ecological Importance** to this species, given how infrequently the species was observed.

7.4.1.4 Merlin

As per the latest NPWS Article 12 reporting document, the national population of merlin is estimated to be between 400 - 800 for the Republic of Ireland (ROI) (EU, 2022). Therefore, a regularly occurring population of four to eight birds is required for classification as National Importance. There are no published figures for the County Galway population of merlin. Taking a precautionary approach, a regularly occurring population of a single bird is required for classification of County Importance.

Merlin was observed within the Proposed Wind Farm on only one occasion and the observation was of an individual bird. No roosts or nest sites were identified despite undertaking a comprehensive suite of surveys over two and a half years. The Proposed Wind Farm site is of **No Ecological Importance** to this species, given how infrequently the species was observed.

7.4.1.5 Peregrine Falcon

As per the latest NPWS Article 12 reporting document, the national population of peregrine is estimated to be 425 pairs for the Republic of Ireland (ROI) (EU, 2022). Therefore, a regularly occurring population of four pairs birds is required for classification as National Importance. There is no published data on the Galway County population of peregrine, however, assuming an even distribution of peregrine across the 26 counties of the Republic of Ireland, the population of peregrine in County Galway is estimated to be 32 birds (national population divided by 26 counties). It is possible that the Galway population of peregrine falcon is higher than 32 birds, given that there is a higher population density around coastal counties according to peregrine distribution in bird atlas maps. Furthermore, the habitat (agricultural grassland) of the Proposed Wind Farm and wider surroundings are not unique to the site or rare in the county. Peregrine are a wide ranging species (SNH, 2016). Adult peregrine are also site faithful and less likely to disperse from their territories (Smith *et al.*, 2015). In the absence of data on peregrine populations at a county level, the best information was used. Taking a precautionary approach using the above as a guide; a regularly occurring population of a single bird is required for classification of County Importance.

Peregrine was observed within the Proposed Wind Farm on 6 no. occasions and all observations were of an individual bird. No breeding evidence for this species was recorded within the Proposed Wind Farm site, however a confirmed breeding territory was identified approximately 2.3km from the site in 2021. There were 3 no. observations within the Proposed Wind Farm during the breeding season 2021 (individuals observed hunting/circling). It cannot be ruled out that these observations are associated with the confirmed nest site, given that peregrine falcon can hunt beyond their 2km foraging range (SNH, 2016) where habitats are suboptimal for provisioning. Taking a precautionary approach, the population recorded was assigned **County Importance**.

7.4.1.6 Whooper Swan

As per the latest national wintering estimates provided in Burke *et al.* (2021), the national wintering population of whooper swan in the Republic of Ireland is 14,467. Therefore, a regularly occurring population of 145 birds is required for classification as National Importance. The Swan Census 2020 (Burke *et al.*, 2021) was consulted regarding the population data for whooper swan in County Galway. Based on the 2020 Swan Census data, in January 2020 the county population was 1,261 individuals. Therefore, a regularly occurring population of 13 no. birds is required for classification of County Importance.

Whooper swan was observed within the Proposed Wind Farm on three occasions. The maximum number of birds recorded within the Proposed Wind Farm from the winter seasons surveyed was eight

birds. Taking a precautionary approach, the population recorded was assigned **Local Importance (higher value)**.

7.4.1.7 Black-headed Gull

Wintering

The national population of wintering black-headed gull is estimated to be 48,821 for the Republic of Ireland (ROI) (Lewis *et al.* (2019a)). Therefore, a regularly occurring population of 488 birds is required for classification as National Importance.

To estimate the county population, a review of all County Galway I-WeBS sites was conducted. It should be noted that, the population estimate based on I-WeBS figures below is likely to be an underestimate of the county population⁸. Similar to golden plover outlined above, wintering black-headed gull will utilise agricultural grasslands and other habitats not typically surveyed during I-WeBS counts. To account (partly) for the birds that occur in terrestrial habitats that would not have been counted by I-WeBS surveyors, the black-headed gull that occur at terrestrial locations outside of any I-WeBS sites within the 8km survey radius of the Waterbird Distribution and Abundance Surveys were included in the county population estimate.

Below are the mean count values recorded for I-WeBS sites over the most recent 5-season period, i.e., for the period 2016/17 – 2020/21 (note that sites with a mean of zero birds were excluded from this list) and the mean peak count from the 8km survey radius of the Waterbird Distribution and Abundance Surveys for the two winter seasons (2020/21 – 2021/22):

- > Ballindeereen Turlough (mean = 43)
- > Ballinduff Turlough & Grassland (mean = 7)
- > Ballyboy (mean = 21)
- > Ballyconneely Bay (mean = 22)
- > Caherglassaun Lough (mean = 67)
- > Cahermore Turlough (mean = 37)
- > Caranavoodaun Turlough (mean = 75)
- > Coole Lough – Newtown Turlough (mean = 49)
- > Doolough Headford (Turloughcor) (mean = 7)
- > Inishmore, Aran Islands (mean = 42)
- > Inner Galway Bay (mean = 1950)
- > Inner Streamstown Bay (mean = 4)
- > Kiltiernan Turlough (mean = 39)
- > L. Coy – Blackrock – Bullaunagh – Ballylee (mean = 31)
- > Lough Corrib (mean = 72)
- > Lough Cutra – Ballynakill L. (mean = 17)
- > Lough Rea (mean = 270)
- > Lydacan Castle Turlough (mean = 83)
- > Mannin Bay (mean = 6)
- > North Central Galway Lakes (mean = 26)
- > North East Galway Lakes (mean = 49)
- > Omey Strand (mean = 12)
- > Polleagh Turlough (mean = 19)
- > Pollnagarragh Marshes (mean = 38)

⁸ The counting of gulls is optional under I-WeBS survey methodology, and gulls often occur outside of wetland areas which are not covered by this survey. Furthermore, NPWS Article 12 reporting states the following concerning black-headed gull: “this species along with other gull species that overwinter in Ireland is currently only poorly covered by the Irish Wetland Bird Survey (I-WeBS) programme. This [Article 12] reported population size...is an underestimate of the true population size”. Black-headed gull population numbers outlined are therefore highly likely to be a considerable underestimate of the actual wintering national population and county population.

- > Rahasane Turlough (mean = 52)
- > Rossadillisk (mean = 3)
- > Termon Turloughs (mean = 5)

- Terrestrial habitats⁹ (mean = 565)

Based on the above, the mean wintering population¹⁰ from Galway sites is 3,611 birds. However, as previously stated this likely remains an underestimate. Therefore, a regularly occurring population of 36 or more birds (>1% of the county population, as per NRA (2009)) is required to be classified as County Importance. The birds recorded at the site are judged to be associated with the larger county population, given this is a widespread species (as per Bird Atlas distribution maps) that utilises an abundant and widespread habitat at the county level (i.e. agricultural grassland).

Black-headed gull were observed within, or partially within, the Proposed Wind Farm on 15 no. occasions during winter seasons. The maximum number of birds recorded within the Proposed Wind Farm from the winter seasons surveyed was 75 no. birds. Therefore, the population occurring at the Proposed Wind Farm site is considered to be of **County Importance**.

Black-headed gull are an SCI species for the nearby SPA of Lough Corrib. However, this SPA cites breeding populations of black-headed gull only¹¹. The wintering population of black-headed gull is not cited as an interest of the SPA.

Breeding

As per the latest NPWS Article 12 reporting document, the national population of breeding black-headed gull is estimated to be 7,810 pairs for the Republic of Ireland (ROI) (Lewis *et al.* (2019a)). Therefore, a regularly occurring population of 78 pairs of birds is required for classification as National Importance. The latest seabird census (Seabird Count 2023) published figures for the County Galway population of black-headed gull to be 980 pairs. Therefore, a regularly occurring population of nine pairs is required for classification of County Importance.

Black-headed gulls were observed within, or partially within, the Proposed Wind Farm on 34 no. occasions during breeding seasons. The maximum number of birds recorded within the Proposed Wind Farm from the winter seasons surveyed was 16 no. birds. The birds observed at the Proposed Wind Farm are likely associated with a breeding population of **Local Importance (higher value)**.

7.4.1.8 Common Gull

Wintering

The wintering national population of common gull is estimated to be 21,438 for the Republic of Ireland (ROI) (Lewis *et al.* (2019a)) and the county population is estimated to be 1,826 (mean populations from I-WeBS sites in Galway (2016-2021) Therefore, a regularly occurring population of 214 birds is required for classification as National Importance.

To estimate the county population, a review of all County Galway I-WeBS sites was conducted. It should be noted that, the population estimate based on I-WeBS figures below is likely to be an

⁹ From terrestrial areas within the 8km radius of the Waterbird Distributions and Abundance Surveys outside of any I-WeBS sites. Flocks in flight not included in counts.

¹⁰ Please note that these figures are estimates based on the best available information and should be interpreted with a degree of caution.

¹¹ https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004042.pdf

underestimate of the county population¹². Similar to black-headed gull outlined above, wintering common gull will utilise agricultural grasslands and other habitats not typically surveyed during I-WeBS counts. To account (partly) for the birds that occur in terrestrial habitats that would not have been counted by I-WeBS surveyors, the common gull that occur at terrestrial locations outside of any I-WeBS sites within the 8km survey radius of the Waterbird Distribution and Abundance Surveys were included in the county population estimate.

Below are the mean count values recorded for I-WeBS sites over the most recent 5-season period, i.e., for the period 2016/17 – 2020/21 (note that sites with a mean of zero birds were excluded from this list) and the mean peak count from the 8km survey radius of the Waterbird Distribution and Abundance Surveys for the two winter seasons (2020/21 – 2021/22):

- > Ballindeereen Turlough (mean = 69)
- > Ballyboy (mean = 3)
- > Ballyconneely Bay (mean = 50)
- > Caherglassaun Lough (mean = 25)
- > Cahermore Turlough (mean = 6)
- > Caranavoodaun Turlough (mean = 16)
- > Coole Lough – Newtown Turlough (mean = 2)
- > Doolough Headford (Turloughcor) (mean = 68)
- > Inishmore, Aran Islands (mean = 197)
- > Inner Galway Bay (mean = 1,131)
- > Inner Streamstown Bay (mean = 15)
- > Kiltiernan Turlough (mean = 14)
- > Lough Corrib (mean = 101)
- > Lydacan Castle Turlough (mean = 13)
- > Mannin Bay (mean = 33)
- > Omey Strand (mean = 60)
- > Pollnagarragh Marshes (mean = 3)
- > Rahasane Turlough (mean = 5)
- > Rossadillisk (mean = 15)
- > Terrestrial habitats¹³ (mean = 55)

Based on the above, the mean wintering population¹⁴ from Galway sites is 1,881 birds. However, as previously stated this likely remains an underestimate. Therefore, a regularly occurring population of 18 or more birds (>1% of the county population, as per NRA (2009)) is required to be classified as County Importance. The birds recorded at the site are judged to be associated with the larger county population, given they are a wide-ranging species and their association with agricultural grassland which is an abundant and widespread habitat at the county level. The grassland of the proposed wind farm site is not unique to the local area.

Common gull were observed within, or partially within, the Proposed Wind Farm on 4 no. occasions. The maximum number of birds recorded within the Proposed Wind Farm from the winter seasons surveyed was 250 no. birds. A population of national importance was observed on one occasion only. There were 3 no. observations of populations of county importance within the Proposed Wind Farm. Given how infrequently populations of national or county importance were observed within the Proposed Wind Farm, this species is considered to be a population of no greater than **Local Importance (higher value)**.

¹² The counting of gulls is optional under I-WeBS survey methodology, and gulls often occur outside of wetland areas which are not covered by this survey. Common gull population numbers outlined are therefore highly likely to be a considerable underestimate of the actual wintering national population and county population.

¹³ From terrestrial areas within the 8km radius of the Waterbird Distributions and Abundance Surveys outside of any I-WeBS sites. Flocks in flight not included in counts.

¹⁴ Please note that these figures are estimates based on the best available information and should be interpreted with a degree of caution.

Common gull are an SCI species for the nearby SPA of Lough Corrib however, this SPA cite breeding populations of common gull only¹⁵. As common gull were only observed during the winter season, this population is not cited as an interest of the SPA. Common gull are also cited as an SCI species for Inner Galway bay SPA however, given the distance of the Proposed Wind Farm to Inner Galway Bay SPA (17km) it has been determined that the birds observed on site during the survey period are associated with Lough Corrib.

Breeding

Common gull was not observed within the Proposed Wind Farm site during the breeding seasons. The Proposed Wind Farm is of **No Ecological Importance** to the breeding population of this species.

7.4.1.9 Coot

Coot is an SCI species of Lough Corrib that was only observed on one occasion within the Proposed Wind Farm despite undertaking a comprehensive suite of surveys over two and a half years. The Proposed Wind Farm is of **No Ecological Importance** to this species, given how infrequently the species was observed.

7.4.1.10 Lesser Black-backed Gull

Wintering

Lesser black-backed gull is an SCI species of Lough Mask. The national population of lesser black-backed gull is estimated to be 11,842 for the Republic of Ireland (ROI) (Lewis *et al.* (2019a)) Therefore, a regularly occurring population of 118 birds is required for classification as National Importance.

To estimate the county population, a review of all County Galway I-WeBS sites was conducted. It should be noted that, the population estimate based on I-WeBS figures below is likely to be an underestimate of the county population¹⁶. Similar to golden plover and black-headed gull outlined above, wintering lesser black-backed gull will utilise agricultural grasslands and other habitats not typically surveyed during IweBS counts. To account (partly) for the birds that occur in terrestrial habitats that would not have been counted by I-WeBS surveyors, the lesser black-backed gull that occur at terrestrial locations outside of any IweBS sites within the 8km survey radius of the Waterbird Distribution and Abundance Surveys were included in the county population estimate.

Below are the mean count values recorded for I-WeBS sites over the most recent 5-season period, i.e., for the period 2016/17 – 2020/21 (note that sites with a mean of zero birds were excluded from this list) and the mean peak count from the 8km survey radius of the Waterbird Distribution and Abundance Surveys for the two winter seasons (2020/21 – 2021/22):

- > Ballindeereen Turlough (mean = 1)
- > Ballyboy (mean = 1)
- > Ballyconneely Bay (mean = 1)
- > Caherglassaun Lough (mean = 1)
- > Cahermore Turlough (mean = 3)
- > Caranavoodaun Turlough (mean = 1)

¹⁵ https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004042.pdf

¹⁶ The counting of gulls is optional under I-WeBS survey methodology, and gulls often occur outside of wetland areas which are not covered by this survey. Furthermore, NPWS Article 12 reporting states the following concerning black-headed gull: "this species along with other gull species that overwinter in Ireland is currently only poorly covered by the Irish Wetland Bird Survey (I-WeBS) programme. This [Article 12] reported population size...is an underestimate of the true population size". Black-headed gull population numbers outlined are therefore highly likely to be a considerable underestimate of the actual wintering national population and county population.

- > Doolough Headford (Turloughcor) (mean = 2)
- > Inishmore, Aran Islands (mean = 5)
- > Inner Galway Bay (mean = 15)
- > Inner Streamstown Bay (mean = 1)
- > Lough Corrib (mean = 1)
- > Lough Rea (mean = 21)
- > North Central Galway Lakes (mean = 4)
- > North East Galway Lakes (mean = 3)
- > Omev Strand (mean = 2)
- > Pollnagarragh Marshes (mean = 4)
- > Rahasane Turlough (mean = 3)
- > Terrestrial habitats¹⁷ (mean = 27)

Based on the above, the mean wintering population¹⁸ from Galway sites is 96 birds. However, as previously stated this likely remains an underestimate. Therefore, a regularly occurring population of one or more birds (>1% of the county population, as per NRA (2009)) is required to be classified as County Importance. The birds recorded at the site are judged to be associated with the larger county population, given they are a wide-ranging species and their association with agricultural grassland which is an abundant and widespread habitat at the county level. The grassland of the proposed wind farm site is not unique to the local area.

Lesser black-backed gull were observed within, or partially within, the Proposed Wind Farm on 23 occasions during the winter season. The maximum number of birds recorded within the Proposed Wind Farm from the winter seasons surveyed was 6 birds. Thus, this species is considered to be a population of **County Importance**.

Lesser black-backed gull are an SCI species for Lough Mask SPA however, given the large separation distance between the Proposed Wind Farm and Lough Mask and the proximity of Lough Corrib (3.7km), it is more likely that the birds observed at the Proposed Wind Farm are associated with Lough Corrib. Lesser black-backed gull is not an SCI species for Lough Corrib however, it does support a population of wintering birds.

