

## 8 ORNITHOLOGY

### 8.1 INTRODUCTION

This chapter has been prepared by APEM Ltd to examine the potential effects that the Proposed Development (described in **Chapter 2: Description of the Proposed Development**) may have on the ornithological interests present within the Study Area, including Important Ornithological Features (IOFs). This assessment considers the potential effects with regard to each phase of the development: construction phase, operational phase, and decommissioning phase. Appropriate mitigation measures are described to avoid, or/reduce potential negative effect(s). The mitigation measures detailed within this chapter should be read in conjunction with mitigation measures contained in **Chapter 6: Biodiversity** and those contained in the CEMP (**Volume IV, Appendix 2.1**).

This Chapter of the EIA Report is supported by the following Technical Appendices provided in Volume 3 - Technical Appendices:

- Appendix A8.1: Year 1 Baseline Ornithology Report
- Appendix A8.2: Year 2 Baseline Ornithology Report;
- Appendix A8.3: Confidential Appendix; and
- Appendix A8.4: Collision Risk Modelling Report.

The Proposed Development refers to all elements of the application for the construction of Kellystown Wind Farm (**Chapter 2: Description of the Proposed Development**). 'The Site', which encompasses land within the Site Boundary as shown on **Figure 1**, is located approximately 6.6km inland west of Clogher Head, and 3.6km south-east of the town of Dunleer within Co. Louth.

This chapter includes the following elements:

- Legislation, Policy and Guidance;
- Assessment Methodology and Significance Criteria;
- Baseline Conditions;
- Assessment of Potential Effects;
- Cumulative Effect Assessment;
- Mitigation, Monitoring, and Residual Effects;
- Summary of Effects; and
- Statement of Significance.

This Chapter was written by Matthew Rea ACIEEM, Principal Ornithology Consultant at APEM, Billy Gardener, Consultant Ornithology Consultant at APEM and has been technically

reviewed by James Spencer ACIEEM, Head of Ornithology Consultancy at APEM. All contributors are suitably qualified and experienced to undertake the tasks completed in support of the impact assessment. Those who have contributed are outlined in **Table 8.1** below.

**Table 8.1: Statement of authority**

Name	Company	Qualifications	Job Title	Project Role and Experience
Matthew Rea	APEM Ltd	MSc, BSc (Hons), Associate member of CIEEM (ACIEEM).	Principal Ornithology Consultant	Lead author of the EIA Report and undertook Collision Risk Modelling. Matt is an experienced ornithologist who has worked on over 40 onshore wind projects across the UK and Ireland. He has managed surveys, undertaken numerous impact assessments and is experienced in Collision Risk Modelling.
James Spencer	APEM Ltd	BSc (Hons), Associate member of CIEEM (ACIEEM).	Head of Ornithology Consultancy	James leads the APEM Ornithology team and has over 14 years of experience in ornithology consultancy, including working on wind farm projects across the UK and Ireland. James was the reviewer for the Ornithology Chapter.
Billy Gardener	APEM Ltd	MScRes, BSc (Hons)	Senior Ornithology Consultant	Billy has more than 3 years' experience in consultancy, including working on a number of Irish wind farm projects. Billy assisted with production of the Ornithology Chapter, and authored Appendix A8.2: Year 2 Baseline Ornithology Report.
Mike Trewby	Woodrow Sustainable Solutions (part of the APEM Group)	BSc (Hons), Full member of CIEEM (MCIEEM)	Associate Director – Ornithology	Mike has worked for BirdWatch Ireland, before joining Woodrow in 2016, and has over 20 years of ornithology survey experience. Mike is extremely experienced in managing onshore wind projects, and oversaw delivery of the Kellystown baseline surveys, and approved Appendix A8.1: Year 1 Baseline Ornithology Report.
Julieta Pedrana	Woodrow Sustainable	PhD, BSc (Hons)	Senior Ornithologist	Julieta joined Woodrow in 2023 and regularly carries

Name	Company	Qualifications	Job Title	Project Role and Experience
	Solutions (part of the APEM Group)			out ornithological surveys and compiles ornithological reports, including carrying out collision risk modelling to inform wind farm planning. Julieta authored Appendix A8.1: Year 1 Baseline Ornithology Report.
Emmi Virkki	Woodrow Sustainable Solutions (part of the APEM Group)	MSc, BSc (Hons), MCIEEM	Senior Ecologist	Emmi has over six years of experience in consultancy in Ireland and her specialism lies in the fields of ornithology and botany. She regularly undertakes a wide variety of ornithological surveys, and was the Project Manager for the Kellystown baseline surveys, and reviewed A8.1: Year 1 Baseline Ornithology Report.
Ciaran Smyth	N/A	N/A	N/A	External field surveyors who carried out all baseline ornithology surveys for the Proposed Development. Surveyors were all suitably experienced, with good knowledge of the survey methods employed for onshore wind farms.
Enda Flynn	N/A	N/A	N/A	
Mikee Hoit	N/A	N/A	N/A	

Irish (English language) common and scientific names of bird species referred to in this report follow those used by BirdWatch Ireland<sup>1</sup>.

### 8.1.1 Legislation, Policy and Guidance

This assessment was undertaken considering the following key legislation, planning policy, guidance and other information. Guidance specific to Collision Risk Modelling (CRM) is listed within **Appendix A8.4**.

#### 8.1.1.1 Legislation

- Irish Wildlife Acts 1976 to 2018 (as amended).
- The International Convention on Wetlands of International Importance especially as Waterfowl Habitat 1971.

<sup>1</sup> <https://birdwatchireland.ie/irelands-birds-birdwatch-ireland/list-of-irelands-birds/> (Accessed 03/09/24)

- The European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) (S.I. No. 477 of 2011) (transposes EU Birds Directive 2009/147/EC and EU Habitats Directive 92/43/EEC).
- Planning and Development Regulations 2001 (as amended)
- Planning and Development Act 2000 (as amended)
- S.I. No. 296/2018 - European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018
- Directive 2011/92/EU as amended by Directive 2014/52/EU

#### **8.1.1.2 Policy**

- Project Ireland 2040: National Planning Framework.
- Louth County Council (2021) County Louth Development Plan 2021-2027.
- Louth County Council (2021) Local Biodiversity Action Plan for County Louth 2021-2026.
- Department of Housing, Local Government and Heritage (2021) Ireland's 4th National Biodiversity Action Plan.
- The International Convention on Wetlands of International Importance especially as Waterfowl Habitat 1971 (the "Ramsar Convention").
- The Convention on the Conservation of Migratory Species of Wild Animals 1979 (the "Bonn Convention").
- The Convention on the Conservation of European Wildlife and Natural Habitats 1979 (the "Bern Convention").

#### **8.1.1.3 Guidance**

- Department of Environment Community and Local Government [DoECLG], (2018). Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment.
- Environmental Protection Agency (2022). Guidelines on the information to be contained in Environmental Impact Assessment Reports.
- European Commission (2017). Environmental Impact Assessment of Projects.
- European Commission (2011). Wind energy development and Natura 2000. Guidance document.
- Gilbert, G., Stanbury, A., & Lewis, L. (2021). Birds of conservation concern in Ireland 4: 2020–2026. Irish Birds, 43, 1-22.
- NatureScot (2018a). Assessing significance of impacts from onshore wind farms on birds outwith designated areas, Version 2.

- NatureScot (2018b). Assessing the cumulative impacts of onshore wind farms on birds. SNH Guidance Note.
- NatureScot (2017) Recommended bird survey methods to inform impact assessment of onshore wind farms, Version 2.
- NatureScot (2016a). Assessing connectivity with Special Protection Areas (SPAs), Version 3.
- NatureScot (2016b). Environmental Statements and Annexes of Environmentally Sensitive Bird Information; Guidance for Developers, Consultants and Consultees, Version 2.
- NatureScot (2000). Windfarms and birds: calculating a theoretical collision risk assuming no avoidance action. SNH Guidance Note.
- Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. (2013). Raptors: a field guide to survey and monitoring, 3rd edition. The Stationery Office, Edinburgh.
- Gilbert, G., Gibbons, D.W. & Evans, J. (1998). Bird monitoring methods. RSPB, Sandy.
- Goodship, N.M. and Furness, R.W. (MacArthur Green) (2022) Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species. NatureScot Research Report 1283.
- National Roads Authority (2009). Guidelines for Assessment of Ecological Impacts of National Road Schemes (Revision 2).

Additional sources which were only used occasionally have been referenced within the text where relevant.

## 8.2 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

### 8.2.1 Scoping Report

A Scoping Report was issued to consultees in June 2023. This document outlined the ornithology surveys undertaken up to the date of issue, and the proposed scope of the assessment.

A summary of the key content within the Scoping Report in relation to Ornithology is outlined in **Table 8.2** below.

**Table 8.2: Summary of key information contained within the Ornithology Scoping Report Chapter**

Topic	Summary
Scope and results of surveys	The Scoping Report outlined the baseline surveys undertaken to inform the impact assessment. A brief summary was provided of the key results of surveys to date, and likely impacts of the Proposed Development
Impact assessment methodology	<p>The Scoping Report outlined the methodology for the impact assessment, including the key guidance which would be followed. This included:</p> <ul style="list-style-type: none"> <li>• CIEEM (2018) <i>Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine</i></li> <li>• Environmental Protection Agency (2022). <i>Guidelines on the information to be contained in Environmental Impact Assessment Reports.</i></li> <li>• National Roads Authority (2009). <i>Guidelines for Assessment of Ecological Impacts of National Road Schemes (Revision 2).</i></li> </ul>
Evaluating Features within the Zone of Influence	<p>The importance of an ecological feature should be considered within a defined geographical context. The following frame of reference will be used in this case:</p> <ul style="list-style-type: none"> <li>• International and European</li> <li>• National</li> <li>• County</li> <li>• Local</li> <li>• Site</li> </ul> <p>In certain circumstances particular receptors may be valued below the Site level. In these instances, they are described as being of negligible importance. CIEEM guidance indicates that features of less than Local importance are generally considered unlikely to trigger a mitigation or policy response in EclA terms.</p>

The Scoping Report has informed the structure and methodology of the impact assessment. No responses to the Scoping Report were received.

### 8.2.2 Study Area/Survey Areas

The Ornithology Survey Areas are defined below for each survey method. The Study Area for the assessment has been determined based on the Ornithology Survey Areas and guidance on potential connectivity to designated sites (SNH, 2016a). The assessment considers all parts of the development within the Site Boundary as shown in Chapter 1: Introduction, **Figure 1.2 Redline Boundary**, other than those scoped out as noted in Section 8.3.4.

### 8.2.3 Desk Study Methods

A Desk Study was undertaken to provide information on the ornithological interest of the Site and the wider area, which included details of any relevant statutory protected sites.

A search was made for all statutory protected sites designated for their ornithological features within the following areas:

- Nature Reserves within 10km; and
- Nature Heritage Areas (NHAs), Special Protection Areas (SPAs) and Ramsar sites within 20km, including candidate and/or proposed sites.

A desk study was undertaken by Woodrow Sustainable Solutions to inform the Year 1 Baseline Report (**Appendix A8.1**), which has been summarised in Section 8.3.1.1. Additional to this, Irish Wetland Bird Survey (I-WeBS) peak count data has been consulted to provide context to the Louth wintering gull populations.

#### 8.2.4 Baseline Survey Methods

Baseline Ornithology Surveys were completed over a two-year period between September 2021 and August 2023 (inclusive) following NatureScot guidance<sup>2</sup>. Although NatureScot guidance was written for Scotland, it is considered best practice in Ireland, and all survey methods outlined are relevant and applicable to Ireland. Full details of ornithology survey methods are given in **Appendix A8.1** and **Appendix A8.2**, with an overview of methods provided below.

The ornithology survey areas were based on a 'viable area' provided at the time of surveys, rather than the final Site Boundary, which included all land within which turbines could be located. The final turbine layout was not finalised until after completion of all surveys. Full details of the Survey Areas utilised for each survey are discussed in **Appendix A8.1** and **Appendix A8.2**, and survey areas in relation to the final turbine layout, site infrastructure and Proposed Development Site Boundary are shown in **Figure 2**.

##### 8.2.4.1 Vantage Point Surveys

Vantage Point Surveys (VPS) were carried out between September 2021 and September 2023 (inclusive), using a series of Vantage Point (VP) watches, to record flight activity of target bird species and inform the Collision Risk Modelling. Surveys were undertaken from four VPs, which provided views of the viable area and a 500m buffer. VPs were selected using viewshed analysis, undertaken using Geographic Information Systems (GIS) and were 'ground-truthed' in the field to ensure that views were accurate.

Surveys were undertaken following NatureScot (2017) guidance, with 36 hours of survey undertaken during each breeding and non-breeding season, with a total of 144 hours of survey from each VP during baseline surveys.

Target species during VPS were as follows:

- All waterbird species;

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<sup>2</sup> NatureScot (2017). Recommended bird survey methods to inform impact assessment of onshore wind farms, Version 2.

- All raptor species;
- Any species listed on Annex I of the EU Birds Directive; and,
- Any species listed as Red or Amber of the BoCCI 2020-26 (Gilbert *et al.*, 2021), where collision risk presents potential for population level effects

Each recorded flight path was numbered and cross-referenced, with the following data recorded:

- Time on detection;
- Bird species, age and sex (where age and sex was determinable);
- Number of birds;
- Behaviour where applicable (e.g. foraging, commuting, display etc);
- Duration of flight within the VP viewshed; and
- Flight height range and duration

Vantage Points and viewsheds are shown in **Figure 3**.

#### **8.2.4.2 Breeding Bird Surveys**

A three-visit diurnal Breeding Bird Survey (BBS) was completed between April and July (inclusive) in both 2022 and 2023, to map the territories of breeding wader and other non-passerine species of conservation concern, such as wildfowl and red grouse in areas of open ground. In line with NatureScot (2017) guidance, the survey combined elements of the O'Brien and Smith (1992) method (designed to census lowland breeding waders) and the common bird census (CBC) methodology described in Gilbert *et al.* (1998). The BBS Survey Area included all potentially suitable habitat within the viable area and surrounding 500m buffer.