Breeding

As per the latest NPWS Article 12 reporting document, the national population of breeding lesser black-backed gull is estimated to be 7,112 pairs for the Republic of Ireland (ROI) (Lewis *et al.* (2019a)). Therefore, a regularly occurring population of 71 pairs of birds is required for classification as National Importance. The recent seabird census (Seabird Count 2023) published figures for the County Galway population of lesser black-backed gull estimated to be 384 pairs each (national population divided by 13 counties). Therefore, a regularly occurring population of three pairs is required for classification of County Importance.

Lesser black-backed gull were observed within, or partially within, the Proposed Wind Farm on 230 occasions during breeding seasons. The maximum number of birds recorded within the Proposed Wind Farm from the winter seasons surveyed was 50 birds. Given the number of birds and frequency of observations, the population observed at the Proposed Wind Farm is considered to be associated with a breeding population of **County Importance**.

Lesser black-backed gull are an SCI species for Lough Mask SPA, however, given the large separation distance between the Proposed Wind Farm and Lough Mask, the proximity of Lough Corrib (3.7km)

¹⁷ From terrestrial areas within the 8km radius of the Waterbird Distributions Surveys outside of any I-WeBS sites. Flocks in flight not included in counts.

¹⁸ Please note that these figures are estimates based on the best available information and should be interpreted with a degree of caution.

and that there are breeding birds at Lough Corrib¹⁹, it is more likely that the birds observed at the Proposed Wind Farm are associated with Lough Corrib, an SPA of which this species is not cited as an SCI.

7.4.1.11 Curlew

Curlew is a BoCCI Red Listed species in Ireland. It was observed on only three occasions within, or partially within, the Proposed Wind Farm despite undertaking a comprehensive suite of surveys over two and a half years. The Proposed Wind Farm is of **No Ecological Importance** to this species, given how infrequently the species was observed.

7.4.1.12 Kestrel

As reported (2008-2012) under Article 12 of the Birds Directive (Directive 2009/147/EC), the national breeding population estimates of kestrel in the Republic of Ireland is 13,500 birds. Therefore, a regularly occurring population of 135 birds is required for classification as National Importance. There are no published figures for the County Galway population of kestrel. Assuming an even distribution of kestrel across the 26 counties of the Republic of Ireland²⁰, the population of kestrel in the county is estimated to be 519 birds each (national population divided by 26 counties). While density across counties may vary throughout Ireland, kestrel populations are present in all counties according to the bird atlas and distribution is roughly even. Furthermore, the habitat (agricultural grassland) of the Proposed Wind Farm and wider surroundings are not unique to the site or rare in the county. Kestrel are largely resident, often remaining in breeding territories if winters are mild (Riegert & Fuchs, 2011) or moving to lowlands if breeding territories are upland. In the absence of data on kestrel populations at a county level, an even distribution of kestrel across all counties is currently the best available estimate of the kestrel population in Galway county. Therefore, a regularly occurring population of five birds is required for classification of County Importance.

Kestrel was observed within the Proposed Wind Farm Site on 107 occasions. The maximum number of birds recorded within the Proposed Wind Farm Site from the winter seasons surveyed was two birds. There was a maximum of two breeding territories per year (2020–2023) identified (one probable and one confirmed in 2023) within, or partially within, the Proposed Wind Farm Site. This indicates a resident population of four adult birds during the breeding season. This population would be bolstered by fledglings at the end of the breeding season, which will remain present at the Proposed Wind Farm Site until the start of the next breeding season, when birds become territorial again. Given that kestrel have brood sizes of four to five chicks, and a survival rate of 30% in their first year²¹, it is likely that there would be a population of approximately four adults and three juvenile birds by the end of each winter season. The population recorded at the Proposed Wind Farm Site was therefore assigned **County Importance** on the basis of a resident/regularly occurring wintering population assessed to be important on a county level.

7.4.1.13 Lapwing

Wintering

The estimated national wintering population of lapwing in Ireland is 69,823 for the Republic of Ireland (ROI) (Burke et al. 2018). Therefore, a regularly occurring population 698 birds is required for classification as National Importance.

¹⁹ <https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004042.pdf>

²⁰ While acknowledging the unfavourable conservation status of this species with an identified population decline, this remains a species with a widespread distribution in Ireland (BoCCI, 2020-2026).

²¹ <https://app.bto.org/birdfacts/results/bob3040.htm>

To estimate the county population, a review of all County Galway I-WeBS sites was conducted. It should be noted that, the population estimate based on I-WeBS figures below is likely to be an underestimate of the county population²². Similar to golden plover and black-headed gull outlined above, wintering lapwing will utilise agricultural grasslands and other habitats not typically surveyed during I-WeBS counts. To account (partly) for the birds that occur in terrestrial habitats that would not have been counted by I-WeBS surveyors, the lapwing that occur at terrestrial locations outside of any I-WeBS sites within the 8km survey radius of the Waterbird Distribution and Abundance Surveys were included in the county population estimate.

Below are the mean count values recorded for I-WeBS sites over the most recent 5-season period, i.e., for the period 2016/17 – 2020/21 (note that sites with a mean of zero birds were excluded from this list) and the mean peak count from the 8km survey radius of the Waterbird Distribution and Abundance Surveys for the two winter seasons (2020/21 – 2021/22):

- > Ballindeereen Turlough (mean = 69)
- > Ballinduff Turlough & Grassland (mean = 34)
- > Ballyboy (mean = 49)
- > Ballyconneely Bay (mean = 17)
- > Caherglassaun Lough (mean = 74)
- > Cahermore Turlough (mean = 132)
- > Caranavoodaun Turlough (mean = 247)
- > Coole Lough - Newtown Turlough (mean = 30)
- > Doolough Headford (Turloughcor) (mean = 20)
- > Glenamaddy Turlough (mean = 64)
- > Inishmore, Aran Islands (mean = 87)
- > Inner Galway Bay (mean = 1599)
- > Kiltieman Turlough (mean = 113)
- > L. Coy - Blackrock - Bullaunagh – Ballylee (mean = 204)
- > Inner Streamstown Bay (mean = 1)
- > Lough Corrib (mean = 113)
- > Lough Rea (mean = 200)
- > Lydacan Castle Turlough (mean = 106)
- > North Central Galway Lakes (mean = 300)
- > North East Galway Lakes (mean = 223)
- > Polleagh Turlough (mean = 69)
- > Pollnagarragh Marshes (mean = 12)
- > Rahasane Turlough (mean = 472)
- > Termon Turloughs (mean = 106)
- > Tullaghnafrankagh Lough (mean = 90)
- > Terrestrial habitats²³ (mean = 331)

Based on the above, the mean wintering population²⁴ from Galway sites is 4,762 birds. However, as previously stated this likely remains an underestimate. Therefore, a regularly occurring population of 48 birds (>1% of the county population, as per NRA (2009)) is required to be classified as County Importance. The birds recorded at the site are judged to be associated with the larger county population, given this is a widespread species (as per Bird Atlas distribution maps) that utilises an abundant and widespread habitat at the county level (i.e. agricultural grassland).

²² A relatively large proportion of lapwing are known to spend winter away from coastal wetlands, often in non-wetland habitats such as agricultural land. Therefore, this species is considered poorly monitored by wetland waterbird monitoring methods and assigning accurate national estimates of wintering populations is difficult (Delaney et al., 2009).

²³ From terrestrial areas within the 8km radius of the Waterbird Distribution and Abundance Surveys outside of any I-WeBS sites. Flocks in flight not included in counts.

²⁴ Please note that these figures are estimates based on the best available information and should be interpreted with a degree of caution.

Lapwing was observed within the Proposed Wind Farm site on two occasions. The maximum number of birds recorded within the Proposed Wind Farm site from the winter seasons surveyed was 43 birds. The population recorded at the Proposed Wind Farm Site was therefore assigned **Local Importance (higher)** on the basis of a resident/regularly occurring wintering population assessed to be important on a local level.

Breeding

Lapwing was not observed within the Proposed Wind Farm during the breeding seasons. The Proposed Wind Farm Site is of **No Ecological Importance** to the breeding population of this species.

7.4.1.14 Snipe

As reported (2013-2018) under Article 12 of the Birds Directive (Directive 2009/147/EC), the national breeding population estimates of snipe in the Republic of Ireland is 8,550 no. birds. Therefore, a regularly occurring population of 86 no. birds is required for classification as National Importance. There are no published figures for the County Galway population of snipe. Assuming an even distribution of snipe²⁵ across the 26 counties of the Republic of Ireland, the County population of snipe is estimated to be 329 no. birds in each county (national population divided by 26 counties). While density across counties may vary throughout Ireland, snipe populations are present in all counties according to the bird atlas and distribution is roughly even. Furthermore, the habitat (agricultural grassland) of the Proposed Wind Farm and wider surroundings are not unique to the site or rare in the county. In the absence of data on snipe populations at a county level, an even distribution of snipe across all counties is currently the best available estimate of the snipe population in Galway county. Therefore, a regularly occurring population of 2 no. birds is required for the classification of County Important.

Snipe was observed within the Proposed Wind Farm on 30 no. occasions. The maximum number of birds recorded within the Proposed Wind Farm from the winter seasons surveyed was 6 no. birds. While there were no confirmed breeding territories identified during surveys, there was a regular occurrence of snipe. As a precautionary approach, the population recorded at the Proposed Wind Farm was therefore assigned **County Importance** on the basis of a resident/regularly occurring wintering population assessed to be important on a county level.

7.4.1.15 Woodcock

Woodcock is a BoCCI Red Listed species for the breeding season only in Ireland. There are no national estimates of the breeding or non-breeding population of woodcock in Ireland. It was observed on only one occasion outside of the breeding season within, or partially within, 500m of the proposed turbine layout despite undertaking a comprehensive suite of surveys over two and a half years. The Proposed Wind Farm Site is of **No Ecological Importance** to this species, given how infrequently the species was observed.

7.4.1.16 Buzzard

The national population of buzzard is estimated to be 1,938 breeding pairs (NPWS Article 12 Reporting). Buzzard is a Green Listed BoCCI species, which is widely distributed and utilises a wide variety of habitats and is therefore of lower conservation concern.

Buzzard was regularly observed within the Proposed Wind Farm site and surrounds during the breeding and winter seasons. Birds were hunting within the Proposed Wind Farm site, one confirmed

²⁵ While acknowledging the unfavourable conservation status of this species with an identified population decline, this remains a species with a widespread distribution in Ireland (BoCCI, 2020-2026).

and one probable breeding territory were identified within the Proposed Wind Farm site, and further probable territories were identified in the hinterland. Thus, this species is considered to be a population of **Local Importance (Higher value)** on the basis of a resident/regularly occurring population assessed to be important at the local level.

7.4.1.17 Sparrowhawk

The national population of sparrowhawk is estimated to be 11,859 birds (Lewis *et al.*, 2019). Sparrowhawk is a Green Listed BoCCI species, which is widely distributed and utilises a wide variety of habitats and is therefore of lower conservation concern.

Sparrowhawk was regularly observed within the Site and surrounds during the breeding and winter seasons. Birds were hunting within the Proposed Wind Farm site, one probable breeding territory was identified within the Proposed Wind Farm site, and another probable breeding territory within 1km of the turbines was identified. Thus, this species is considered to be a population of **Local Importance (Higher value)** on the basis of a resident/regularly occurring population assessed to be important at the local level.

7.4.1.18 Grey Wagtail

The national population of grey wagtail is estimated to be 50,768 birds (Lewis *et al.*, 2019). In the absence of more detailed county-level information, the county population is estimated to be 1,953 birds, assuming an even spatial distribution across the 26 counties of Ireland covered by these data. Therefore, a regularly occurring population of 508 birds is required for classification as National Importance and of 20 birds for classification as County Importance.

This species was occasionally observed during surveys, including within the Proposed Wind Farm site. It is considered to be a population of **Local Importance (Lower Value)**.

7.4.1.19 Meadow Pipit

The national population of meadow pipit is estimated to be 1,351,995 birds (Lewis *et al.*, 2019). In the absence of more detailed county-level information, the county population is estimated to be 52,000 birds, assuming an even spatial distribution across the 26 counties of Ireland covered by these data. Therefore, a regularly occurring population of 13,520 birds is required for classification as National Importance and of 520 birds for classification as County Importance.

This species was regularly observed during surveys, including within the Proposed Wind Farm site. Thus, this species is considered to be a population of **Local Importance (Lower value)** on the basis of a resident/regularly occurring population assessed to be important at the local level.

7.4.1.20 Redwing

Estimates for the national or county wintering population of redwing are not available. However, the estimate for Europe is 26,300,000-40,300,000 birds, a proportion of which visit Ireland in winter.

This species was regularly observed during winter surveys, including within the Proposed Wind Farm site, with flocks of up to 400 birds observed. Thus, this species is considered to be a wintering population of **Local Importance (Lower value)** on the basis of a regularly occurring winter population assessed to be important at the local level.

7.4.1.21 Swift

The national population of swift is estimated to be 51,728 birds (Lewis *et al.*, 2019). In the absence of more detailed county-level information, the county population is estimated to be 1,990 birds, assuming an even spatial distribution across the 26 counties of Ireland covered by these data. Therefore, a regularly occurring population of 517 birds is required for classification as National Importance and of 20 birds for classification as County Importance.

This species was occasionally observed during breeding season surveys, including within the Proposed Wind Farm site. Thus, this species is considered to be a breeding population of **Local Importance (Lower value)** on the basis of a regularly occurring breeding population assessed to be important at the local level.

7.4.1.22 Yellowhammer

The national population of yellowhammer is estimated to be 217,252 birds (Lewis *et al.*, 2019). In the absence of more detailed county-level information, the county Galway population is estimated to be approximately 11,434 birds, assuming an even spatial distribution across the 19 counties of Ireland where this species was frequently recorded in the distribution map provided in Lewis *et al.* (2019). Therefore, a regularly occurring population of 2,173 birds is required for classification as National Importance and of 114 birds for classification as County Importance.

This species was regularly observed during surveys, including within the Proposed Wind Farm site. Thus, this species is considered to be a population of **Local Importance (Lower value)** on the basis of a resident/regularly occurring population assessed to be important at the local level.