#### **8.2.4.3 Crepuscular/Dusk Surveys**

To supplement the BBS and Breeding Raptor Surveys, additional dusk visits were undertaken between May and June 2022 and March and August 2023 to record crepuscular or nocturnal species which are difficult to detect during standard surveys. The surveys covered woodland habitat within the BBS Survey Area to identify roding woodcock (territorial males), breeding long-eared owls, and suitable breeding snipe habitat. Surveys followed species-specific methods detailed in Gilbert *et al.* (1998) for woodcock, long-eared owl and snipe.

#### **8.2.4.4 Breeding Raptor Surveys**

Breeding Raptor Surveys were completed between March and August (inclusive) in both 2022 and 2023, to detect the presence of target raptor species (Annex I species and raptor species

listed on Birds of Conservation Concern Ireland). The Breeding Raptor Survey Area covered accessible areas within 1km of the viable area for goshawk and owls (other than short-eared owl), and within 2km of the viable turbine area for all other raptor species, in line with NatureScot (2017) guidance. Surveys followed methods outlined in Hardey *et al.* (2013).

#### **8.2.4.5 Winter Walkover Survey**

A three-visit Winter Walkover Surveys (WWS) was completed between October and February (inclusive) in both the 2021/22 and 2022/23 non-breeding seasons, to map the location of all species within the WWS Survey Area, defined as the viable area and a surrounding 500m buffer. Passerine species were not considered target species, as per NatureScot (2017) guidance.

#### **8.2.4.6 Wintering Waterbird Survey**

A ten-visit Wintering Waterbird Survey was completed between September and March (inclusive) during both 2021/22 and 2022/23 non-breeding seasons. Surveys followed the methodology employed by Irish Wetland Bird Surveys (I-WeBS, undated), within the Wintering Waterbird Survey Area, defined as the viable area and a surrounding 5km buffer. All suitable waterbodies or habitats considered suitable for foraging and/or roosting waterbirds was approached with all waterbirds of conservation concern recorded.

#### **8.2.4.7 Hen Harrier Roost Surveys**

In line with NatureScot (2017) guidance, hen harrier roost surveys of suitable roosting habitat were undertaken between October and January (inclusive) in both 2021/22 and 2022/23 non-breeding seasons. Surveys followed guidance by Hardey *et al.* (2013), noting any hen harrier sightings, and their behaviour, within the Hen Harrier Survey Area, defined as the viable area and a 2km surrounding buffer.

#### **8.2.4.8 Baseline Survey Limitations**

Surveys were only undertaken within land where access had been granted, or from publicly accessible land and roads. Despite this limitation, it is considered that sufficiently robust data was collected over the study period to identify any ornithological constraints that may arise for the proposed wind farm and inform the ornithological impact assessment.

As the majority of surveys were completed in optimal weather conditions it is considered that a small number of surveys undertaken in poor weather conditions are not a constraint. Furthermore, it is considered that surveying in a variety of conditions will be more representative of the baseline conditions and associated levels of bird activity within the

Survey Areas. As such, sub-optimal weather is not considered to represent a constraint to the robustness of the data collected.

Limitations are outlined in full within **Appendix A8.1** and **Appendix A8.2**.

### 8.2.5 Collision Risk Modelling Methodology

The Collision Risk Modelling (CRM) methods followed those those outlined by Band *et al.* (2007). Data collected during the 2021-23 VPS was used to predict the number of individuals per species expected to collide with the turbine rotors. The number of collisions have been predicted during the breeding season and non-breeding season (following NatureScot guidance on breeding season dates [SNH, 2014]) and combined to predict the number of collisions annually for each species.

CRM was undertaken to predict the number of collisions associated with three different theoretical candidate turbine models, categorised as 'Highest', 'Moderate' and 'Lowest' risk. Parameters to use for each theoretical turbine have been supplied to APEM by EDF and are based on real turbine specifications.

- Lowest Risk Turbine: Rotor diameter 149.1m with a rotor swept height of 30.5-179.5m;
- Moderate Risk Turbine: Rotor diameter 155m with a rotor swept height of 25-180m; and
- Highest Risk Turbine: Rotor diameter 163m with a rotor swept height of 16.5-179.5m.

Within this assessment, a precautionary approach has been taken and the worst-case predicted collisions have been presented which assumes that the Highest Risk Turbine would be selected.

CRM was completed for the following species:

- black-headed gull;
- common gull;
- herring gull;
- lesser black-backed gull;
- peregrine; and
- kestrel.

All other target were scoped out of CRM based on their flight activity, or lack thereof, within the Collision Risk Zone (the CRZ, a 500m buffer of the turbine layout). The full CRM

methodology, including justification for the scoping-out of species is presented within **Appendix A8.4**.

## 8.2.6 Methodology for the Assessment of Effects

The methodology used for the assessment of effects on ornithological receptors complies with Chapter 3 of the 'Guidelines for Assessment of Ecological Impacts of National Roads Schemes' (NRA, 2009) and CIEEM Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2018).

### 8.2.6.1 Scope of Assessment

The key issues for the assessment of potential ornithological effects relating to the Proposed Development are:

- Direct loss of breeding, foraging and/or roosting habitat through construction;
- Displacement of birds as a result of disturbance during all phases of the development. This includes barrier effects to commuting or migrating birds due to the presence of wind turbines or other infrastructure;
- Death or injury through collision with turbine blades or other types of infrastructure; and
- Cumulative effects on species and / or designated sites, resulting from construction, operation and decommissioning of the Proposed Development in conjunction with other developments that may also impact on the same populations.

### 8.2.6.2 Assessing the Importance of Ornithological Features

CIEEM and NRA guidance provide a framework for determining the importance of an ornithological feature at the following geographic scales:

- International importance – important in a European or wider international context;
- National importance – important in an Irish context
- County importance – important within the context of County Louth
- Local importance - locally important populations/assemblages of bird species and/or protected and/or priority species/habitats

The evaluation criteria for these scales of importance are provided in **Table 8.3** below. It should be noted that professional judgement has been used when defining importance, based on the level of species activity recorded during surveys. For example, where a species has been recorded very rarely, or not recorded within or close to the Proposed Development, its importance has been decreased.