7.4.2 Identification of Key Ornithological Receptors

Table 7-11 outlines the rationale for including or excluding each target species recorded during field surveys as a KOR. The 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 rational

Species	Conservation Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
Golden Plover	Annex I Birds Directive & SCI of Lough Corrib SPA	<u>Wintering</u> County Importance	<p>This species was occasionally recorded landing within the Proposed Wind Farm. The potential for habitat loss cannot be excluded. Potential for direct habitat loss cannot be excluded.</p> <p>Birds were recorded flying over the Proposed Wind Farm and within 500m of the proposed turbine layout. Potential for disturbance/displacement cannot be excluded.</p> <p>This species was recorded flying over the Proposed Wind Farm within the potential collision risk zone. Potential for collision risk cannot be excluded.</p> <p>As such, an assessment of direct habitat loss, displacement and collision risk is required for golden plover.</p>	Yes
Hen Harrier	Annex I Birds Directive & SCI of Lough Corrib SPA	<u>Wintering</u> County Importance (higher value)	<p>This species was occasionally recorded hunting within the Proposed Wind Farm. The potential for habitat loss cannot be excluded. Potential for direct habitat loss cannot be excluded.</p>	Yes

Species	Conservation Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
			<p>Birds were recorded flying over the Proposed Wind Farm and within 500m of the proposed turbine layout. Potential for disturbance/displacement cannot be excluded.</p> <p>This species was recorded flying over the Proposed Wind Farm within the potential collision risk zone. Potential for collision risk cannot be excluded.</p> <p>As such, an assessment of direct habitat loss, disturbance/displacement and collision risk is required for hen harrier.</p>	
Little Egret	Annex I Birds Directive	<p><u>All Seasons</u></p> <p>No populations of ecological importance recorded</p>	No population of ecological significance was recorded utilising the Proposed Wind Farm during the extensive suite of surveys conducted. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Proposed Project will have a significant effect on this species.	No
Merlin	Annex I Birds Directive	<p><u>All Seasons</u></p> <p>No populations of ecological importance recorded</p>	No population of ecological significance was recorded utilising the Proposed Wind Farm during the extensive suite of surveys conducted. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Proposed Project will have a significant effect on this species.	No
Peregrine Falcon	Annex I Birds Directive	<p><u>All Seasons</u></p> <p>County Importance</p>	<p>This species was occasionally recorded hunting within the Proposed Wind Farm. The potential for habitat loss cannot be excluded. Potential for direct habitat loss cannot be excluded.</p> <p>Birds were recorded flying over the Proposed Wind Farm and within 500m of the proposed turbine locations. Potential for disturbance/displacement cannot be excluded.</p>	Yes

Species	Conservation Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
			<p>This species was recorded flying over the Proposed Wind Farm within the potential collision risk zone. Potential for collision risk cannot be excluded.</p> <p>As such, an assessment of direct habitat loss, disturbance/displacement and collision risk is required for peregrine falcon.</p>	
Whooper Swan	Annex I Birds Directive	<p><u>Wintering</u></p> <p>Local Importance (higher value)</p>	<p>Birds were not recorded utilising habitats within the site of the Proposed Wind Farm or its immediate surroundings. Therefore, the potential for direct habitat loss is limited.</p> <p>Birds were recorded flying over the Proposed Wind Farm and within 500m of the proposed turbine layout. Potential for disturbance/displacement cannot be excluded.</p> <p>This species was recorded flying over the Proposed Wind Farm within the potential collision risk zone. Potential for collision risk cannot be excluded.</p> <p>As such, an assessment of direct disturbance/displacement and collision risk is required for whooper swan.</p>	Yes
Black-headed Gull	SCI of Lough Corrib SPA (Breeding Season)	<p><u>Wintering</u></p> <p>County Importance</p>	<p>This species was occasionally recorded landing within the Proposed Wind Farm. The potential for habitat loss cannot be excluded. Potential for direct habitat loss cannot be excluded.</p> <p>Birds were recorded flying over the Proposed Wind Farm and within 500m of the proposed turbine layout. Potential for disturbance/displacement cannot be excluded.</p> <p>This species was recorded flying over the Proposed Wind Farm within the potential collision risk zone. Potential for collision risk cannot be excluded.</p>	Yes

Species	Conservation Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
			As such, an assessment of direct habitat loss, displacement and collision risk is required for black-headed gull.	
		<p>Breeding</p> <p>County Importance</p>	<p>This species was occasionally recorded landing within the Proposed Wind Farm. The potential for habitat loss cannot be excluded. Potential for direct habitat loss cannot be excluded.</p> <p>Birds were recorded flying over the Proposed Wind Farm and within 500m of the proposed turbine layout. Potential for disturbance/displacement cannot be excluded.</p> <p>This species was recorded flying over the Proposed Wind Farm within the potential collision risk zone. Potential for collision risk cannot be excluded.</p> <p>As such, an assessment of direct habitat loss, displacement and collision risk is required for black-headed gull.</p>	Yes
Common Gull	SCI of Lough Corrib SPA (Breeding Season)	<p>Wintering</p> <p>Local Importance (higher value)</p>	<p>Birds were recorded flying over the Proposed Wind Farm and within 500m of the proposed turbine layout. Potential for disturbance/displacement cannot be excluded.</p> <p>This species was recorded flying over the Proposed Wind Farm within the potential collision risk zone. Potential for collision risk cannot be excluded.</p> <p>As such, an assessment of disturbance/displacement and collision risk is required for common gull.</p>	Yes
		<p>Breeding</p>	<p>No population of ecological significance was recorded utilising the Proposed Wind Farm during the extensive suite of surveys conducted. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are</p>	No

Species	Conservation Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
		No populations of ecological importance recorded	limited and there is no evidence to suggest that the Proposed Project will have a significant effect on this species.	
Coot	SCI of Lough Corrib SPA	<u>Wintering</u> No populations of ecological importance recorded	No population of ecological significance was recorded utilising the Proposed Wind Farm during the extensive suite of surveys conducted. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Proposed Project will have a significant effect on this species.	No
Lesser Black-backed Gull	BoCCI Amber Listed	<u>Wintering</u> County Importance	<p>This species was occasionally recorded landing within the Proposed Wind Farm. The potential for habitat loss cannot be excluded. Potential for direct habitat loss cannot be excluded.</p> <p>Birds were recorded flying over the Proposed Wind Farm and within 500m of the proposed turbine layout. Potential for disturbance/displacement cannot be excluded.</p> <p>This species was recorded flying over the Proposed Wind Farm within the potential collision risk zone. Potential for collision risk cannot be excluded.</p> <p>As such, an assessment of direct habitat loss, disturbance/displacement and collision risk is required for lesser black-backed gull.</p>	Yes
		<u>Breeding</u> County Importance	This species was occasionally recorded landing within the Proposed Wind Farm. The potential for habitat loss cannot be excluded. Potential for direct habitat loss cannot be excluded.	Yes

Species	Conservation Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
			<p>Birds were recorded flying over the Proposed Wind Farm and within 500m of the proposed turbine layout. Potential for disturbance/displacement cannot be excluded.</p> <p>This species was recorded flying over the Proposed Wind Farm within the potential collision risk zone. Potential for collision risk cannot be excluded.</p> <p>As such, an assessment of direct habitat loss, disturbance/displacement and collision risk is required for lesser black-backed gull.</p>	
Curlew	BoCCI Red List	<p><u>All Seasons</u></p> <p>No populations of ecological importance recorded</p>	<p>Curlew was recorded infrequently and in low numbers. No population of ecological significance was recorded utilising the Proposed Wind Farm during the extensive suite of surveys conducted. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Proposed Project will have a significant effect on this species.</p>	No
Kestrel	BoCCI Red List	<p><u>All Seasons</u></p> <p>County Importance</p>	<p>There were up to two kestrel territories identified within the Proposed Wind Farm. Additionally, this species was regularly recorded hunting within the Proposed Wind Farm. The potential for habitat loss cannot be excluded. Potential for direct habitat loss cannot be excluded.</p> <p>Birds were recorded flying over the Proposed Wind Farm and within 500m of the proposed turbine layout. Potential for disturbance/displacement cannot be excluded.</p> <p>This species was recorded flying over the Proposed Wind Farm within the potential collision risk zone. Potential for collision risk cannot be excluded.</p>	Yes

Species	Conservation Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
			As such, an assessment of direct habitat loss, disturbance/displacement and collision risk is required for kestrel.	
Lapwing	BoCCI Red List	<p><u>Wintering</u></p> <p>Local Importance</p>	<p>Birds were not recorded utilising habitats within the Proposed Wind Farm site or its immediate surroundings. Therefore, the potential for direct habitat loss is limited.</p> <p>Birds were recorded flying over the Proposed Wind Farm over the winter season and within 500m of the proposed turbine layout. Potential for disturbance/displacement cannot be excluded.</p> <p>This species was recorded flying over the Proposed Wind Farm within the potential collision risk zone. Potential for collision risk cannot be excluded.</p> <p>As such, an assessment of disturbance/displacement and collision risk is required for lapwing.</p>	Yes
		<p><u>Breeding</u></p> <p>No population of ecological importance recorded</p>	<p>This species was not recorded on site or within the Proposed Wind Farm during the breeding season. There is no evidence to suggest that the Proposed Project will have a significant effect on this species.</p> <p>There is no potential for any significant effects.</p>	No
Snipe	BoCCI Red List	<p><u>All Seasons</u></p> <p>County Importance</p>	<p>This species was regularly recorded within the Proposed Wind Farm. The potential for habitat loss cannot be excluded. Potential for direct habitat loss cannot be excluded.</p> <p>Birds were recorded flying over the Proposed Wind Farm and within 500m of the proposed turbine layout. Potential for disturbance/displacement cannot be excluded.</p>	Yes

Species	Conservation Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
			<p>This species was recorded flying over the Proposed Wind Farm within the potential collision risk zone. Potential for collision risk cannot be excluded.</p> <p>As such, an assessment of direct habitat loss, disturbance/displacement and collision risk is required for snipe.</p>	
Woodcock	BoCCI Red List	<p><u>Wintering</u></p> <p>No populations of ecological importance recorded</p>	<p>No population of ecological significance was recorded utilising the Proposed Wind Farm during the extensive suite of surveys conducted. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Proposed Project will have a significant effect on this species.</p>	No
Buzzard	BoCCI Green List; a species sensitive to Wind Farm Developments	<p><u>All Seasons</u></p> <p>Local Importance (higher value)</p>	<p>This species was regularly recorded within the Proposed Wind Farm. The potential for habitat loss cannot be excluded. Potential for direct habitat loss cannot be excluded.</p> <p>Birds were recorded flying over the Proposed Wind Farm and within 500m of the proposed turbine layout. Potential for disturbance/displacement cannot be excluded.</p> <p>This species was recorded flying over the Proposed Wind Farm within the potential collision risk zone. Potential for collision risk cannot be excluded.</p> <p>As such, an assessment of direct habitat loss, disturbance/displacement and collision risk is required for buzzard.</p>	Yes
Sparrowhawk	BoCCI Green List; a species sensitive to Wind Farm Developments	<p><u>All Seasons</u></p> <p>Local Importance (higher value)</p>	<p>This species was regularly recorded within the Proposed Wind Farm. The potential for habitat loss cannot be excluded. Potential for direct habitat loss cannot be excluded.</p>	Yes

Species	Conservation Status	NRA Evaluation	Rationale for inclusion/exclusion as KOR	KOR
			<p>Birds were recorded flying over the Proposed Wind Farm and within 500m of the proposed turbine layout. Potential for disturbance/displacement cannot be excluded.</p> <p>This species was recorded flying over the Proposed Wind Farm within the potential collision risk zone. Potential for collision risk cannot be excluded.</p> <p>As such, an assessment of direct habitat loss, disturbance/displacement and collision risk is required for sparrowhawk.</p>	
Passerines	BoCCI Red List	<p><u>All Seasons</u></p> <p>Local Importance (lower value)</p>	<p>Grey wagtail, meadow pipit, redwing, swift and yellowhammer were recorded at the Proposed Wind Farm. However, as per NatureScot guidance, it is generally considered that passerine bird species are not significantly impacted by wind farms due to their ecology. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Proposed Project will have a significant effect on these species.</p>	No

7.4.3 Key Ornithological Receptor Sensitivity Determination

Criteria developed by Percival (2003) for assessing bird sensitivity within the Proposed Wind Farm is presented in Table 7-3 (Section 7.2.5). The sensitivity of the KORs, as per Percival (2003), are listed below, including the rationale for their respective sensitivity classification.

Very High Sensitivity KORs are:

- > Black-headed Gull (Breeding) (SCI of Lough Corrib SPA)
- > Golden Plover (SCI of Lough Corrib SPA)
- > Hen Harrier (SCI of Lough Corrib SPA)

Medium Sensitivity KORs are:

- > Peregrine Falcon (Annex I; EU Birds Directive)
- > Whooper Swan (Annex I; EU Birds Directive)
- > Kestrel (BoCCI Red Listed)
- > Lapwing (BoCCI Red Listed)
- > Snipe (BoCCI Red Listed)
- > Black-headed Gull (Wintering) (County important population)
- > Lesser Black-backed Gull (All Seasons) (County important population)

Low Sensitivity KORs are:

- > Common Gull (Wintering) (lower conservation concern)
- > Buzzard (lower conservation concern)
- > Sparrowhawk (lower conservation concern)

7.5 Potential Effects

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

- > Assessment of 'Do nothing' Effect
- > Assessment of effects in relation to KORs during construction and operation phases of the Proposed Wind Farm
- > Assessment of effects in relation to KORs during decommissioning phase of the Proposed Wind Farm
- > Assessment of effects associated with the Proposed Grid Connection underground cabling route; and
- > Assessment of effects on designated areas

7.5.1 Do-Nothing Effect

If the Proposed Project were not to proceed, the existing uses of small-scale agriculture would continue. The opportunity to harness the wind energy resource of County Galway would be lost, as would the opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions. The opportunity to generate local employment and investment would also be lost.

7.5.2 Effects on Key Ornithological Receptors during Construction and Operation

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

7.5.2.1 Golden Plover (Winter)

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	<p>Golden plover were observed within, or partially within 500m of the proposed turbine layout on 21 no. occasions. Birds of county importance were observed on 6 no. occasions. Birds were observed landing and/or roosting in field within 500m of the proposed turbine layout on 5 no. occasions.</p> <p>The land lost to the development footprint is small (i.e. 13.8ha/1.46% of Proposed Project) relative to the total area within the Site.</p> <p>The species was observed infrequently foraging on the Proposed Wind Farm during the wintering period. Birds were not dependent on the Proposed Wind Farm for foraging or roosting. Given the abundance of similar suitable habitats (improved agricultural grasslands) in the wider area as those found within the Proposed Wind Farm and that extensive areas of suitable foraging and roosting habitat will remain post construction, no significant impacts are predicted.</p> <p>No significant effects of direct habitat loss are anticipated at the county, national or international level.</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Very High</i> sensitivity species and <i>Negligible</i> impact corresponds to a Low effect significance.</p>	<p>Likely long-term Slight Negative Effect</p>

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
Disturbance	<p>Research indicates that this species is susceptible to disturbance impacts during the construction works (Pearce-Higgins <i>et al.</i>, 2012). This species was not regularly recorded utilising habitats 500m of the proposed turbine layout for roosting or foraging. Significant areas of suitable roosting and foraging habitat for the species occur in the wider landscape and will be retained. In the event of displacement, there are extensive areas of similar habitat in the wider area. This would likely render such an effect inconsequential.</p> <p>No significant effects of disturbance are anticipated at the county, national or international level.</p>	The magnitude of the effect is assessed as <i>Negligible</i> . The cross tabulation of a <i>Very High</i> sensitivity species and <i>Negligible</i> impact corresponds to a Low effect significance.	Likely Short-term Slight Negative Effect
Operational Phase			
Direct Habitat Loss	Direct effects are not anticipated as no additional infrastructure is proposed.	No Effect	No Effect
Displacement and Barrier Effect	<p>Hötker <i>et al.</i> (2006) state that Golden Plover will approach wind turbines to an average distance of 175m in non-breeding season. 7 no. of the 23 no. observations of golden plover were within 175m of the proposed turbine layout during surveys during the 2020/21 and 2021/22 winter seasons. In the event of displacement, there are extensive areas of similar habitat in the wider area. This would likely render such an effect inconsequential.</p> <p>There is no evidence to suggest that the Proposed Wind Farm lies on a migratory/ regular commuting route for this species, therefore barrier effect is not anticipated.</p> <p>No significant effects of displacement are anticipated at the county, national or international level.</p>	The magnitude of the effect is assessed as <i>Negligible</i> . The cross tabulation of a <i>Very High</i> sensitivity species and <i>Negligible</i> impact corresponds to a Low effect significance.	Likely Long-term Slight Negative Effect
Collision Risk	The species was recorded flying within PCH during vantage point surveys. A “Random” collision risk analysis has been undertaken. To account for the	The magnitude of the effect is assessed as <i>Negligible</i> . The	Likely Long-term Constant Slight Negative Effect

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
<p>potential for the nocturnal flight activity of water birds, it has been assumed in the collision risk analysis that this species was active for a quarter of night (full details provided in Appendix 7-6).</p> <p>A key factor in calculating the predicted rate of collisions for a given species is the application of an avoidance rate. The avoidance rate accounts for the ability of a bird to take evasive action to avoid a collision with a turbine. Where species-specific avoidance rates are available these rates are usually very high, e.g. all swan species have been shown to avoid colliding with operating turbines 99.8% of the time. Until recently a species-specific avoidance rate has not been available for golden plover. A review of golden plover collision avoidance from four UK wind farms has been undertaken and is outlined in Appendix 7-6. The output of this new research was a golden plover avoidance rate of 99.6%. This avoidance rate was used in the collision risk analysis.</p> <p>The collision risk has been calculated at a rate of 0.8 collisions per year, or one bird every year. Annual mortality of adult golden plover has been calculated at 27% per annum (Sandercock, 2003). If 0.8 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. 4,423) by 0.07%. The predicted collision risk is negligible.</p> <p>No significant effects of collision risk are anticipated at the county, national or international level.</p>	<p>cross tabulation of a <i>Very High</i> sensitivity species and <i>Negligible</i> impact corresponds to a Low effect significance.</p>		

7.5.2.2 **Hen Harrier (Winter)**

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
Direct Habitat Loss	<p>The Proposed Wind Farm is dominated by improved agricultural grassland, this habitat is sub-optimal for wintering hen harrier.</p> <p>Hen harrier was observed on 5 no. occasions during winter season surveys. No winter roosts were identified within the Proposed Wind Farm or within 2km of the same, during the 2020/21 and 2021/22 winter seasons. There were no observations of hen harrier during breeding seasons.</p> <p>Hen harrier were observed hunting within the Proposed Wind Farm, however, the land lost to the development footprint is small (i.e. 13.8ha/1.46% of Proposed Project) relative to the total area within the Site. Given that hen harrier were observed infrequently at the Proposed Wind Farm, this limits the potential for the proposed infrastructure to result in ecologically significant habitat loss for hen harrier. Furthermore, there is an abundance of suitable habitat in the wider surroundings of the Proposed Wind Farm.</p> <p>No significant effects of direct habitat loss are anticipated at the county, national or international level.</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Very High</i> sensitivity species and <i>Negligible</i> impact corresponds to a Low effect significance.</p>	<p>Likely Long-term Slight Negative Effect</p>
Disturbance	<p>As previously discussed, no confirmed hen harrier roosting sites were recorded within a 2km radius of the Proposed Wind Farm. Foraging or commuting hen harrier were infrequently recorded within the Proposed Wind Farm (only on five occasions over 30 months).</p> <p>Therefore, based on the survey data, there is little potential for significant disturbance effects given that hen harrier were not dependent on the habitats located in close proximity to development infrastructure for foraging or roosting.</p> <p>Significant effects are not predicted.</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Very High</i> sensitivity species and <i>Negligible</i> impact corresponds to a Low effect significance.</p>	<p>Likely Short-term Slight Negative Effect</p>

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
Operational Phase			
Direct Habitat Loss	Direct effects are not anticipated as no additional infrastructure is proposed.	No Effect	No Effect
Displacement and Barrier Effect	<p>No evidence of roosting was recorded within the Proposed Wind Farm or within 2km of the Site. Hen harrier have been recorded to be subject to displacement impacts within a 500m radius of turbines (Pearce-Higgins <i>et al.</i>, 2009). However, foraging/commuting hen harrier were infrequently recorded within the Proposed Wind Farm and were only recorded within 500m of the proposed turbine layout on 4 no. occasions.</p> <p>Significant effects are not predicted given the low numbers recorded and infrequency of these observations.</p>	The magnitude of the effect is assessed as <i>Negligible</i> . The cross tabulation of a <i>Very High</i> sensitivity species and <i>Negligible</i> impact corresponds to a Low effect significance.	Likely Long-term Slight Negative Effect
Collision Risk	<p>The species was recorded flying within PCH during vantage point surveys. A “Random” collision risk analysis has been undertaken (full details provided in Appendix 7-6).</p> <p>The collision risk has been calculated at a rate of 0.001 collisions per year, or one bird every 1,653 years. The predicted collision risk is insignificant over the 30- year life-time of the Proposed Project.</p>	The magnitude of the effect is assessed as <i>Negligible</i> . The cross tabulation of a <i>Very High</i> sensitivity species and <i>Negligible</i> impact corresponds to a Low effect significance.	Likely Long-term Constant Slight Negative Effect

7.5.2.3 Peregrine Falcon (All Seasons)

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	<p>Peregrine were recorded on 6 no. occasions within the Proposed Wind Farm during surveys between April 2020 to March 2022 and April 2023 to September 2023. Most observations were of birds commuting, circling or foraging within the Proposed Wind Farm. While there were occasional observations of this species foraging within the Proposed Wind Farm during the breeding season, no evidence of on-site breeding activity was recorded. A confirmed breeding territory was identified approximately 3.2km from the proposed turbine layout. It cannot be ruled out that birds observed hunting within the Proposed Wind Farm were provisioning for this nest. This species is unlikely to be dependent on the onsite habitats, given the separation distance (3km) and the wide-ranging nature of the species and the availability of similar suitable habitats in the surroundings.</p> <p>No significant effects of direct habitat loss are anticipated.</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Medium</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.</p>	<p>Likely Long-Term Imperceptible Negative Effect</p>
Disturbance	<p>There were 5 no. observations of this species within, or partially within, 500m of the proposed turbine layout throughout the entire survey period: April 2020 to March 2022 and April 2023 to September 2023. Disturbance during construction is unlikely to discourage flight activity or foraging in the vicinity of the Proposed Wind Farm, particularly given peregrine has been documented to become accustomed to various sources of human disturbance (Ruddock <i>et al.</i>, 2007).</p> <p>No significant effects of disturbance are anticipated.</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Medium</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.</p>	<p>Likely Short-Term Imperceptible Negative Effect</p>
Operational Phase			
Direct Habitat Loss	<p>Direct effects are not anticipated as no additional infrastructure is proposed.</p>	No Effect	No Effect

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
Displacement and Barrier Effect	<p>In total, this species was recorded on 5 no. occasions within, or partially within, 500m of the proposed turbine layout between April 2020 to March 2022 and April 2023 to September 2023. The availability of alternative suitable habitat in the surroundings, limit the potential for significant displacement effects. Furthermore, peregrine has been documented to become accustomed to various sources of human disturbance (Ruddock <i>et al.</i>, 2007). It is, therefore, reasonable to conclude that following a period of habituation, the population will become accustomed to the wind farm in the landscape.</p> <p>No significant effects of displacement are anticipated.</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Medium</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.</p>	<p>Likely Long-Term Imperceptible Negative Effect</p>
Collision Risk	<p>The species was recorded flying within PCH during vantage point surveys. A “Random” collision risk analysis has been undertaken (full details provided in Appendix 7-6).</p> <p>The collision risk has been calculated at a rate of 0.03 collisions per year, or one bird every 30 years. Annual mortality of adult peregrine falcon has been calculated at 19% per annum (Craig <i>et al.</i>, 2004). If 0.03 collisions were to occur per year, it would mean that the losses at the Proposed Wind Farm would increase the annual mortality of the estimated county population (c.32) by 0.5%. The predicted collision risk is negligible. No significant effects are anticipated.</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Medium</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.</p>	<p>Likely Long-Term Imperceptible Negative Effect</p>

7.5.2.4 Whooper Swan (Wintering)

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	<p>As outlined in Section 7.4.2, all observations of whooper swan were of birds commuting over the Proposed Wind Farm. There were no observations of birds utilizing habitats within the Proposed Wind Farm for roosting or foraging during the winter season. Significant habitat loss effects are not predicted, given that the habitats within the Proposed Wind Farm are little used by this species during the winter.</p> <p>No significant effects of direct habitat loss are anticipated.</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Medium</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.</p>	<p>Likely Long-Term Imperceptible Negative Effect</p>
Disturbance	<p>There were no observations of whooper swan landing within the Proposed Wind Farm during surveys between April 2020 to March 2022 and April 2023 to September 2023. This demonstrates a lack of dependence of whooper swan on the habitats of the Proposed Wind Farm.</p> <p>No roosts were identified during the 30 months of survey. No disturbance is predicted to occur given the absence of roosting/foraging locations surrounding the Proposed Wind Farm.</p> <p>A disturbance buffer of 200-600m is recommended for non-breeding whooper swan (Goodship and Furness, 2022). This species was recorded in flight within 200m of the Proposed Wind Farm on 3 no. occasions. Numbers recorded ranged from an individual to 8 no. birds. Significant disturbance to whooper swan is not anticipated given the infrequency of observations.</p> <p>No significant effects of disturbance are anticipated.</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Medium</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.</p>	<p>Likely Short-Term Imperceptible Negative Effect</p>
Operational Phase			
Direct Habitat Loss	<p>Direct effects are not anticipated as no additional infrastructure is proposed.</p>	No Effect	No Effect

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
Displacement and Barrier Effect	<p>There were no observations of whooper swan utilising habitats within the Proposed Wind Farm during surveys. This demonstrates a lack of dependence of whooper swan on the habitats of the Proposed Wind Farm.</p> <p>Observations of whooper swan non-breeding activity give an avoidance distance of 300m from the base of wind energy installations (Percival, 2003). 3 no. of the observed flights of whooper swan were recorded within 300m of the proposed turbine layout across the two winters surveyed. This amount of flight activity is very low relative to the survey effort undertaken.</p> <p>No significant effects of displacement or barrier effects are anticipated at the county, national or international level.</p>	<p>The magnitude of the effect is assessed as <i>Low</i>. The cross tabulation of a <i>Medium</i> sensitivity species and <i>Low</i> impact corresponds to a Low effect significance.</p>	<p>Likely Long-Term Slight Negative Effect</p>
Collision Risk	<p>The species was recorded flying within PCH during vantage point surveys. A “Random” collision risk analysis has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated at a rate of 0.05 collisions per year, or one bird every 20 years. To account for the potential for the nocturnal flight activity of water birds, it has been assumed in the collision risk analysis that this species was active for a quarter of night (full details provided in Appendix 7-6).</p> <p>Annual mortality of adult whooper swan has been calculated at 20% per annum (Brazil, 2003). If 0.05 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. 1,261) by 0.02%. The predicted collision risk is negligible. No significant effects are anticipated at the county, national or international level.</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Very High</i> sensitivity species and <i>Negligible</i> impact corresponds to a Low effect significance.</p>	<p>Likely Long-Term Constant Slight Negative Effect</p>

7.5.2.5 Black-headed Gull (Winter)

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	<p>Black-headed gull were observed within, or partially within, 500m of the proposed turbine layout on 13 no occasions during winter seasons and ranged from an individual to 75 no. birds.</p> <p>Black-headed gull were observed landing or foraging in fields within 500m of the proposed turbine layout on only 2 no. occasions and were of 2 no. and 50 no. birds. Based on the survey data, black-headed gull infrequently utilise habitats within the Proposed Wind Farm.</p> <p>The land lost to the development footprint is small (i.e. 13.8ha/1.46% of Proposed Project) relative to the total area within the Site. Significant areas of suitable roosting and foraging habitat for the species occur in the wider landscape and will be retained.</p> <p>No significant effects of direct habitat loss are anticipated given the low numbers of observations.</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Medium</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.</p>	<p>Likely Long-term Imperceptible Negative Effect</p>
Disturbance	<p>Black-headed gull were observed within, or partially within, the Proposed Wind Farm on 13 no. occasions during winter seasons and numbers ranged from an individual to 75 no. birds.</p> <p>This species was not regularly recorded utilising habitats within the EIAR Site Boundary for roosting or foraging. Significant areas of suitable roosting and foraging habitat for the species occur in the wider landscape and will not be subject to construction disturbance. In the event of disturbance, there are extensive areas of similar habitat in the wider area. This would likely render such an effect inconsequential.</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Medium</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.</p>	<p>Likely Short-term Imperceptible Negative Effect</p>

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
	No significant effects of disturbance are anticipated at the county, national or international level.		
Operational Phase			
Direct Habitat Loss	Direct effects are not anticipated as no additional infrastructure is proposed.	No Effect	No Effect
Displacement and Barrier Effect	<p>Black-headed gull were observed within, or partially within, the Proposed Wind Farm on 13 no. occasions during winter seasons and numbers ranged from an individual to 75 no. birds.</p> <p>This species was not regularly recorded utilising habitats within the EIAR Site Boundary for roosting or foraging. Significant areas of suitable roosting and foraging habitat for the species occur in the wider landscape and will be retained. In the event of displacement, there are extensive areas of similar habitat in the wider area. This would likely render such an effect inconsequential.</p> <p>There is no evidence to suggest that the Proposed Wind Farm lies on a migratory/ regular commuting route for this species, therefore barrier effect is not anticipated.</p> <p>No significant effects of displacement are anticipated at the county, national or international level.</p>	The magnitude of the effect is assessed as <i>Negligible</i> . The cross tabulation of a <i>Medium</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.	Likely Long-term Imperceptible Negative Effect
Collision Risk	The species was recorded flying within PCH during vantage point surveys. A “Random” collision risk analysis has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated at a rate of 1.1 collisions per year, or one bird every year. To account for the potential for the nocturnal flight activity of water birds, it has been assumed in the collision risk analysis	The magnitude of the effect is assessed as <i>Negligible</i> . The cross tabulation of a <i>Medium</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.	Likely Long-term Imperceptible Negative Effect

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
	<p>that this species was active for a quarter of night (full details provided in Appendix 7-6).</p> <p>Annual mortality of adult black-headed gull has been calculated at 10% per annum (Prévot-Julliard <i>et al.</i>, 1998). If 1.1 collisions were to occur per year, it would mean that the losses at the Proposed Wind Farm would increase the annual mortality of the county population (c. 3,611) by 0.3%. The predicted collision risk is negligible. No significant effects are anticipated.</p>		

7.5.2.6 Black-headed Gull (Breeding)

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	<p>Black-headed gull were observed within, or partially within, the Proposed Wind Farm on 29 no. occasions during breeding seasons. and numbers ranged from an individual to 16 no. birds.</p> <p>Black-headed gull were observed landing or foraging in fields within 500m of the proposed turbine layout on 2 no. occasions and were of two and three birds. Based on the survey data, black-headed gull infrequently utilise habitats within the Proposed Wind Farm Site.</p> <p>The land lost to the development footprint is small (i.e. 13.8ha/1.46% of Proposed Project) relative to the total area within the Site. Significant areas of suitable roosting and foraging habitat for the species occur in the wider landscape and will be retained.</p> <p>No significant effects of direct habitat loss are anticipated at the county, national or international level.</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Very High</i> sensitivity species and <i>Negligible</i> impact corresponds to a Low effect significance.</p>	<p>Likely Long-term Slight Negative Effect</p>
Disturbance	<p>Black-headed gull were observed within, or partially within, the Proposed Wind Farm on 29 no. occasions during breeding seasons and numbers ranged from an individual to 16 no. birds.</p> <p>This species were only recorded on two occasions utilising habitats within EIAR Site Boundary for roosting or foraging. Furthermore, significant areas of suitable roosting and foraging habitat for the species occur in the wider landscape and will not be subject to construction disturbance. In the event of disturbance, there are extensive areas of similar habitat in the wider area. This would likely render such an effect inconsequential.</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Very High</i> sensitivity species and <i>Negligible</i> impact corresponds to a Low effect significance.</p>	<p>Likely Short-term Slight Negative Effect</p>

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
	No significant effects of disturbance are anticipated at the county, national or international level.		
Operational Phase			
Direct Habitat Loss	Direct effects are not anticipated as no additional infrastructure is proposed.	No Effect	No Effect
Displacement and Barrier Effect	<p>Black-headed gull were observed within, or partially within, the Proposed Wind Farm on 29 no. occasions during breeding seasons and numbers ranged from an individual to 16 no. birds.</p> <p>This species was only recorded on two occasions utilising habitats within the EIAR Site Boundary for roosting or foraging. Furthermore, significant areas of suitable roosting and foraging habitat for the species occur in the wider landscape and will be retained. In the event of displacement, there are extensive areas of similar habitat in the wider area. This would likely render such an effect inconsequential.</p> <p>There is no evidence to suggest that the Proposed Wind Farm lies on a migratory/ regular commuting route for this species, therefore barrier effect is not anticipated.</p> <p>No significant effects of displacement are anticipated at the county, national or international level.</p>	The magnitude of the effect is assessed as <i>Negligible</i> . The cross tabulation of a <i>Very High</i> sensitivity species and <i>Negligible</i> impact corresponds to a Low effect significance.	Likely Long-term Slight Negative Effect
Collision Risk	The species was recorded flying within PCH during vantage point surveys. A “Random” collision risk analysis has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated at a rate of 0.5 collisions per year, or one bird every two years. To account for the potential for the nocturnal flight activity of water birds, it has been assumed in the collision risk	The magnitude of the effect is assessed as <i>Negligible</i> . The cross tabulation of a <i>Very High</i> sensitivity species and <i>Negligible</i> impact corresponds to a Low effect significance.	Likely Long-term Constant Slight Negative Effect

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
	<p>analysis that this species was active for a quarter of night (full details provided in Appendix 7-6).</p> <p>Annual mortality of adult black-headed gull has been calculated at 10% per annum (Prévot-Julliard <i>et al.</i>, 1998). If 0.5 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.1,960) by 0.26%. The predicted collision risk is negligible. No significant effects are anticipated at the county, national or international level.</p>		