**Table 8.3: Evaluation criteria for determining the importance of ornithological features**

Importance	Evaluation Criteria
International	<ul style="list-style-type: none"> <li>• Statutory sites of international ornithological importance (SPAs and Ramsar sites) with potential connectivity to the Site.</li> <li>• The regular presence within or around the Site of a qualifying species of an existing or proposed statutory site of international importance (i.e. an SPA or Ramsar site) with potential connectivity to the Site. Numbers of birds making use of the Site are also taken into account.</li> <li>• The regular presence within or around the Site of other bird species that contribute to the integrity of an existing or proposed statutory site of international importance (such as a species which is part of an assemblage feature) with potential connectivity to the Site. Numbers of birds making use of the Site are also taken into account.</li> </ul>
National (Ireland)	<ul style="list-style-type: none"> <li>• Statutory sites of national ornithological importance (NHAs) with potential connectivity to the Site.</li> <li>• The regular presence within or around the Site of a qualifying species of an existing or proposed statutory site of national importance (i.e. an NHA) with potential connectivity to the Site. Numbers of birds making use of the Site are also taken into account.</li> <li>• The regular present within or around the Site of a species listed on Annex I of the Birds' Directive, where the species is not a cited interest of a statutory site but is present in nationally important numbers.</li> <li>• The regular presence within or around the Site of nationally importance numbers of a species of conservation concern (Gilbert <i>et al.</i>, 2021), where this is identified in NS guidance as a priority for assessment (NS, 2018a).</li> <li>• The regular presence within or around the Site of nationally important numbers of a species of conservation concern, where this is identified in NS guidance (NS, 2018a) as a priority for assessment.</li> <li>• The regular presence within or around the Site of nationally importance numbers of a migratory species which is rare or vulnerable or warrant consideration on account of the proximity of migration routes, or breeding, moulting, wintering or staging areas to a proposed development, and which is identified in guidance as a priority for assessment.</li> </ul>
County (Co. Louth)	<ul style="list-style-type: none"> <li>• A cited interest of an existing or proposed statutory site i.e. SPA, Ramsar or NHA) with potential connectivity to the Site but is only present within the Site infrequently or in low numbers.</li> <li>• Other species which contribute to the integrity of an existing or proposed statutory site (for example as part of an assemblage) with potential connectivity to the Site but is only present within the Site infrequently or in low numbers.</li> <li>• A species listed on Annex I of the Birds' Directive, where the species is not a cited interest of a statutory site and is regularly present in numbers of county importance.</li> <li>• The regular presence within or around the Site of important numbers in the county context of a species of conservation concern, where this is identified in guidance as a priority for assessment.</li> </ul>
Local	<ul style="list-style-type: none"> <li>• Locally important populations of priority species identified in the Local Biodiversity Action Plan.</li> <li>• Regularly occurring populations (assessed to be important at the local level) of Annex I species or species of conservation concern.</li> </ul>
Site	<ul style="list-style-type: none"> <li>• A species or site which is covered by the categories above, for which there is no pathway for significant effects.</li> <li>• All other species which are widespread, common and not listed as a species of conservation concern.</li> <li>• A species for which there will be no likely impacts (for example passerine species, which are stated in NS guidance (2018a) as unlikely to be impacted by onshore wind developments).</li> </ul>

Features assessed as being of less than Local importance have been considered to be of negligible importance and have scoped out of the detailed assessment of effects, as any effects on these receptors would be considered not significant.

The importance of an ornithological feature (using the geographical scale of importance defined above) has been determined based on the following criteria:

- Conservation status:
  - Whether a species is listed on Annex I of the Birds' Directive; and
  - BoCCI Red and Amber listed species (Gilbert *et al.* 2021).
- Species abundance at a relevant geographic scale.

### 8.2.6.3 Methodology for Assessing Effects

The assessment of potential effects from the Proposed Development on ornithological features has taken consideration of the following factors in line with CIEEM guidance (2018):

- Nature of effect: whether it is positive (beneficial) to ornithological features, e.g. by increasing species diversity or extending habitat, or negative (detrimental), e.g. by loss of, or displacement from, suitable habitat;
- Extent: the spatial or geographical area over which the effect may occur;
- Magnitude: the size, amount, intensity, and volume of the effect;
- Duration: the duration of an effect as defined in relation to ornithological characteristics (such as a species' life cycle) as well as human timeframes. It should also be noted that the duration of an activity may differ from the duration of the resulting effect; e.g. if short-term construction activities cause disturbance to breeding birds, there may be long-term implications from failure to reproduce that season;
- Frequency: the number of times an activity occurs may influence the resulting effect; and
- Timing: this may result in an impact on an ecological feature if it coincides with critical life stages or seasons (e.g. the breeding season).
- Reversibility: an irreversible effect is one from which recovery is not possible within a reasonable timescale or there is no reasonable chance of action being taken to reverse it.

Following the classification of an effect based on the factors described above, it is necessary to state whether an effect is "significant" or "not significant". EPA guidance (2022) states that "*Significance of effects is usually understood to mean the importance of the outcome of the effects (the consequences of the change)*". In line with CIEEM (2018) guidance, the significance of an effect on an ornithological feature has been determined based on analysis

of the factors listed above, with CIEEM (2018) guidance stating that a “*significant effect*’ is an effect that either supports or undermines biodiversity conservation objectives”.

As CIEEM (2018) and EPA (2022) guidance are both of relevance to this assessment, the terminology used when determining the significance of effects takes into consideration the significance definitions of both guidance documents. Definitions of significance outlined in EPA (2022) are presented in **Table 8.4** below and are related to the equivalent CIEEM (2018) significance level in **Table 8.5**. CIEEM guidance (2018), discourages the use of a matrix and suggests that effects should be considered “significant” or “not significant”.

**Table 8.4: EPA (2022) guidelines for determining significance of effects**

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

**Table 8.5: CIEEM (2018) guidelines for determining significance of effects**

EPA Significance	Equivalent CIEEM Significance
Profound	Significant effect
Very significant	Significant effect
Significant	Significant effect
Moderate	Not significant
Slight	Not significant
Not significant	Not significant
Imperceptible	Not significant

**8.2.6.4 Determining the Importance of Ornithological Receptors**

Guidance from Percival (2007) and NRA (2009), alongside professional judgement, has been used to evaluate the importance of bird species associated with Proposed Development. The criteria used to determine the importance of ornithological receptors for this assessment is outlined in **Table 8.3** and compared to criteria from guidance in **Table 8.6**.

**Table 8.6: Criteria for establishing the importance of ornithological receptors**

Importance of Receptor	Percival (2007) criteria	NRA (2009) resource evaluation	NRA (2009) criteria	Kellystown Criteria
Very High.	<ul style="list-style-type: none"> <li>Species is cited interest of SPA.</li> <li>Species present in Internationally important numbers.</li> </ul>	International Importance.	<ul style="list-style-type: none"> <li>A 'European Site', including SPA or pSPA and Ramsar Site</li> <li>Resident or regularly occurring populations (assessed to be important at the national level) of the following: Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive</li> </ul>	<ul style="list-style-type: none"> <li>Statutory sites of international ornithological importance (SPAs and Ramsar sites) with potential connectivity to the Site.</li> <li>The regular presence within or around the Site of a qualifying species of an existing or proposed statutory site of international importance (i.e. an SPA or Ramsar site) with potential connectivity to the Site. Numbers of birds making use of the Site are also taken into account.</li> <li>The regular presence within or around the Site of other bird species that contribute to the integrity of an existing or proposed statutory site of international importance (such as a species which is part of an assemblage feature) with potential connectivity to the Site. Numbers of birds making use of the Site are also taken into account.</li> </ul>
High	<ul style="list-style-type: none"> <li>Other non-cited species which contribute to integrity of SPA.</li> <li>Ecologically sensitive species (&lt;300 breeding pairs in UK) and less common birds of prey.</li> <li>Species listed on Annex 1 of the EU Birds Directive.</li> <li>Regularly occurring relevant migratory species which are rare or vulnerable</li> </ul>	National Importance	<ul style="list-style-type: none"> <li>Site designated as an NHA</li> <li>Resident or regularly occurring populations (assessed to be important at the national level) of the following: Species protected under the Wildlife Acts;</li> <li>Species listed on the relevant Red Data list</li> </ul>	<ul style="list-style-type: none"> <li>Statutory sites of national ornithological importance (NHAs) with potential connectivity to the Site.</li> <li>The regular presence within or around the Site of a qualifying species of an existing or proposed statutory site of national importance (i.e. an NHA) with potential connectivity to the Site. Numbers of birds making use of the Site are also taken into account.</li> <li>The regular presence within or around the Site of a species listed on Annex I of the Birds' Directive, where the species is not a cited interest of a statutory site but is present in nationally important numbers.</li> <li>The regular presence within or around the Site of nationally importance numbers of a species of conservation concern (Gilbert <i>et al</i>, 2021), where this is identified in NS guidance as a priority for assessment (NS, 2018a).</li> </ul>

Importance of Receptor	Percival (2007) criteria	NRA (2009) resource evaluation	NRA (2009) criteria	Kellystown Criteria
				<ul style="list-style-type: none"> <li>The regular presence within or around the Site of nationally important numbers of a species of conservation concern, where this is identified in NS guidance (NS, 2018a) as a priority for assessment.</li> <li>The regular presence within or around the Site of nationally importance numbers of a migratory species which is rare or vulnerable or warrant consideration on account of the proximity of migration routes, or breeding, moulting, wintering or staging areas to a proposed development, and which is identified in NS guidance (NS, 2018a) as a priority for assessment.</li> </ul>
Medium	<ul style="list-style-type: none"> <li>Species present in regionally important numbers (&gt;1% of regional population).</li> <li>Species occurring within SPA's but not crucial to the integrity of the site.</li> <li>Species listed as priority species in the UK BAP subject to special conservation measures</li> </ul>	County Importance	<ul style="list-style-type: none"> <li>Resident or regularly occurring populations (assessed to be important at the County level) of the following: Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</li> <li>County important populations of species.</li> <li>Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.</li> </ul>	<ul style="list-style-type: none"> <li>A cited interest of an existing or proposed statutory site i.e. SPA, Ramsar or NHA) with potential connectivity to the Site, but is only present within the Site infrequently or in low numbers.</li> <li>Other species which contribute to the integrity of an existing or proposed statutory site (for example as part of an assemblage) with potential connectivity to the Site, but is only present within the Site infrequently or in low numbers.</li> <li>A species listed on Annex I of the Birds' Directive, where the species is not a cited interest of a statutory site and is regularly present in numbers of county importance.</li> <li>The regular presence within or around the Site of important numbers in the county context of a species of conservation concern, where this is identified in NS guidance (NS, 2018a) as a priority for assessment.</li> </ul>
Low	<ul style="list-style-type: none"> <li>Species covered above which are present very infrequently or in very low numbers.</li> </ul>	Local Importance (High Value)	<ul style="list-style-type: none"> <li>Locally important populations of priority species or habitats or natural heritage features identified in the Local Biodiversity Action Plan</li> </ul>	<ul style="list-style-type: none"> <li>Species covered above which are present very infrequently or in very low numbers.</li> <li>Locally important populations of priority species identified in the Local Biodiversity Action Plan.</li> </ul>

Importance of Receptor	Percival (2007) criteria	NRA (2009) resource evaluation	NRA (2009) criteria	Kellystown Criteria
	<ul style="list-style-type: none"> <li>Any other species of conservation interest not covered above, e.g. species listed on the red or amber lists of the BoCCI.</li> </ul>		(BAP), if this has been prepared; <ul style="list-style-type: none"> <li>Resident or regularly occurring populations (assessed to be important at the Local level) of the following: Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; Species protected under the Wildlife Acts; and/or Species listed on the relevant Red Data list.</li> </ul>	<ul style="list-style-type: none"> <li>Regularly occurring populations (assessed to be important at the local level) of Annex I species or species of conservation concern.</li> </ul>
Negligible	Species that remain common and widespread	Local Importance (Low Value)	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>All other species which are widespread, common and not listed as a species of conservation concern.</li> <li>A species for which there will be no likely impacts (for example passerine species which are stated in NS guidance (2018a) as unlikely to be impacted by onshore wind developments).</li> </ul>

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## 8.3 BASELINE CONDITIONS AND EVALUATION OF ORNITHOLOGICAL RECEPTORS

### 8.3.1 Baseline Conditions

#### 8.3.1.1 Desk Study Results

##### 8.3.1.1.1 Statutory Sites

The National Parks and Wildlife Services (NPWS) Designations Viewer<sup>3</sup> was used to identify the location of sites designated for ornithological features with potential connectivity to the Site using the following criteria:

- Internationally important sites - Special Protection Areas (SPAs) and Ramsar sites within 20km<sup>4</sup> of turbine locations;
- Nationally important sites – Natural Heritage Areas (NHAs) within 20km of the turbine locations; and
- Nature Reserves within 10km of turbine locations.

Seven designated sites were identified. SPA locations are shown on **Figure 4**. Details of statutory sites are provided in below.

**Table 8.7: Details of designated sites within 20km of turbine locations**

Site Name	Designation	Qualifying Features	Distance from nearest turbine
River Boyne and River Blackwater	SPA	<ul style="list-style-type: none"> <li>• Kingfisher (breeding)</li> </ul>	7.6km south-west
River Nanny Estuary and Shore	SPA	<ul style="list-style-type: none"> <li>• Oystercatcher</li> <li>• Ringed plover</li> <li>• Golden plover</li> <li>• Knot</li> <li>• Sanderling</li> <li>• Herring gull</li> <li>• Wetland and waterbirds</li> </ul>	12.3km south-east
Boyne Estuary	SPA	<ul style="list-style-type: none"> <li>• Shelduck (non-breeding)</li> <li>• Oystercatcher (non-breeding)</li> <li>• Golden plover (non-breeding)</li> <li>• Grey plover (non-breeding)</li> <li>• Lapwing (non-breeding)</li> <li>• Knot (non-breeding)</li> <li>• Sanderling (non-breeding)</li> </ul>	6.5km south-east

<sup>3</sup> <https://www.npws.ie/maps-and-data/designated-site-data> (Accessed 30/09/24)

<sup>4</sup> 20km is the zone of potential connectivity for statutory designated sites with non-breeding swan and goose interests, whilst other wildfowl and waders are limited to 15km. This has, therefore, been used as the basis for the area of search.