7.5.2.7 Common Gull (Winter)

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	<p>Common gull were observed within, or partially within, the Proposed Wind Farm Site on three occasions during winter seasons and numbers ranged from 40 no. to 250 no. birds.</p> <p>Common gull were only observed commuting over the Proposed Wind Farm. There were no observations of this species utilising habitats within the Proposed Wind Farm for roosting or foraging.</p> <p>The land lost to the development footprint is small (i.e. 13.8ha/1.46% of Proposed Project) relative to the total area within the Site. Significant areas of suitable roosting and foraging habitat for the species occur in the wider landscape and will be retained.</p> <p>No significant effects of direct habitat loss are anticipated.</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Low</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.</p>	<p>Likely Long-term Imperceptible Negative Effect</p>
Disturbance	<p>Common gull were observed within, or partially within, the Proposed Wind Farm on three occasions during winter seasons and numbers ranged from 40 no. to 250 no. birds.</p> <p>This species was not recorded utilising habitats within the Site for roosting or foraging. Significant areas of suitable roosting and foraging habitat for the species occur in the wider landscape and will not be subject to construction disturbance. In the event of disturbance, there are extensive areas of similar habitat in the wider area. This would likely render such an effect inconsequential.</p> <p>No significant effects of disturbance are anticipated.</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Low</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.</p>	<p>Likely Short-term Imperceptible Negative Effect</p>

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
Operational Phase			
Direct Habitat Loss	Direct effects are not anticipated as no additional infrastructure is proposed.	No Effect	No Effect
Displacement and Barrier Effect	<p>Common gull were observed within, or partially within, the Proposed Wind Farm on three occasions during winter and numbers ranged from 40 no. to 250 no. birds.</p> <p>This species was not recorded utilising habitats within the EIAR Site Boundary for roosting or foraging. Significant areas of suitable roosting and foraging habitat for the species occur in the wider landscape and will be retained. In the event of disturbance, there are extensive areas of similar habitat in the wider area. This would likely render such an effect inconsequential.</p> <p>There is no evidence to suggest that the Proposed Wind Farm lies on a migratory/ regular commuting route for this species, therefore barrier effect is not anticipated.</p> <p>No significant effects of displacement are anticipated.</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Low</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.</p> <p>No significant effects of displacement are anticipated.</p>	Likely Long-term Imperceptible Negative Effect
Collision Risk	<p>The species was recorded flying within PCH during vantage point surveys. A “Random” collision risk analysis has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated at a rate of 5.8 collisions per year, or less than one bird per year. To account for the potential for the nocturnal flight activity of water birds, it has been assumed in the collision risk analysis that this species was active for a quarter of night (full details provided in Appendix 7-6).</p> <p>Annual mortality of adult common gull has been calculated at 14% per annum (Bukaciński and Bukacińska, 2003). If 5.8 collisions were to occur per year, it would mean that the losses at the Proposed Wind Farm would increase the</p>	The magnitude of the effect is assessed as <i>Low</i> . The cross tabulation of a <i>Low</i> sensitivity species and <i>Low</i> impact corresponds to a Very Low effect significance.	Likely Long-Term Constant Slight Negative Effect

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
	annual mortality of the county population (c. 1,826) by 2.3%. The collision risk is predicted to be of low magnitude.		

7.5.2.8 **Lesser Black-backed Gull (Winter)**

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	<p>Lesser black-backed gull were observed within, or partially within, the Proposed Wind Farm on 21 no. occasions during winter seasons and numbers ranged from an individual to 6 no. birds.</p> <p>Lesser black-backed gull were only observed commuting over the Proposed Wind Farm. There were no observations of this species utilising habitats within the Proposed Wind Farm for roosting or foraging during winter seasons.</p> <p>The land lost to the development footprint is small (i.e. 13.8ha/1.46% of Proposed Project) relative to the total area within the Site. Significant areas of suitable roosting and foraging habitat for the species occur in the wider landscape and will be retained.</p> <p>No significant effects of direct habitat loss are anticipated.</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Medium</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.</p>	<p>Likely Long-term Imperceptible Negative Effect</p>

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
Disturbance	<p>Lesser black-backed gull were observed within, or partially within, the Proposed Wind Farm on 21 no. occasions during winter seasons. and numbers ranged from an individual to 6 no. birds.</p> <p>This species was not recorded utilising habitats within the EIAR Site Boundary for roosting or foraging. Significant areas of suitable roosting and foraging habitat for the species occur in the wider landscape and will not be subject to construction disturbance. In the event of disturbance, there are extensive areas of similar habitat in the wider area. This would likely render such an effect inconsequential.</p> <p>No significant effects of disturbance are anticipated.</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Medium</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.</p>	<p>Likely Short-term Imperceptible Negative Effect</p>
Operational Phase			
Direct Habitat Loss	<p>Direct effects are not anticipated as no additional infrastructure is proposed.</p>	No Effect	No Effect
Displacement and Barrier Effect	<p>Lesser black-backed gull were observed within, or partially within, the Proposed Wind Farm on 21 no. occasions during winter seasons and numbers ranged from an individual to 6 no. birds.</p> <p>This species was not recorded utilising habitats within the EIAR Site Boundary for roosting or foraging. Significant areas of suitable roosting and foraging habitat for the species occur in the wider landscape and will be retained. In the event of disturbance, there are extensive areas of similar habitat in the wider area. This would likely render such an effect inconsequential.</p> <p>There is no evidence to suggest that the Proposed Wind Farm lies on a migratory/ regular commuting route for this species, therefore barrier effect is not anticipated.</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Medium</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.</p>	<p>Likely Long-term Imperceptible Negative Effect</p>

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
	No significant effects of displacement are anticipated.		
Collision Risk	<p>The species was recorded flying within PCH during vantage point surveys. A “Random” collision risk analysis has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated at a rate of 0.2 collisions per year, or one bird every five years. To account for the potential for the nocturnal flight activity of water birds, it has been assumed in the collision risk analysis that this species was active for a quarter of night (full details provided in Appendix 7-6).</p> <p>Annual mortality of adult lesser black-backed gull has been calculated at 9% per annum (Wanless <i>et al.</i>, 1996). If 0.2 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. 96) by 2.3%. The predicted collision risk is low.</p>	The magnitude of the effect is assessed as <i>Low</i> . The cross tabulation of a <i>Medium</i> sensitivity species and <i>Low</i> impact corresponds to a Low effect significance.	Likely Long-Term Constant Slight Negative Effect

7.5.2.9 Lesser Black-backed Gull (Breeding)

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	<p>Lesser black-backed gull were observed within, or partially within, the Proposed Wind Farm Site on 175 no. occasions during breeding seasons and numbers ranged from an individual to 50 no. birds.</p> <p>Lesser black-backed gull were mostly observed commuting over the Proposed Wind Farm. There were 8 no. observations of this species landing in fields within the Proposed Wind Farm for roosting or foraging during the breeding seasons surveyed.</p>	The magnitude of the effect is assessed as <i>Negligible</i> . The cross tabulation of a <i>Medium</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.	Likely Long-term Imperceptible Negative Effect

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
	<p>The land lost to the development footprint is small (i.e. 13.8ha/1.46% of Proposed Project) relative to the total area within the Site. Significant areas of suitable roosting and foraging habitat for the species occur in the wider landscape and will be retained.</p> <p>No significant effects of direct habitat loss are anticipated.</p>		
Disturbance	<p>Lesser black-backed gull were observed within, or partially within, the Proposed Wind Farm on 175 no. occasions during breeding seasons and numbers ranged from an individual to 50 no. birds.</p> <p>This species was recorded utilising habitats within the EIAR Site Boundary for roosting or foraging. Significant areas of suitable roosting and foraging habitat for the species occur in the wider landscape and will not be subject to construction disturbance. In the event of disturbance, there are extensive areas of similar habitat in the wider area. This would likely render such an effect inconsequential.</p> <p>No significant effects of disturbance are anticipated.</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Medium</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low significance.</p>	<p>Likely Short-term Imperceptible Negative Effect</p>
Operational Phase			
Direct Habitat Loss	<p>Direct effects are not anticipated as no additional infrastructure is proposed.</p>	No Effect	No Effect
Displacement and Barrier Effect	<p>Lesser black-backed gull were observed within, or partially within, the Proposed Wind Farm on 175 no. occasions during breeding seasons and numbers ranged from an individual to 50 no. birds.</p> <p>This species was recorded utilising habitats within the EIAR Site Boundary for roosting or foraging. Significant areas of suitable roosting and foraging habitat for the species occur in the wider landscape and will be retained. In the event</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Medium</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.</p>	<p>Likely Long-term Imperceptible Negative Effect</p>

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
	<p>of disturbance, there are extensive areas of similar habitat in the wider area. This would likely render such an effect inconsequential.</p> <p>There is no evidence to suggest that the Proposed Wind Farm lies on a migratory/ regular commuting route for this species, therefore barrier effect is not anticipated.</p> <p>No significant effects of displacement are anticipated.</p>		
Collision Risk	<p>The species was recorded flying within PCH during vantage point surveys. A “Random” collision risk analysis has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated at a rate of 2.69 collisions per year, or less than one bird per year. To account for the potential for the nocturnal flight activity of water birds, it has been assumed in the collision risk analysis that this species was active for a quarter of night (full details provided in Appendix 7-6).</p> <p>Annual mortality of adult lesser black-backed gull has been calculated at 9% per annum (Wanless <i>et al.</i>, 1996). If 2.69 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. 768) by 3.9%. The collision risk is predicted to be of low magnitude.</p>	<p>The magnitude of the effect is assessed as <i>Low</i>. The cross tabulation of a <i>Medium</i> sensitivity species and <i>Low</i> impact corresponds to a Low effect significance.</p>	<p>Likely Long-Term Constant Slight Negative Effect</p>

7.5.2.10 Kestrel (All Seasons)

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	<p>There were two confirmed breeding territories, one in 2021 (also occupied in 2020 and 2023), and one in 2023. Additionally, there was one probable territory identified in 2020 and one in 2023 during surveys between April 2020</p>	<p>The magnitude of the effect is assessed as <i>Low</i>. The cross tabulation of a <i>Medium</i></p>	<p>Likely Long-Term Imperceptible Negative Effect</p>

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
	<p>to March 2022 and April 2023 to September 2023. During the 2023 breeding season, there was one confirmed breeding territory within 500m of the proposed turbine layout in the west and two probable territories within, or partially within, 500m of the proposed turbine layout. The northern breeding territory was also a confirmed breeding territory in 2021 and a probable territory in 2020. Both territory locations were located in sparse treelines adjacent to improved agricultural grasslands.</p> <p>There will be minimal loss of suitable breeding habitat, given the extent of similar woodland habitats greater than 500m from the proposed turbine layout. Direct loss of foraging habitat relative to its availability onsite, will be minimal. The land lost to the development footprint is small ((i.e. 13.8ha/1.46% of Proposed Project) relative to the total area within the Site.</p> <p>Substantial areas of undisturbed suitable breeding and foraging habitat will remain both within the Proposed Wind Farm site and the wider surroundings postconstruction.</p> <p>No significant effects of direct habitat loss are anticipated.</p>	<p>sensitivity species and <i>Low</i> impact corresponds to a Very Low effect significance.</p>	
Disturbance	<p>The Proposed Wind Farm does not contain habitats that are unique to the local area. Therefore, were disturbance to occur it would not result in the loss of a scarce resource for the local kestrel population. As previously discussed, there were up to three kestrel territory identified per year at the Proposed Wind Farm. There was a maximum of three (three in 2023, one in 2021 and one in 2020) breeding territories within, or partially within, 500m of the proposed turbine layout. Given that kestrel have brood sizes of four to five chicks, and a survival rate of 30% in their first year, it is likely that there would be a population of approximately four adults and three juvenile birds by the end of the winter season. Therefore, 1.3% of the county population (i.e., 7 of c.519 birds (please see Section 7.4.1.12 for further details)) could be impacted.</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Medium</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.</p>	<p>Likely Short-Term Imperceptible Negative Effect</p>

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
	<p>Significant effects are not anticipated, given that extensive areas of suitable foraging habitat exist and will remain in the wider area. Onsite habitats are not considered unique to the Proposed Wind Farm. Significant disturbance effects are not predicted at the county, national or international scale.</p> <p>No significant effects of disturbance are anticipated.</p>		
Operational Phase			
Direct Habitat Loss	Direct effects are not anticipated as no additional infrastructure is proposed.	No Effect	No Effect
Displacement and Barrier Effect	<p>Raptor studies have generally found only low levels of turbine avoidance (Hötker <i>et al.</i>, 2006; Madders and Whitfield, 2006), with some species, such as kestrels, known to continue foraging activity close to turbines (Pearce-Higgins <i>et al.</i> 2009). Moreover, significant effects are not anticipated, given that extensive areas of suitable foraging habitat exist and will remain in the wider area. Onsite habitats are not considered unique to the Proposed Wind Farm.</p> <p>No significant effects of displacement are anticipated.</p>	The magnitude of the effect is assessed as <i>Negligible</i> . The cross tabulation of a <i>Medium</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.	Likely Long-Term Imperceptible Negative Effect
Collision Risk	<p>The species was recorded flying within PCH during vantage point surveys. A “Random” collision risk analysis has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated at a rate of 0.97 collisions per year, or one bird every year.</p> <p>Annual mortality of adult kestrel has been calculated at 35% per annum (Orta <i>et al.</i>, 2020). If 0.97 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.519) by 0.5%. The predicted collision risk is negligible.</p> <p>No significant effects are anticipated.</p>	The magnitude of the effect is assessed as <i>Negligible</i> . The cross tabulation of a <i>Medium</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.	Likely Long-Term Imperceptible Negative Effect

7.5.2.11 Lapwing (Winter)

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	<p>All observations of lapwing were of birds commuting over the Proposed Wind Farm. There were no observations of birds utilizing habitats within the Proposed Wind Farm for roosting or foraging during the winter season. Significant habitat loss effects are not predicted, given that the habitats within the Proposed Wind Farm are little used by this species during the winter.</p> <p>No significant effects of direct habitat loss are anticipated.</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Medium</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.</p>	<p>Likely Long-Term Imperceptible Negative Effect</p>
Disturbance	<p>There was no evidence to suggest that wintering lapwing were utilizing the Proposed Wind Farm for foraging or roosting. All observations were of birds commuting over the Proposed Wind Farm, and these flights are unlikely to be impacted by construction works. Significant disturbance effects are not anticipated.</p> <p>No significant effects of disturbance are anticipated.</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Medium</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.</p>	<p>Likely Short-Term Imperceptible Negative Effect</p>
Operational Phase			
Direct Habitat Loss	<p>Direct effects are not anticipated as no additional infrastructure is proposed.</p>	No Effect	No Effect
Displacement and Barrier Effect	<p>This species was not observed to utilise any areas of the Proposed Wind Farm during winter months and was recorded only commuting over the Proposed Wind Farm. There are extensive areas of suitable habitat in the wider area, outside any potential displacement buffer, should any potential displacement effect occur. Significant displacement effects are not anticipated.</p> <p>There is no evidence to suggest that the Proposed Wind Farm lies on a migratory/ regular commuting route for this species, therefore barrier effect is not anticipated.</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Medium</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.</p>	<p>Likely Long-Term Imperceptible Negative Effect</p>

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
	No significant effects of displacement are anticipated.		
Collision Risk	<p>The species was recorded flying within PCH during vantage point surveys. A “Random” collision risk analysis has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated at a rate of 0.2 collisions per year, or one bird every four years. To account for the potential for the nocturnal flight activity of water birds, it has been assumed in the collision risk analysis that this species was active for a quarter of night (full details provided in Appendix 7-6).</p> <p>Annual mortality of adult Lapwing has been calculated at 29.5% per annum (Peach <i>et al.</i>, 1994). If 0.2 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. 4,761) by 0.01%. No significant effects are anticipated.</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Medium</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.</p>	<p>Likely Long-Term Imperceptible Negative Effect</p>