Site Name	Designation	Qualifying Features	Distance from nearest turbine
		<ul style="list-style-type: none"> <li>• Black-tailed godwit (non-breeding)</li> <li>• Redshank (non-breeding)</li> <li>• Turnstone (non-breeding)</li> <li>• Little tern (non-breeding)</li> </ul>	
Dundalk Bay	SPA	<ul style="list-style-type: none"> <li>• Great crested grebe (non-breeding)</li> <li>• Greylag goose (non-breeding)</li> <li>• Light-bellied brent goose (non-breeding)</li> <li>• Shelduck (non-breeding)</li> <li>• Teal (non-breeding)</li> <li>• Mallard (non-breeding)</li> <li>• Pintail (non-breeding)</li> <li>• Common scoter (non-breeding)</li> <li>• Red-breasted merganser (non-breeding)</li> <li>• Oystercatcher (non-breeding)</li> <li>• Ringed plover (non-breeding)</li> <li>• Golden plover (non-breeding)</li> <li>• Grey plover (non-breeding)</li> <li>• Lapwing (non-breeding)</li> <li>• Knot (non-breeding)</li> <li>• Dunlin (non-breeding)</li> <li>• Black-tailed godwit (non-breeding)</li> <li>• Bar-tailed godwit (non-breeding)</li> <li>• Curlew (non-breeding)</li> <li>• Redshank (non-breeding)</li> <li>• Black-headed gull (non-breeding)</li> <li>• Common gull (non-breeding)</li> <li>• Herring gull (non-breeding)</li> </ul>	8.3km north-east
Dundalk Bay	Ramsar	<ul style="list-style-type: none"> <li>• Northern pintail (non-breeding)</li> <li>• Northern shoveler (non-breeding)</li> <li>• Teal (non-breeding)</li> <li>• Wigeon (non-breeding)</li> <li>• Greater white-fronted goose (non-breeding)</li> <li>• Greylag goose (non-breeding)</li> <li>• Tufted duck (non-breeding)</li> <li>• Greater scaup (non-breeding)</li> <li>• Light-bellied brent goose (non-breeding)</li> <li>• Goldeneye (non-breeding)</li> <li>• Knot (non-breeding)</li> </ul>	8.3km north-east

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Site Name	Designation	Qualifying Features	Distance from nearest turbine
		<ul style="list-style-type: none"> <li>• Whooper swan (non-breeding)</li> <li>• Mute swan (non-breeding)</li> <li>• Little egret</li> <li>• Snipe (non-breeding)</li> <li>• Black-throated diver (non-breeding)</li> <li>• Great northern diver (non-breeding)</li> <li>• Red-throated diver (non-breeding)</li> <li>• Oystercatcher (non-breeding)</li> <li>• Bar-tailed godwit (non-breeding)</li> <li>• Black-tailed godwit (non-breeding)</li> <li>• Curlew (non-breeding)</li> <li>• Cormorant (non-breeding)</li> <li>• Ruff (non-breeding)</li> <li>• Golden plover (non-breeding)</li> <li>• Slavonian grebe (non-breeding)</li> <li>• Great crested grebe (non-breeding)</li> <li>• Little grebe (non-breeding)</li> <li>• Shelduck (non-breeding)</li> <li>• Sandwich tern (breeding)</li> <li>• Redshank (non-breeding)</li> <li>• Lapwing (non-breeding)</li> </ul>	
North West Irish Sea	SPA	<p>The North West Irish Seas SPA is designated as an important resource for foraging birds during the breeding season which are associated with nearby SPA breeding colonies. The SPA is also an important foraging and roosting resource for a number of species during the non-breeding season.</p> <ul style="list-style-type: none"> <li>• Red-throated diver (non-breeding season)</li> <li>• Great northern diver (non-breeding season)</li> <li>• Fulmar (breeding and non-breeding seasons)</li> <li>• Manx shearwater (breeding season)</li> <li>• Cormorant (breeding season)</li> <li>• Shag (breeding season)</li> <li>• Common scoter (non-breeding season)</li> <li>• Little gull (non-breeding season)</li> <li>• Black-headed gull (non-breeding season)</li> <li>• Common gull (non-breeding season)</li> <li>• Lesser black-backed gull (breeding season)</li> <li>• Herring gull (breeding and non-breeding seasons)</li> </ul>	7.7km east

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Site Name	Designation	Qualifying Features	Distance from nearest turbine
		<ul style="list-style-type: none"> <li>Great black-backed gull (non-breeding season)</li> <li>Kittiwake (breeding and non-breeding seasons)</li> <li>Roseate tern (breeding season)</li> <li>Common tern (breeding season)</li> <li>Arctic tern (breeding season)</li> <li>Little tern (breeding season)</li> <li>Guillemot (breeding and non-breeding seasons)</li> <li>Razorbill (breeding and non-breeding seasons)</li> <li>Puffin (breeding and non-breeding seasons)</li> </ul>	
Stabannan-Braganstown	SPA	<ul style="list-style-type: none"> <li>Greylag goose (non-breeding)</li> </ul>	9.4km NW

### 8.3.1.1.2 Other Desk Study Results

Bird records were collated from the National Biodiversity Data Centre (NBDC) database<sup>5</sup>. The search area was designed to extend a minimum of 10km from the Development. The BirdWatch Ireland Bird Sensitivity Mapping for Wind Energy Development (McGuinness *et al.*, 2015) was examined, however was not sufficiently detailed to generate species sensitivity scores.

#### 8.3.1.1.2.1 Breeding Waders

According to the Bird Atlas 2007-11, there were no recent breeding records of curlew, golden plover, or lapwing within the search area, however, there was evidence of breeding common snipe (Balmer *et al.*, 2013). Historically, woodcock have been confirmed breeding within the 10km grid squares within the search area and encompassing the Proposed Development (Balmer *et al.*, 2013). However, the Bird Atlas 2007-2011 did not register breeding in this area, only wintering birds were recorded (Balmer *et al.*, 2013).

#### 8.3.1.1.2.2 Raptors

Buzzard, sparrowhawk (both green-listed) and kestrel (red-listed) were all recorded breeding within 2km of the Site. Peregrine (amber listed and Annex I) were recorded breeding within 10km of the site (Balmer *et al.*, 2013).

<sup>5</sup> <https://biodiversityireland.ie/> (Accessed 07/05/24)

Long-eared owl (green-listed) was recorded breeding in the area in the Bird Atlas 2007 - 2011 (Balmer *et al.*, 2013).

#### 8.3.1.1.2.3 Geese and Swans

Whooper swan, pink-footed geese, white-fronted geese and greylag geese were all recorded within 20km of the Site during Irish Wetland Bird Surveys 2009/10-2015/16 (Boland *et al.*, 2012), along with internationally important numbers of light-bellied brent goose.

#### 8.3.1.1.2.4 Gulls

Black-headed gull, common gull, lesser black-backed gull, herring gull and great black-backed gull were all recorded nearby the site between 2011/12 and 2015/16 (Lewis *et al.*, 2019).

#### 8.3.1.1.3 Irish Wetland Bird Survey Results

The I-WeBS data for County Louth was consulted to provide context to the county's wintering gull populations. The peak counts for the most recent five years of surveys are provided below. It should be noted that gull records are not recorded during I-WeBS surveys as standard, and therefore the populations at each site may be an underestimate. There was no count data available for the following sites: Fane River Plain, Keenan's Cross Pond, Kilineer Quarry Drogheda, and River Glyde.

**Table 8.8: I-WeBS peak counts for Boyne Estuary gull species**

Species	2016/17	2017/18	2018/19	2019/20	2020/21	Five Year Mean
Black-headed gull	0	0	0	0	280	56
Common gull	0	0	0	0	0	0
Herring gull	0	0	0	0	516	103.2
Lesser black-backed gull	0	0	0	0	1	0.2

**Table 8.9: I-WeBS peak counts for Braganstown gull species**

Species	2016/17	2017/18	2018/19	2019/20	2020/21	Five Year Mean
Black-headed gull	No count	9	250	300	No count	111.8
Common gull	No count	1	0	2	No count	0.6

Species	2016/17	2017/18	2018/19	2019/20	2020/21	Five Year Mean
Herring gull	No count	0	0	0	No count	0
Lesser black-backed gull	No count	0	0	0	No count	0

**Table 8.10: I-WeBS peak counts for Carlingford Lough (Rol) gull species**

Species	2016/17	2017/18	2018/19	2019/20	2020/21	Five Year Mean
Black-headed gull	345	372	26	340	No count	216.6
Common gull	382	626	14	145	No count	233.4
Herring gull	117	60	65	211	No count	90.6
Lesser black-backed gull	0	1	6	1	No count	1.6

**Table 8.11: I-WeBS peak counts for Dunany Point – Clogher Head gull species**

Species	2016/17	2017/18	2018/19	2019/20	2020/21	Five Year Mean
Black-headed gull	222	725	0	7	85	207.8
Common gull	512	885	0	0	5	280.4
Herring gull	1572	1650	290	208	290	802
Lesser black-backed gull	0	0	0	0	0	0

**Table 8.12: I-WeBS peak counts for Dundalk Bay gull species**

Species	2016/17	2017/18	2018/19	2019/20	2020/21	Five Year Mean
Black-headed gull	492	1680	1170	706	870	983.6

Species	2016/17	2017/18	2018/19	2019/20	2020/21	Five Year Mean
Common gull	602	957	671	440	131	560.2
Herring gull	930	9245	379	165	243	2192.4
Lesser black-backed gull	8	44	8	2	7	13.8

**Table 8.13: I-WeBS peak counts for Dundalk Bay Outer (North: Ballagan Point - Giles Quay) gull species**

Species	2016/17	2017/18	2018/19	2019/20	2020/21	Five Year Mean
Black-headed gull	438	530	300	No count	No count	253.6
Common gull	223	230	85	No count	No count	107.6
Herring gull	0	0	0	No count	No count	0
Lesser black-backed gull	0	0	0	No count	No count	0

**Table 8.14: I-WeBS peak counts for Nanny Estuary and Shore gull species**

Species	2016/17	2017/18	2018/19	2019/20	2020/21	Five Year Mean
Black-headed gull	0	0	0	156	68	44.8
Common gull	0	0	0	18	44	12.4
Herring gull	0	0	0	211	321	106.4
Lesser black-backed gull	0	0	0	4	7	2.2

### 8.3.1.2 Field Survey Results

#### 8.3.1.2.1 Vantage Point Surveys

##### 8.3.1.2.1.1 Year 1: 2021-22

A total of 1,048 flights by 18 target species were recorded during the Year 1 VPS. Black-headed gull was the most frequently recorded species (241 flights), followed by buzzard (237 flights), common gull (183 flights) and herring gull (182 flights). For all other target species, flight activity was low, with grey heron, peregrine and sparrowhawk the only species recorded with more than ten flights. 17 flights by unidentified gull species were also recorded.

Details of target species flights are provided in **Appendix A8.1**. It should note that within this report there are details of incidental records from VPS, which includes records of birds during VPS which were not in flight, including birds perched, swimming, or on the ground. These incidental records have been excluded for **Table 8.15**.

##### 8.3.1.2.1.2 Year 2: 2022-23

A total of 503 flights by 15 target species were recorded during the Year 2 VPS. Buzzard was the most frequently recorded species (262 flights), followed by peregrine (62 flights), sparrowhawk (41 flights) and common gull (40 flights). For all other target species, flight activity was low, with black-headed gull, herring gull, lesser black-backed gull, grey heron and kestrel the only species recorded with more than ten flights. 15 flights for unidentified gull species were also recorded.

A summary of target species flights during Year 2 VPS is provided in **Table 8.15**.

**Table 8.15: Summary of Target Species Recorded During Vantage Point Surveys**

Species*	Conservation Status**	Number of Flights			No. of Birds per Flight
		Year 1	Year 2	Total Flights	
Whooper swan	Amber, Ann I	2	0	2	4-7
Mallard	Amber	9	7	16	1-4
Swift	Red	0	5	5	1-2
Lapwing	Red	0	3	3	1-13
Golden plover	Red, Ann I	6	4	10	1-500
Curlew	Red	8	0	8	1-28

Species*	Conservation Status**	Number of Flights			No. of Birds per Flight
		Year 1	Year 2	Total Flights	
Black-headed gull	Amber, SPA	241	10	251	1-278
Common gull	Amber, SPA	183	40	223	1-250
Great black-backed gull	Green, SPA	6	0	6	1-7
Herring gull	Amber, SPA	177	24	206	1-230
Lesser black-backed gull	Amber, SPA	36	12	48	1-11
Gull species***	N/A	21	15	36	1-300
Cormorant	Amber, SPA	4	2	6	1
Grey heron	Green	14	17	31	1-2
Little egret	Green; Ann I, SPA	7	1	8	1
Sparrowhawk	Green	51	41	92	1-2
Red kite	Red; Ann I	1	0	1	1
Buzzard	Green	237	262	499	1-5
Kestrel	Red	2	13	15	1
Merlin	Amber; Ann I	1	0	1	1
Peregrine	Green; Ann I	41	62	103	1-4
<p>* Species names and order in which they are listed follow the Irish list.</p> <p>** Ann I = species listed on Annex I of the Birds Directive. Red and Amber = Red- or Amber-listed species on the UK BoCCI. SPA = species is a feature for a nearby designated site listed in Table 8.7.</p> <p>***Records where gulls could not be identified to species level.</p>					

### 8.3.1.2.2 Breeding Bird Surveys

Breeding Bird Surveys included diurnal and dusk visits. A total of two target species, stock dove and snipe, were confirmed or considered likely to have bred within the BBS Survey Area. Both

species bred within the BBS Survey Area in both years. Long-eared owl was also recorded and is discussed further in **Section 8.3.1.2.3**.

During Year 1 diurnal and dusk surveys a number of other non-breeding target species were recorded; curlew, golden plover, mallard, cormorant, herring gull and lesser black-backed gull. During Year 2 surveys, mallard was recorded as a non-breeding target species, while common gull, herring gull and lesser black-backed full were recorded in flight. There were no records of non-breeding waders during Year 2 surveys.

A summary of breeding territories recorded is provided in **Table 8.16**. Breeding territories are shown on **Figure 5**.

**Table 8.16: Summary of Target Species Recorded During BBS**

Species	Conservation Status	Number of Breeding Territories					
		Year 1 Within Proposed Development Boundary Only	Year 1 Within 500m Buffer Only	Year 1 Total	Year 2 Within Proposed Development Boundary Only	Year 2 Within 500m Buffer Only	Year 2 Total
Stock Dove	Red	0	0	2	0	0	1
Snipe	Red	0	0	1	0	0	3

\* Species names and order in which they are listed follow the Irish list.

\*\* Ann I = species listed on Annex I of the Birds Directive. Red and Amber = Red- or Amber-listed species on the UK BoCCI. SPA = species is a feature for a nearby designated site listed in Table 8.7.

### 8.3.1.2.3 Breeding Raptor Surveys

#### 8.3.1.2.3.1 Target Species

Two BoCCI red-listed or Annex I raptor species were recorded during the breeding raptor surveys. Of these, only peregrine (listed on Annex I) was confirmed breeding within the Breeding Raptor Survey Area, further details are provided in **Appendix A8.3**.