7.5.2.12 Snipe (All Seasons)

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
<p>Direct Habitat Loss</p>	<p>Snipe were observed within the Proposed Wind Farm on 18 no. occasions and numbers ranged from an individual to 6 no. birds. While there were no confirmed breeding territories identified during surveys, there was a regular occurrence of snipe throughout the year.</p> <p>The loss of habitat will be minimal as the infrastructure is confined to a narrow corridor (i.e. 13.8ha/1.46% of Proposed Project) relative to the total area within the Site. Significant areas of suitable nesting and foraging habitat will continue to remain post construction and there is an abundance of suitable habitat in the surrounding area. Significant habitat loss effects are not predicted.</p> <p>No significant effects of direct habitat loss are anticipated.</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Medium</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.</p>	<p>Likely Long-Term Imperceptible Negative Effect</p>
<p>Disturbance</p>	<p>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. No evidence of breeding territories was observed between April 2020 and September 2023.</p> <p>Disturbance associated with construction works could result in a measurable reduction in the breeding density of snipe onsite/around the margins of the Proposed Wind Farm. However, as there is no evidence that snipe breed within the Proposed Wind Farm, no significant effects of disturbance are anticipated. Furthermore, given the abundance of similar habitats (improved agricultural grasslands) in the wider surroundings, substantial areas of undisturbed suitable breeding and foraging habitat will remain both within the Proposed Wind Farm and the wider surroundings during construction.</p> <p>No significant effects of disturbance are anticipated.</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Medium</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.</p>	<p>Likely Short-Term Imperceptible Negative Effect</p>

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
Operational Phase			
Direct Habitat Loss	Direct effects are not anticipated as no additional infrastructure is proposed.	No Effect	No Effect
Displacement and Barrier Effect	<p>Snipe breeding density can be reduced by 50% within 400m of turbines (PearceHiggins <i>et al.</i>, 2009), Disturbance displacement associated with operational turbines could result in a measurable reduction in the breeding density of snipe onsite/around the margins of the Proposed Wind Farm. However, no evidence of breeding was observed for snipe during surveys between April 2020 to March 2022 and April 2023 to September 2023, therefore breeding is unlikely to be affected within the Proposed Wind Farm.</p> <p>Furthermore, substantial areas of undisturbed suitable breeding and foraging habitat will remain both within the Proposed Wind Farm and the wider surroundings post-construction.</p> <p>No significant effects of displacement are anticipated.</p>	The magnitude of the effect is assessed as <i>Negligible</i> . The cross tabulation of a <i>Medium</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.	Likely Long-Term Imperceptible Negative Effect
Collision Risk	<p>The species was recorded flying within PCH during vantage point surveys. A “Random” collision risk analysis has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated at a rate of 0.04 collisions per year, or one bird every 27 years. To account for the potential for the nocturnal flight activity of water birds, it has been assumed in the collision risk analysis that this species was active for a quarter of night (full details provided in Appendix 7-6).</p> <p>Annual mortality of adult snipe has been calculated at 37.5% per annum (Spence, 1988). If 0.04 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. 329) by 0.03%. The predicted collision risk is negligible. No significant effects are anticipated.</p>	The magnitude of the effect is assessed as <i>Negligible</i> . The cross tabulation of a <i>Medium</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.	Likely Long-Term Imperceptible Negative Effect

7.5.2.13 Buzzard (All Seasons)

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	<p>This species was frequently recorded within the Proposed Wind Farm during the breeding and winter seasons. The construction of the wind farms site will not result in the loss of a significant amount of foraging habitat given the development footprint is small (i.e. 13.8ha/1.46% of Proposed Project) relative to the total area within the Site.</p> <p>There was one confirmed breeding territory identified within the Proposed Wind Farm during the 2020 breeding season and two probable breeding territories partially within the Proposed Wind Farm during the 2023 breeding season (see Confidential Appendix 7-5, Figure 7.13.5). There were no confirmed breeding territories within the Proposed Wind Farm in 2021 or 2023.</p> <p>There is evidence of breeding within the Proposed Wind Farm in areas of mature woodland/treelines. These habitats are not unique to the Proposed Wind Farm and are also available the wider area. Significant loss of breeding habitat is not anticipated. Direct loss of potential foraging habitat to the footprint of the Proposed Wind Farm will be minimal.</p> <p>No significant effects of direct habitat loss are anticipated.</p>	<p>The magnitude of the effect is assessed as <i>Low</i>. The cross tabulation of a <i>Low</i> sensitivity species and <i>Low</i> impact corresponds to a Very Low effect significance.</p>	<p>Likely Long-Term Imperceptible Negative Effect</p>
Disturbance	<p>Onsite areas and to a 500m radius of the Proposed Wind Farm has hosted between one and two breeding pairs of buzzard between 2020 and 2023 (see Confidential Appendix 7-5, Figure 7.13.5). As previously discussed, this species is resident at the Proposed Wind Farm. The disturbance associated with construction works will result in a measurable reduction in the breeding density of buzzard onsite and a reduction in the amount of available foraging habitat around the margins of the Proposed Wind Farm. However, these lands</p>	<p>The magnitude of the effect is assessed as <i>Medium</i>. The cross tabulation of a <i>Low</i> sensitivity species and <i>Medium</i> impact corresponds to a Very Low effect significance.</p>	<p>Likely Short-Term Slight Negative Effect</p>



Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
	<p>(e.g., treeline, scrub, adjacent woodland and farmland) are not considered unique to the Proposed Wind Farm Site or rare in the wider surroundings.</p> <p>No significant effects of disturbance are anticipated.</p>		
Operational Phase			
Direct Habitat Loss	Direct effects are not anticipated as no additional infrastructure is proposed.	No Effect	No Effect
Displacement and Barrier Effect	<p>This species was frequently recorded within the Proposed Wind Farm during the breeding and winter seasons. As previously discussed, there was one confirmed territory identified in the 2020 breeding season and one probable territory identified in the 2023 breeding season. These territories were within or partially within the Proposed Wind Farm (see Confidential Appendix 7-5, Figure 7.13.5).</p> <p>Pearce-Higgins (2009) describes that buzzard has been found to show significant turbine avoidance extending to at least 500m. There was one confirmed and one probable breeding territory identified within 500m of the proposed turbine layout. Extensive areas of suitable foraging and breeding habitat exist and will remain in the wider area (i.e., outside 500m from the proposed turbine layout).</p> <p>Additionally, there were 99 observations of buzzard within 500m of the proposed turbine layout. There will be a measurable reduction in the frequency of commuting and foraging buzzard within 500m of the proposed turbine layout. However, onsite habitats are not considered unique to the Proposed Wind Farm and there is an abundance of suitable habitat for this species greater than 500m from the proposed turbine layout within the Proposed Wind Farm and its surroundings.</p> <p>No significant effects of displacement are anticipated.</p>	The magnitude of the effect is assessed as <i>Medium</i> . The cross tabulation of a <i>Low</i> sensitivity species and <i>Medium</i> impact corresponds to a Very Low effect significance.	Likely Long-Term Slight Negative Effect

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
Collision Risk	<p>The species was recorded flying within PCH during vantage point surveys. A “Random” collision risk analysis has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated at a rate of 0.6 collisions per year, or one bird every two years.</p> <p>The favourable conservation status of this species (Green-listed BoCCI) limits the potential for ecologically significant effects to result. The loss one bird per two years from the local population of a Green-listed (BoCCI) species is considered of low significance.</p>	<p>The magnitude of the effect is assessed as <i>Low</i>. The cross tabulation of a <i>Low</i> sensitivity species and <i>Low</i> impact corresponds to a Very Low effect significance.</p>	<p>Likely Long-Term Constant Slight Negative Effect</p>

7.5.2.14 Sparrowhawk (All Seasons)

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
Construction Phase			
Direct Habitat Loss	<p>This species was frequently recorded within the Proposed Wind Farm during the breeding and winter seasons. The construction of the Wind Farm will not result in the loss of a significant amount of foraging habitat given the development footprint is small (i.e. 13.8ha/1.46% of Proposed Project) relative to the total area within the Site. Within, or partially within, the Proposed Wind Farm there was one probable breeding territory identified in 2021, and one probable breeding territory identified in 2023 (see Appendix 7-4, Figure 7.11.6). There is potential for the loss of nesting habitat within the Proposed Wind Farm. However, these lands (e.g. farmland, adjacent woodland and treelines) are not considered unique to the Proposed Wind Farm or rare in the wider surroundings.</p> <p>No significant effects of direct habitat loss are anticipated.</p>	<p>The magnitude of the effect is assessed as <i>Low</i>. The cross tabulation of a <i>Low</i> sensitivity species and <i>Low</i> impact corresponds to a Very Low effect significance.</p>	<p>Likely Long-Term Imperceptible Negative Effect</p>
Disturbance	<p>Breeding sparrowhawk were recorded during the 2021 and 2023 breeding seasons. Construction activity adjacent to the nest sites within the Proposed Wind Farm could potentially cause disturbance of breeding and foraging sparrowhawk. The disturbance associated with construction works will result in a measurable reduction in the breeding density of sparrowhawk and a reduction in the amount of available foraging habitat within the Proposed Wind Farm. However, these lands (e.g., farmland, adjacent woodland and treelines) are not considered unique to the Proposed Wind Farm or rare in the wider surroundings.</p> <p>No significant effects of disturbance are anticipated.</p>	<p>The magnitude of the effect is assessed as <i>Medium</i>. The cross tabulation of a <i>Low</i> sensitivity species and <i>Medium</i> impact corresponds to a Very Low effect significance.</p>	<p>Likely Short-Term Slight Negative Effect</p>
Operational Phase			
Direct Habitat Loss	<p>Direct effects are not anticipated as no additional infrastructure is proposed.</p>	No Effect	No Effect

Potential effects during the construction and operational phases of the Proposed Wind Farm		Significance (Percival, 2003)	Significance (EPA, 2022)
<p>Displacement and Barrier Effect</p>	<p>As previously discussed, the Proposed Wind Farm hosts breeding and foraging sparrowhawk. Displacement from turbines is not reported for sparrowhawk, however, it is assumed for the purposes of the assessment that sparrowhawk show avoidance to a distance of 500m from turbines as with other raptors (Pearce-Higgins <i>et al.</i>, 2009).</p> <p>There was one territory within 500m of the proposed turbine layout in 2021, and one in 2023. The disturbance associated with operational turbines will result in a measurable reduction in the breeding density of sparrowhawk and a reduction in the amount of available foraging habitat within the Proposed Wind Farm. Notwithstanding this, extensive areas of suitable foraging habitat exist and will remain in the wider area (i.e., outside 500m from the proposed turbine layout). Moreover, onsite habitats are not considered unique to the Proposed Wind Farm with significant areas of similar habitats available outside the Proposed Wind Farm.</p> <p>No significant effects of direct habitat loss are anticipated.</p>	<p>The magnitude of the effect is assessed as <i>Medium</i>. The cross tabulation of a <i>Low</i> sensitivity species and <i>Medium</i> impact corresponds to a Very Low effect significance.</p>	<p>Likely Long-Term Slight Negative Effect</p>
<p>Collision Risk</p>	<p>The species was recorded flying within PCH during vantage point surveys. A “Random” collision risk analysis has been undertaken (full details provided in Appendix 7-6). The collision risk has been calculated at a rate of 0.009 collisions per year, or one bird every 106 years.</p> <p>The predicted collision risk for a Green-listed species is insignificant over the 30- year life-time of the Proposed Wind Farm.</p>	<p>The magnitude of the effect is assessed as <i>Negligible</i>. The cross tabulation of a <i>Low</i> sensitivity species and <i>Negligible</i> impact corresponds to a Very Low effect significance.</p>	<p>Likely Long-Term Imperceptible Negative Effect</p>

7.5.3 Effects on Key Ornithological Receptors during Decommissioning

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

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

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

The Proposed Grid Connection underground cabling route will commence from the proposed onsite 110kV substation and will run along Proposed Wind Farm roads and existing roads to Cloon Substation. Required works are minor and are all located within the existing road corridor (full details in Chapter 4 of this EIAR). The proposed turbine delivery route will not require any accommodation works and will involve temporary removal of traffic lights and street furniture during the delivery of abnormal loads, (full details in Chapter 4 of this EIAR).

For the Proposed Grid Connection underground cabling route, the existing habitats (i.e., existing roads) do not have the potential to support species of conservation interest in the area. On a precautionary basis, it is assumed that some temporary disturbance may occur during works. However, given the extent of suitable habitat in the wider area, significant disturbance effects are not predicted. The effect significance for all KORs is classed as no greater than **Low** (Percival, 2003) or a **Slight Negative Effect** (EPA, 2022). Further details on the habitats along the Proposed Grid Connection underground cabling route are detailed in Chapter 6, Section 6.4.1.5.

7.5.5 Effects on Designated Areas

The Proposed Wind Farm is not located within the boundaries of any European Sites (see Section 7.3.1). An Appropriate Assessment screening was prepared to provide the information necessary to complete an Appropriate Assessment for the Proposed Project. The screening identified and assessed a potential pathway for indirect effects on the Lough Corrib SPA.

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

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

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

No proposed National Heritage Area or National Heritage Area within the ZOI were considered as ornithological ecological receptors in their own right due to the separation distance from the Proposed Project and the absence of connectivity.

7.6 Mitigation and Best Practice Measures

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

- Design of the Proposed Project.
- Management of the development phases.

7.6.1 Design of the Proposed Project

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

- The Proposed Project avoids wildlife refuge sites (e.g. waterbodies)
- Hard standing areas have been designed to the minimum size necessary to accommodate the turbine model that is selected.
- The Proposed Grid Connection underground cabling 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 Management of the Proposed Project Phases

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

7.6.2.1 Construction Phase

A Construction and Environmental Management Plan (CEMP) has been prepared and will be in place prior to the start of the construction phase. Full details of the CEMP are available Appendix 4-2 to Chapter 4 of this EIAR, while details pertinent to birds are summarised below. Note that these measures are proposed as industry best practice rather than to mitigate any identified significant effect and will be updated as required to address any conditions of a grant of permission or findings of any pre-construction survey results.

- Works will commence outside the bird nesting season (1st of March to 31st of August inclusive). Any requirement for construction works to run into the subsequent breeding season following commencement will be informed by further bird surveys to identify any potential breeding activity of birds of conservation concern once per month during the breeding season (April to July).
- The removal of woody vegetation will be undertaken in full compliance with Section 40 of the Wildlife Act 1976 – 2022. There are no tree removal works along the turbine delivery route, however where sections of vegetation are removed within the Proposed Wind Farm, these will be replaced with suitable hedge/tree species which are common in the local context. Further details can be found in Chapter 6.
- During the construction phase, noise limits, noise control measures, hours of operation (i.e., dusk and dawn is high faunal activity time) and selection of plant items will be considered in relation to disturbance of birds. All plant and equipment for use will comply with the European Communities (Noise Emission By Equipment For Use Outdoors) Regulations, 2001, as amended (SI 632/2001). Plant machinery will also be turned off when not in use.
- If winter roosting or breeding activity of birds of high conservation concern is identified, the roost or nest site will be located and no works shall be undertaken within a species-specific disturbance buffer in line with industry best practice (e.g.,

Goodship and Furness, 2022). No works shall be permitted within the buffer until it can be demonstrated that the roost/nest is no longer occupied.

- An Environmental Clerk of Works (ECoW) and Project Ecologist will be appointed. Duties will include:
 - Organise the undertaking of a pre-construction walkover bird survey by a suitably qualified ornithologist to ensure that significant effects on birds will be avoided. Further details are provided in Section 7.7 below.
 - Inform and educate on-site personnel of the ornithological and ecological sensitivities within the Proposed Wind Farm.
 - Oversee management of ornithological issues during the construction period and advise on ornithological issues as they arise.
 - Provide guidance to contractors to ensure legal compliance with respect to protected species onsite.
 - Liaise with officers of consenting authorities and other relevant bodies with regular updates in relation to construction progress as necessary.

7.6.2.2 **Operational Phase**

No significant operational phase impacts requiring mitigation were identified. However, monitoring in line with best practice is proposed, please see Section 7.7 below for details.

7.6.2.3 **Decommissioning Phase**

During the decommissioning phase, disturbance limitation measures will be as per the construction phase described in Section 7.6.2.1. Further details are provided in Section 7.7.3 below.

7.7 Monitoring

The following monitoring measures are proposed as industry best practice rather than in response to any identified impacts associated with the Proposed Project.

7.7.1 Commencement and Construction

Taking a precautionary approach, it is proposed that construction works will commence outside the bird breeding season (1st of March to 31st of August inclusive). Pre-commencement surveys will be undertaken prior to the initiation of works at the wind farm. Any requirement for construction works to run into the subsequent breeding seasons following commencement will be subject to further bird surveys, once per month (April to July), to confirm the absence of breeding birds of conservation concern.

Monitoring will be undertaken by a suitably qualified ornithologist. The survey will include a thorough walkover survey to a 500m radius of the development footprint and/or all works areas, where access allows. If winter roosts or breeding activity of birds of high conservation concern is identified, the roost or nest site will be located and earmarked for monitoring at the beginning of the first winter or breeding season of the construction phase. If the roost/nest is found to be active during the construction phase survey no works shall be undertaken within a species-specific buffer (as per Forestry Commission Scotland, 2006; Ruddock and Whitfield, 2007; Goodship and Furness, 2022) in line with best practice. No works within the buffer zone shall be permitted until it can be demonstrated that that birds of conservation concern are no longer reliant on the roost/nest site.

7.7.2 Operational monitoring

A detailed operational Bird Monitoring Programme has been prepared for the operational phase of the Proposed Project (refer to Appendix 7-6 for further details). The programme of works will monitor parameters associated with collision, displacement/barrier effects and habituation during the lifetime of the project. Surveys will be scheduled to coincide with Years 1, 2, 3, 5, 10 and 15 of the lifetime of the wind farm. Monitoring measures are broadly based on guidelines issued by SNH (2009). The following individual components are proposed:

- Monthly flight activity surveys: vantage point surveys.
- Breeding bird surveys: adapted Brown and Shepard
- Targeted bird collision surveys (corpse searches) will be undertaken with trained dogs. The surveys will include detection and scavenger trials, to correct for these two biases and ensure the resulting data is robust.

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

7.7.3 Decommissioning

Decommissioning monitoring surveys will be undertaken prior to works associated with decommissioning at the wind farm. Survey methodology and timing will be the same as that outlined for construction phase surveys in Section 7.7.1 above. The survey will include a thorough walkover survey to a 500m radius of the development footprint and all works areas, where access allows. If winter roosting or breeding activity of birds of high conservation concern is identified, the roost or nest site will be located and earmarked for monitoring at the beginning of the first winter or breeding season of the decommissioning phase. If it is found to be active during the decommissioning phase, no works shall be

undertaken within a species-specific disturbance buffer in line with industry best practice (e.g. Forestry Commission Scotland, 2006; Ruddock and Whitfield, 2007; 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. A Decommissioning Plan is included as Appendix 4-7 of this EIAR.

Residual Effects

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

- > Golden Plover (Winter)
- > Hen Harrier (Winter)
- > Peregrine Falcon (All Seasons)
- > Whooper Swan (Winter)
- > Black-headed Gull (All Seasons)
- > Common Gull (Winter)
- > Lesser Black-backed Gull (All Seasons)
- > Kestrel (All Seasons)
- > Lapwing (Winter)
- > Snipe (All Seasons)
- > Buzzard (All Seasons)
- > Sparrowhawk (All Seasons)

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.

7.9 Cumulative Effects

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)

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

7.9.1 Other Plans and Projects

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

7.9.1.1 Plans Considered in the Cumulative Impact Assessment

The following plans were considered in the cumulative impact assessment:

- Adopted Galway County Development Plan 2022-2028
- Regional Planning Guidelines
- National Biodiversity Action Plan 2023-2027

7.9.1.2 Projects Considered in the Cumulative Impact Assessment

NatureScot guidance (SNH, 2012; 2018) was consulted while undertaking the cumulative 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 effects at the regional level ‘where regional effects have national implications (for example where a specific region holds the majority of the national population)’. A 25km radius of the proposed turbine locations was considered a reasonable approximation of the size of a county and a 5km radius of the Proposed Wind Farm was considered a reasonable approximation for the local level.

To conduct the cumulative impact assessment, Galway County and City Councils and An Bord Pleanála online planning registers, relevant EIAR (or EIS) documents, planning application details and planning drawings within the Proposed Project and all associated works were reviewed to identify past and future projects, their activities and their environmental effects. The findings of this review are outlined in the following sections.

7.9.1.2.1 Developments/Landuses

The review of the planning register documented relevant general development planning applications within 25km of the Proposed Wind Farm, most of which relate to the provision/alteration of one-off rural housing and agricultural related structures, as described in Section 2.4 of Chapter 2 and listed in Appendix 2-3. These applications and land uses have also been taken into account in describing the baseline environment and in the relevant assessments.

Furthermore, the cumulative impact assessments carried out in each of the subsequent chapters of this EIAR consider all potential significant cumulative effects arising from all land uses in the vicinity of the Proposed Project. These include ongoing agricultural practices, and drainage/maintenance works/programmes. Overall, the Proposed Project has been designed to mitigate effects on the environment and a suite of mitigation measures is set out within the EIAR. The mitigation measures set out in this EIAR will ensure that significant cumulative effects do not arise during the construction, operational or decommissioning phases of the Proposed Project. Additional detail in relation to the potential significant cumulative effects arising and, where appropriate, the specific suite of relevant mitigation measures proposed are set out within each of the relevant chapters of this EIAR.

The review of the planning register also documented relevant general development planning applications within 200m of the Proposed Grid Connection, most of which relate to the provision/alteration of one-off rural housing, agricultural related structures as well as some energy infrastructure, as described in Section 2.4 of Chapter 2 and listed in Appendix 2-3.

Agricultural Practices

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

7.9.1.2.2 Other Wind Farm Developments

Wind farm projects within 25km of the Proposed Wind Farm turbines are provided in Table 7-12, including details of their planning status. A total of 67 no. existing/permitted turbines and 34 no. proposed turbines were identified for consideration. The Proposed Project is located in an area of low-density of turbines. The environmental effects of each permitted or existing wind farm are outlined in detail in this section.

Table 7-12 Wind energy applications within 25km of the Proposed Wind Farm

Wind Farm	Planning Status	Number of Turbines	Separation Distance (turbine to turbine)
Clonberne Wind Farm	Proposed	11	c.19.8km
Knockranny Wind Farm	Permitted	11	c.21.2km
Lettergunnet Wind Farm	Existing	10	c.22.4km
Knockalough Wind Farm	Existing	11	c.22.5km
Ardderroo Wind Farm	Existing	25	c.23.4km
Letterpeak Wind Farm	Existing	7	c.25km
Galway Wind Park	Existing	20	c. 24km
Shanclon Wind Farm	Proposed	11	c.10.9km
Cooloo Wind Farm	Proposed	9	c.18.1km
Cloonlusk Wind Farm	Existing	2	c.9.3km
Cloonascragh Locally Owned Turbine	Permitted	1	c.7.3km
Domestic turbine at Montiagh	Existing	1	c.9.8km
Domestic turbine at Summerfield	Existing	1	c.10.9km
Domestic turbine at Park	Proposed	1	c.17.7km
Single turbine at Galway City	Existing	1	c. 16km

Clonberne Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside Clonberne Wind Farm was considered. The planning file²⁶ was reviewed on the An Bord Pleanála Register and no information regarding potential effects on birds was available due to this project being in the pre-planning stage and therefore no planning application has been lodged and no impacts assessment has been completed. Clonberne Wind Farm is located within predominately improved agricultural grassland and cutover bog, with smaller areas of commercial forestry and other agricultural habitats.

Knockranny Wind Farm

The potential for the Proposed Project to result in significant cumulative or in combination effects when assessed alongside Knockranny Wind Farm, which is c.21.2km from the nearest proposed turbine was considered. The Environmental report was reviewed on the Galway County Council website²⁷. Knockranny Wind Farm shared the following key species with Laurclavagh Wind Farm: golden plover, whooper swan, kestrel and sparrowhawk. Collision risk for golden plover, kestrel and sparrowhawk was predicted to be low. Whooper swan were not observed at the site and disturbance was considered to be low. The only species anticipated to be affected by the Knockranny Wind Farm was red grouse, which is not a key ornithological receptor of Laurclavagh. No significant impacts on designated birds were anticipated in the report.

Lettergunnet Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside Lettergunnet Wind Farm was considered. The planning file²⁸ was reviewed on the Galway County Council Planning Register. Lettergunnet Wind farm shared the following key species with Laurclavagh Wind Farm: snipe, golden plover, meadow pipit, redwing. No significant impacts on designated birds were anticipated in the report.

Knockalough Wind Farm

The potential for the Proposed Project to result in significant cumulative or in combination effects when assessed alongside Knockalough Wind Farm, which is c.22.5km from the nearest proposed turbine was considered. The Environmental Report was reviewed on the Galway County Council website²⁹. Knockalough Wind Farm shared the following key species with Laurclavagh Wind Farm: hen harrier, peregrine falcon, common gull, kestrel, lapwing and sparrowhawk. Hen harrier was observed only once at Knockalough. Collision risk for common gull, sparrowhawk and kestrel was predicted to have no significant effect on population decline. Lapwing were also recorded on only one occasion and were unlikely to be affected by collision risk. Two observations of peregrine were recorded in the wider area of Knockalough Wind Farm, the closest of which was 70m from the study area. No significant impacts on designated birds were anticipated in the report.

Ardderroo Wind Farm

The potential for the Proposed Project to result in significant cumulative or in combination effects when assessed alongside Ardderroo Wind Farm, which is c.23.4km from the nearest proposed turbine, was considered. The EIAR for Ardderroo Wind Farm was consulted³⁰. Ardderroo Wind Farm shared the

²⁶ <https://www.pleanala.ie/en-ie/case/307058>

²⁷ <https://www.eplanning.ie/GalwayCC/AppFileRefDetails/13829/0>

²⁸ <https://www.eplanning.ie/GalwayCC/AppFileRefDetails/091239/0>

²⁹ <https://www.eplanning.ie/GalwayCC/AppFileRefDetails/141273/0>

³⁰ <https://www.pleanala.ie/en-ie/case/303086>

following key ornithological receptors with Laurclavagh Wind Farm: golden plover, common gull, hen harrier, whooper swan, kestrel, snipe and sparrowhawk. This EIAR assessed collision risk and displacement for the operational phase of this development. The collision risk was assessed to be Low (as per Percival, 2003) for common gull, hen harrier and Very Low (as per Percival, 2003) for whooper swan, kestrel and sparrowhawk. Disturbance/displacement was assessed to be Low (as per Percival, 2003) for golden plover, common gull, hen harrier and Very Low (as per Percival, 2003) for kestrel and sparrowhawk.

The cumulative assessment for the Ardderroo Wind Farm assessed the cumulative disturbance, displacement, habitat loss and barrier effects of the wind farm when wind farms within the wider area were taken into consideration. It was concluded that there would be no significant cumulative barrier effects anticipated given that no important migratory routes were identified. It was concluded that there was no potential for significant cumulative disturbance, displacement or habitat loss effects given the separation distance of the other wind farms in this assessment.

Letterpeak Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside Letterpeak Wind Farm was considered. The Environmental report was reviewed on the Galway County Council website³¹ and the following species shared with Laurclavagh were discussed: golden plover and kestrel. No significant impacts on designated birds were anticipated in the report. Letterpeak Wind Farm is located within predominately cutover bog, with smaller areas of commercial forestry and other agricultural habitats.

Galway Wind Park

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside Galway Wind Park was considered. The Environmental report³² was reviewed on the Galway County Council Planning Register. Galway Wind Park shared the following key species with Laurclavagh Wind Farm: meadow pipit, snipe and sparrowhawk. No significant impacts on designated birds were anticipated in the report.

Shanclon Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside Shanclon Wind Farm was considered. The planning file³³ was reviewed on the An Bord Pleanála Register and no information regarding potential effects on birds was available due to this project being in the pre-planning stage and therefore no planning application has been lodged and no impacts assessment has been completed. The indicative turbine locations for Shanclon are in an area of predominantly agricultural grassland with smaller area of cutover bog and commercial forestry.

Cooloo Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside Cooloo Wind Farm was considered. The planning file³⁴ was reviewed on the An Bord Pleanála Register and no information regarding potential effects on birds was available due to this project being in the pre-planning stage. However, given the location of the Cooloo wind farm, the

³¹ <https://archive.pleanala.ie/en-ie/case/238762>

³² <https://www.eplanning.ie/GalwayCC/AppFileRefDetails/036992/0>

³³ <https://www.pleanala.ie/en-ie/case/317307>

³⁴ <https://www.pleanala.ie/en-ie/case/316466>

nature of the habitats onsite (as reviewed on publicly available aerial photography) and the lack of significant residual effects on bird species associated with Proposed Project when considered on its own, significant cumulative or in-combination effects on KORs with regard to displacement or collision mortality are not anticipated.

Cloonlusk Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside Cloonlusk Wind Farm was considered. The planning file³⁵ 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), buzzard, peregrine falcon, kestrel, sparrowhawk and red grouse (probable). The Cloonlusk Wind Farm was ruled out as suitable foraging grounds for lapwing, golden plover, curlew, swans, geese or ducks. There were no known migration routes for whooper swan over the area. No known records of roosting hen harrier were recorded for this site. 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.

The EIS assessed collision risk and displacement for the operational phase of the Cloonlusk turbines. The collision risk was assessed to be of low significance for peregrine falcon, lapwing and kestrel, and negligible/not significant for hen harrier, lapwing, snipe, merlin, sparrowhawk and buzzard. Disturbance/displacement and barrier effect were assessed to be of low significance for golden plover, snipe, peregrine falcon, buzzard, sparrowhawk, hen harrier, kestrel, merlin, lapwing and whooper swan and not significant/negligible for curlew, meadow pipit or grouse.

Cloonascragh Locally Owned Turbine

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside a domestic turbine at Park, Athenry was considered. The planning file³⁶ was reviewed on the Galway County Council Planning Register and an environmental impact assessment was reviewed. The only target species discussed in this document were lapwing. No significant impacts on designated birds were anticipated in the report for the locally owned turbine.

Domestic turbine at Montiagh

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside Montiagh Domestic Turbine was considered. The planning file³⁷ was reviewed on the Galway County Council Planning Register and no information regarding potential effects on birds was available. The domestic turbine at Montiagh is located within agricultural grassland, with cutover bog in the wider area.

Domestic turbine at Summerfield

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the Summerfield domestic turbine was considered. The planning file³⁸ was reviewed on the Galway County Council Planning Register and no information regarding potential effects on birds was available. The domestic turbine at Summerfield is located within agricultural cultivated land, with agricultural grassland and cutover bog in the wider area.

³⁵ <http://www.eplanning.ie/GalwayCC/AppFileRefDetails/082407/0>

³⁶ <http://www.eplanning.ie/GalwayCC/AppFileRefDetails/221175/0>

³⁷ <http://www.eplanning.ie/GalwayCC/AppFileRefDetails/091675/0>

³⁸ <http://www.eplanning.ie/GalwayCC/AppFileRefDetails/091571/0>

Domestic turbine at Park

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside a domestic turbine at Park, Athenry was considered. The planning file³⁹ was reviewed on the Galway County Council Planning Register and the response to a further information request on birds and bats was reviewed. The target species discussed in this document were black-headed gull, kestrel, buzzard, snipe, golden plover and lapwing. Flights at PCH were observed for lapwing and buzzard however collision risk was not anticipated due to low levels of activity for both species. No significant impacts on designated birds were anticipated in the report.

Single Turbine at Galway City

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the single turbine at Galway City was considered. The planning file⁴⁰ was reviewed on the Galway City Council Planning Register and no information regarding potential effects on birds was available. The single turbine at Galway City is located within built land.

7.9.2 Assessment of Cumulative Effects – Proposed Wind Farm

There were 12 no. KORs identified at the Proposed Project: golden plover, hen harrier, peregrine falcon, whooper swan, black-headed gull, common gull, lesser black-backed gull, kestrel, lapwing, snipe, buzzard and sparrowhawk. A key consideration in the assessment of the potential for cumulative effects to result in significant effects on KORs is proximity. For the purposes of this cumulative assessment, the local scale is considered to be a 5km radius of the Proposed Wind Farm. There were no wind farms within 5km of the Proposed Wind Farm; all existing and proposed wind farms were greater than 5km from the Proposed Wind Farm.

Following SNH (2012) guidance, the cumulative effects assessment has been carried out at the scale of the importance rating of the receptor: County Importance (golden plover, hen harrier, peregrine falcon, black-headed gull, lesser black-backed gull, kestrel, snipe); and Local Importance Higher Value (whooper swan, common gull, lapwing, buzzard and sparrowhawk). The assessment of cumulative effects on KORs is provided below. In particular, cumulative habitat loss and displacement associated with operational turbines is assessed. Short-term effects (e.g. construction disturbance) are highly unlikely to give rise to significant cumulative impacts. For this reason, it is not considered further. For the purposes of this cumulative assessment, a 25km radius has been used to approximate the county scale.

7.9.2.1 Golden Plover (County Importance)

Golden plover were recorded travelling over the Proposed Wind Farm and there were eight records of birds utilising habitats within the Proposed Wind Farm. The effects of habitat loss, disturbance, displacement and barrier effects as a result of the Proposed Project are classed as of low effect significance. No significant effects of collision risk are anticipated at the county, national or international level.

The potential for developments at a county scale (within 25km) to result in significant cumulative or in combination effects when assessed alongside the Proposed Project were considered. Cloonlusk, Montiagh, Claregalway, Cloonascaragh, Park and Lettergunnet turbines are located within agricultural grassland habitat. Clonberne, Shancloon, Cooloo, Knockranny and Letterpeak Wind Farms turbines are located within cutover bog and agricultural grassland habitats. Galway Wind Park turbines are

³⁹ <http://www.eplanning.ie/GalwayCC/AppFileRefDetails/2374/0>

⁴⁰ <https://www.eplanning.ie/GalwayCity/AppFileRefDetails/1368/0>

located in cutover bog and forest habitat. The single turbine at Galway City is located on built land. Arderroo and Knockalough Wind Farm are located in an area that is predominantly forest habitat. The agricultural grassland and cutover bog habitats are suitable for foraging and roosting golden plover. However, given the separation distance and that these habitats (cutover bogs and farmland), are not considered to be a scarce resource within 25km of the Proposed Wind Farm, significant cumulative impacts are not anticipated.

No significant cumulative impacts on this species were identified within 5km as there were no wind farms within this radius. Furthermore, no significant effects were reported for any of the wind farm located within a 25km radius (county scale) of the Proposed Wind Farm.

Taking into consideration the reported effects at other wind farms and the predicted effects of the Proposed Project, no significant residual additive, antagonistic or synergistic effects have been identified.

Significant cumulative effects are not predicted.

7.9.2.2 Hen Harrier (County Importance)

Foraging hen harrier was infrequently recorded within the Proposed Wind Farm. The impacts of habitat loss, disturbance, displacement and barrier effects as a result of the Proposed Project are assessed to be of low significance. No significant effects of collision risk are anticipated at the county, national or international level.

No significant cumulative impacts on this species were identified within 5km, as there were no wind farms within this area. Furthermore, no significant effects were reported for any of the wind farm located within a 25km radius (county scale) of the Proposed Wind Farm.

The potential for other developments to have resulted in significant cumulative or in combination effects when assessed alongside the Proposed Project was considered. Taking into consideration that there are no other wind farms within 5km of the Proposed Wind Farm and the predicted effects of the Proposed Project, no significant residual additive, antagonistic or synergistic effects have been identified.

Significant cumulative effects are not predicted.

7.9.2.3 Peregrine Falcon (County Importance)

Foraging peregrine was infrequently recorded within the Proposed Wind Farm, with a confirmed nest located approximately 2.3km from the Proposed Wind Farm. The impacts of habitat loss, disturbance, displacement and barrier effects as a result of the Proposed Project were assessed to be of very low significance. No significant effects of collision risk are anticipated at the county, national or international level.

The potential for developments at a county scale (25km) to result in significant cumulative or in combination effects when assessed alongside the Proposed Project were considered. The habitats within the identified wind farms within 25km of the Proposed Wind Farm comprise agricultural grassland, cutover bog and woodland. Some of these habitats offer some foraging potential for peregrine. However, given the separation distance and that these habitats are not considered to be a scarce resource within 25km of the Proposed Wind Farm, significant cumulative impacts are not anticipated. Furthermore, no significant effects were reported for any of the wind farm located within a 25km radius (county scale) of the Proposed Wind Farm.

There were seven wind energy developments located within the maximum foraging range of peregrine. The maximum foraging range of peregrine is 18km (NatureScot, 2016). Cloonascaragh, Cloonlusk,

Montiagh, Summerfield, Shancloon, Park, the single turbine at Galway City and Cooloo are all located within 18.1km of the Proposed Wind Farm. No significant impacts on peregrine were anticipated from any of these developments. Furthermore, the above listed turbines are located within areas that are predominantly improved agricultural grassland (excluding the single turbine at Galway City which is located on built land), a habitat of limited ecological value for peregrine.

No significant impacts on this species were identified at the local scale (5km), given that there are no turbines located within 5km of the Proposed Wind Farm. Furthermore, no significant effects were reported for any of the wind farms located within a 25km radius (county scale) of the Proposed Wind Farm.

Taking into consideration the reported effects at other wind farms and the predicted effects of the Proposed Project, no significant residual additive, antagonistic or synergistic effects have been identified.

Significant cumulative effects are not predicted.

7.9.2.4 Whooper Swan (Local Importance)

Whooper swan were recorded travelling over the Proposed Wind Farm, but there were no observations of birds utilising habitats within the Proposed Wind Farm. The impacts of habitat loss, disturbance, displacement and barrier effects as a result of the Proposed Project as assessed to be no greater than low effect significance. No significant effects of collision risk are anticipated at the county, national or international level.

No significant cumulative impacts on this species were identified within 5km as there were no wind farms within this radius. Furthermore, no significant effects were reported for any of the wind farm located within a 25km radius (county scale) of the Proposed Wind Farm.

The potential for other developments to have resulted in significant cumulative or in combination effects when assessed alongside the Proposed Project was considered. Taking into consideration the reported effects at other wind farms and the predicted effects of the Proposed Project, no significant residual additive, antagonistic or synergistic effects have been identified.

Significant cumulative effects are not predicted.

7.9.2.5 Black-headed Gull (County Importance)

Black-headed gull were recorded travelling over the Proposed Wind Farm and were infrequently observed utilising habitats within the Proposed Wind Farm. The impacts of habitat loss, disturbance, displacement and barrier effects as a result of the Proposed Project were assessed to be no greater than low effect significance. No significant effects of collision risk are anticipated at the county, national or international level.

The potential for developments at a county scale (25km) to result in significant cumulative or in combination effects when assessed alongside the Proposed Project were considered. Cloonlusk, Montiagh, Claregalway, Cloonascaragh, Park and Lettergunnet turbines are located within agricultural grassland habitat. Clonberne, Shancloon, Cooloo, Knockranny and Letterpeak Wind Farms turbines are located within cutover bog and agricultural grassland habitats. Galway Wind Park turbines are located in cutover bog and forest habitat. The single turbine at Galway City is located on built land. Arderroo and Knockalough Wind Farm are located in an area that is predominantly forest habitat. Some of these habitats offer some foraging potential for black-headed gull. However, given the separation distance and that these habitats are not considered to be a scarce resource within 25km of the Proposed Wind Farm Site, significant cumulative impacts are not anticipated. Furthermore, no

significant effects were reported for any of the wind farm located within a 25km radius (county scale) of the Proposed Wind Farm Site.

No significant cumulative impacts on this species were identified within 5km as there were no wind farms within this radius. Furthermore, no significant effects were reported for any of the wind farm located within a 25km radius (county scale) of the Proposed Wind Farm.

The potential for other developments to have resulted in significant cumulative or in combination effects when assessed alongside the Proposed Project was considered. Taking into consideration the reported effects at other wind farms and the predicted effects of the Proposed Project, no significant residual additive, antagonistic or synergistic effects have been identified.

Significant cumulative effects are not predicted.

7.9.2.6 Common Gull (Local Importance)

Common gull were recorded travelling over the Proposed Wind Farm but there were no observations of birds utilising habitats within the Proposed Wind Farm. The impacts of habitat loss, disturbance, displacement and barrier effects as a result of the Proposed Project were assessed to be no greater than low effect significance. No significant effects of collision risk are anticipated at the county, national or international level.

No significant cumulative impacts on this species were identified within 5km as there were no wind farms within this radius. Furthermore, no significant effects were reported for any of the wind farm located within a 25km radius (county scale) of the Proposed Wind Farm.

The potential for other developments to have resulted in significant cumulative or in combination effects when assessed alongside the Proposed Project was considered. Taking into consideration the reported effects at other wind farms and the predicted effects of the Proposed Project, no significant residual additive, antagonistic or synergistic effects have been identified.

Significant cumulative effects are not predicted.

7.9.2.7 Lesser Black-Backed Gull (County Importance)

Lesser black-backed gull were recorded travelling over the Proposed Wind Farm and were infrequently observed utilising habitats within the Proposed Wind Farm. The impacts of habitat loss, displacement and barrier effects as a result of the Proposed Project assessed to be no greater than low effect significance. No significant effects of collision risk are anticipated at the county, national or international level.

The potential for developments at a county scale (25km) to result in significant cumulative or in combination effects when assessed alongside the Proposed Project were considered. Cloonlusk, Montiagh, Claregalway, Cloonascaragh, Park and Lettergunnet turbines are located within agricultural grassland habitat. Clonberne, Shanclon, Cooloo, Knockranny and Letterpeak Wind Farms turbines are located within cutover bog and agricultural grassland habitats. Galway Wind Park turbines are located in cutover bog and forest habitat. The single turbine at Galway City is located on built land. Arderroo and Knockalough Wind Farm are located in an area that is predominantly forest habitat. Some of these habitats offer some foraging potential for lesser black-backed gull. However, given the separation distance and that these habitats are not considered to be a scarce resource within 25km of the Proposed Wind Farm, significant cumulative impacts are not anticipated. Furthermore, no significant effects were reported for any of the wind farm located within a 25km radius (county scale) of the Proposed Wind Farm.

No significant cumulative impacts on this species were identified within 5km as there were no wind farms within this radius. Furthermore, no significant effects were reported for any of the wind farm located within a 25km radius (county scale) of the Proposed Wind Farm.

The potential for other developments to have resulted in significant cumulative or in combination effects when assessed alongside the Proposed Project was considered. Taking into consideration the reported effects at other wind farms and the predicted effects of the Proposed Project, no significant residual additive, antagonistic or synergistic effects have been identified.

Significant cumulative effects are not predicted.

7.9.2.8 Kestrel (County Importance)

Kestrel were recorded hunting within the Proposed Wind Farm and breeding territories were identified within the Proposed Wind Farm. The impacts of habitat loss, displacement and barrier effects as a result of the Proposed Project were assessed to be of very low effect significance. No significant effects of collision risk are anticipated at the county, national or international level.

The potential for developments at a county scale (25km) to result in significant cumulative or in combination effects when assessed alongside the Proposed Project were considered. Cloonlusk, Montiagh, Claregalway, Cloonascaragh, Park and Lettergunnet turbines are located within agricultural grassland habitat. Clonberne, Shancloon, Cooloo, Knockranny and Letterpeak Wind Farms turbines are located within cutover bog and agricultural grassland habitats. Galway Wind Park turbines are located in cutover bog and forest habitat. The single turbine at Galway City is located on built land. Arderroo and Knockalough Wind Farm are located in an area that is predominantly forest habitat. These habitats offer some breeding and foraging potential for kestrel. However, given the separation distance and that these habitats are not considered to be a scarce resource within 25km of the Proposed Wind Farm, significant cumulative impacts are not anticipated. Furthermore, no significant effects were reported for any of the wind farm located within a 25km radius (county scale) of the Proposed Wind Farm.

There were no wind energy developments located within the foraging range of kestrel. The core foraging range of kestrel is 1.8km (based off a maximum home range of 10km² (Village, 1990)). There are no wind farms within 1.8km of the Proposed Wind Farm. Furthermore, the Proposed Wind Farm is predominantly in an area of agricultural grassland with small areas of woodland/scrub and cutover bog in the wider area, habitat types that are predominantly utilized for hunting and/or nesting. However, these habitat types are not rare locally. Therefore, significant cumulative impacts are not predicted.

The potential for other developments to have resulted in significant cumulative or in combination effects when assessed alongside the Proposed Project was considered. Taking into consideration the reported effects at other wind farms and the predicted effects of the Proposed Project, no significant residual additive, antagonistic or synergistic effects have been identified.

Significant cumulative effects are not predicted.

7.9.2.9 Lapwing (Local Importance)

Lapwing were recorded travelling over the Proposed Wind Farm but there were no observations of birds utilising habitats within the Proposed Wind Farm. The impacts of habitat loss, disturbance, displacement and barrier effects as a result of the Proposed Project were assessed to be of very low effect significance. No significant effects of collision risk are anticipated at the county, national or international level.

No significant cumulative impacts on this species were identified within 5km as there were no wind farms within this radius. Furthermore, no significant effects were reported for any of the wind farm located within a 25km radius (county scale) of the Proposed Wind Farm.

The potential for other developments to have resulted in significant cumulative or in combination effects when assessed alongside the Proposed Project was considered. Taking into consideration the reported effects at other wind farms and the predicted effects of the Proposed Project, no significant residual additive, antagonistic or synergistic effects have been identified.

Significant cumulative effects are not predicted.

7.9.2.10 Snipe (County Importance)

Snipe were recorded travelling over the Proposed Wind Farm but there were observations of birds utilising habitats within the Proposed Wind Farm. The impacts of habitat loss, disturbance, displacement and barrier effects as a result of the Proposed Project are classed as up to low significance. No significant effects of collision risk are anticipated at the county, national or international level.

The potential for developments at a county scale (25km) to result in significant cumulative or in combination effects when assessed alongside the Proposed Project were considered. The habitats within the six identified wind farms within 25km of the Proposed Wind Farm comprise agricultural grassland, cutover bog and scrubland/woodland. Some of these habitats offer some breeding, wintering and foraging potential for snipe. However, given the separation distance and that these habitats are not considered to be a scarce resource within 25km of the Proposed Wind Farm, significant cumulative impacts are not anticipated. Furthermore, no significant effects were reported for any of the wind farm located within a 25km radius (county scale) of the Proposed Wind Farm.

The potential for other developments to have resulted in significant cumulative or in combination effects when assessed alongside the Proposed Project was considered. Taking into consideration the reported effects at other wind farms and the predicted effects of the Proposed Project, no significant residual additive, antagonistic or synergistic effects have been identified.

Significant cumulative effects are not predicted.

7.9.2.11 Buzzard (Local Importance)

Buzzard was recorded hunting within the Proposed Wind Farm in addition to one confirmed and one probable breeding territory. The impacts of habitat loss, disturbance, displacement and barrier effects as a result of the Proposed Project were assessed to be of very low effect significance. No significant effects of collision risk are anticipated at the county, national or international level.

No significant cumulative impacts on this species were identified within 5km as there were no wind farms within this radius. Furthermore, no significant effects were reported for any of the wind farm located within a 25km radius (county scale) of the Proposed Wind Farm.

The potential for other developments to have resulted in significant cumulative or in combination effects when assessed alongside the Proposed Project was considered. Taking into consideration the reported effects at other wind farms and the predicted effects of the Proposed Project, no significant residual additive, antagonistic or synergistic effects have been identified.

Significant cumulative effects are not predicted.

7.9.2.12 Sparrowhawk (Local Importance)

Sparrowhawk was recorded hunting within the Proposed Wind Farm in addition to one probable breeding territory on-site and one off-site. The impacts of habitat loss, disturbance, displacement and

barrier effects as a result of the Proposed Project were assessed to be of very low effect significance. No significant effects of collision risk are anticipated at the county, national or international level.

No significant cumulative impacts on this species were identified within 5km as there were no wind farms within this radius. Furthermore, no significant effects were reported for any of the wind farm located within a 25km radius (county scale) of the Proposed Wind Farm.

The potential for other developments to have resulted in significant cumulative or in combination effects when assessed alongside the Proposed Project was considered. Taking into consideration the reported effects at other wind farms and the predicted effects of the Proposed Project, no significant residual additive, antagonistic or synergistic effects have been identified.

Significant cumulative effects are not predicted.

7.9.3 Assessment of Cumulative Effects – Proposed Grid Connection

As detailed above, the cumulative assessment for the Proposed Grid Connection considers a buffer in the range of 200m from the Proposed Grid Connection underground grid connection. As detailed above, the existing habitats (i.e., existing roads) do not have the potential to support species of conservation interest in the area. On a precautionary basis, it is assumed that some temporary disturbance may occur during works. However, given the extent of suitable habitat in the wider area, significant disturbance effects are not predicted. Being that no significant effects were associated with the Proposed Grid Connection underground grid connection, there will be no significant effects when assessed cumulatively with other projects.

7.10 Conclusion

Following consideration of the residual effects (post-mitigation), it is concluded that the Proposed Project will not result in any significant effects on any of the identified KORs. No significant effects on receptors of International, National or County Importance were identified. Provided that the Proposed Project is constructed, operated and decommissioned in accordance with the design, best practice mitigation and enhancement measures that are described within this application, significant individual or cumulative effects on the identified KORs are not anticipated.