Kestrel was recorded twice during Breeding Raptor Surveys, with a single record in the 2022 breeding season and one further record in the 2023 breeding season. Kestrel was also recorded, in low numbers, incidentally during other surveys. There was no evidence of kestrel breeding within the survey area.

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**8.3.1.2.3.2 Secondary Species**

Buzzard was recorded frequently during both the 2022 and 2023 Breeding Raptor Surveys, with four potential breeding territories in 2022 and a single likely territory in 2023. Seven probable sparrowhawk territories were recorded during the 2022 breeding season however, none were recorded during 2023 breeding season. A single long-eared owl territory was recorded close to Turbine T05, while a breeding pair was confirmed during 2023 surveys with begging chicks heard (long-eared owl were recorded during dusk surveys).

**8.3.1.2.4 Winter Walkover Surveys**

A total of three BoCCI red-listed, non-passerine species were recorded within the WWS Area across both survey years. Snipe was the most abundant BoCCI red-listed species across the survey period, with 14 recorded during Year 1 surveys and six during Year 2 surveys. Two stock dove during a Year 2 survey, and a single woodcock during a Year 2 survey were the only other red-listed species recorded. Small numbers of black-headed gull, common gull, herring gull and lesser black-backed gull were recorded occasionally in flight, but were not recorded foraging, loafing or roosting within 500m of proposed site infrastructure.

A summary of species recorded is provided in **Table 8.17**.

**Table 8.17: Summary of Target Species Recorded During WWS.**

Species*	Conservation Status**	Year One			Year Two		
		Visit 1	Visit 2	Visit 3	Visit 1	Visit 2	Visit 3
Stock dove	Red	0	0	0	0	2	0
Woodcock	Red	0	0	0	0	0	1
Snipe	Red, SPA	0	10	4	2	2	1

\* Species names and order in which they are listed follow the Irish list

\*\* Ann I = species listed on Annex I of the Birds Directive. Red and Amber = Red- or Amber-listed species on the UK BoCCI. SPA = species is a feature for a nearby designated site

### 8.3.1.2.5 Wintering Waterbird Surveys

A total of five BoCCI red-listed or Annex I target species were recorded during Wintering Waterbird Surveys. A further nine species that are features of nearby designated sites, were also recorded within the Wintering Waterbird Survey Area. Little egret, golden plover and ruff were the only Annex I species recorded across the survey period, whilst lapwing, golden plover, curlew and black-tailed godwit, were the BoCCI red-listed species recorded.

There were very few records recorded within 500m of proposed site infrastructure, with only six records during Year 1 and Year 2 surveys. These records are summarised below:

- Black-headed gull
  - A flock of nine individuals foraging on 13/09/21 to the north-west of the Site
  - A flock of 100 birds was recorded foraging to the east of the Site on 03/02/22. This flock was counted again later in the day, when 250 birds were present
  - A flock of 24 birds was present to the east of the Site on 06/03/23
- Common gull
  - A flock of 20 birds was present to the east of the Site (with a flock of black-headed gulls) on 03/02/22
  - A flock of 20 birds was present to the east of the Site on 19/12/22
  - A flock of 13 birds was present to the east of the Site on 06/03/23

These records are shown on **Figure 6**.

### 8.3.1.2.6 Hen Harrier Roost Surveys

No hen harrier roosts, or any records of hen harrier, were recorded during Hen Harrier Roost Surveys across both years. The historic roost site, east of the development, remained unoccupied throughout the survey period.

### 8.3.1.3 Future Baseline Conditions

As construction is currently proposed to start in 2029, between four and five years from submission, it is necessary to consider possible changes to baseline conditions during this time. No substantial habitat modifications or changes that could influence ornithological interest are foreseen other than works associated with Kilsaran quarry, which are detailed in Section 8.6.2. While there may be minor land use changes due to farming practices, this is considered to be part of the natural baseline, and therefore it is considered unlikely that the future baseline will change from that assessed within this Chapter.

#### **8.3.1.4 Collision Risk Modelling Results**

For each species for which CRM was completed, the predicted collisions in each breeding and non-breeding season (as applicable), as well as annually, are outlined in the tables below. As stated in Section 8.2.5, a worst-case scenario has been used within the assessment, assuming that the that the 'highest risk' turbine would be selected. If the other turbine models were to be used, then the collision risk would be reduced. For context, predicted collisions for each candidate turbine model have been presented.

CRM took into account species-specific avoidance rates as recommended by NatureScot (2018 and 2019) guidance when determining predicted collisions.

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**Table 8.18: Predicted collisions for each species for Highest Risk Turbine**

Species	Predicted collisions per non-breeding season*	Predicted collisions per breeding season	Predicted annual collisions**	Predicted years per collision	Predicted collisions during Proposed Development operational lifespan
Black-headed gull	0.77	0	0.77	1.31	26.79
Common gull	0.53	0.13	0.66	1.52	23.03
Herring gull	0.23	0.25	0.48	2.10	16.70
Lesser black-backed gull	0.01	0.02	0.02	45.17	0.77
Kestrel ***	N/A	N/A	0.01	100.96	0.35
Peregrine	0.01	0.16	0.17	5.82	6.02
*Seasonal collision risk was calculated based on the breeding season dates stated in NatureScot (SNH, 2014) guidance **Sum of non-breeding and breeding season predicted collisions. Note that all figures have been rounded to two decimal places. ***As kestrel was recorded extremely rarely, it was not considered necessary to calculate collisions by season.					

**Table 8.19: Predicted collisions for each species for Moderate Risk Turbine**

Species	Predicted collisions per non-breeding season*	Predicted collisions per breeding season	Predicted annual collisions**	Predicted years per collision	Predicted collisions during Proposed Development operational lifespan
Black-headed gull	0.59	0	0.59	1.71	20.51
Common gull	0.38	0.12	0.49	2.03	17.25
Herring gull	0.12	0.11	0.23	4.31	8.12
Lesser black-backed gull	<0.01	0.01	0.02	58.38	0.60
Kestrel***	N/A	N/A	0.01	162.17	0.22
Peregrine	0.01	0.14	0.15	6.75	5.18
*Seasonal collision risk was calculated based on the breeding season dates stated in NatureScot (SNH, 2014) guidance **Sum of non-breeding and breeding season predicted collisions. Note that all figures have been rounded to two decimal places.					

Species	Predicted collisions per non-breeding season*	Predicted collisions per breeding season	Predicted annual collisions**	Predicted years per collision	Predicted collisions during Proposed Development operational lifespan
***As kestrel was recorded extremely rarely, it was not considered necessary to calculate collisions by season.					

**Table 8.20: Predicted collisions for each species for Lowest Risk Turbine**

Species	Predicted collisions per non-breeding season*	Predicted collisions per breeding season	Predicted annual collisions**	Predicted years per collision	Predicted collisions during Proposed Development operational lifespan
Black-headed gull	0.38	0	0.38	2.65	13.21
Common gull	0.13	0.12	0.25	4.03	8.68
Herring gull	0.05	0.12	0.16	6.14	5.70
Lesser black-backed gull	<0.01	0.01	0.01	69.52	0.50
Kestrel***	N/A	N/A	<0.01	371.23	0.09
Peregrine	0.01	0.13	0.14	6.94	5.04
*Seasonal collision risk was calculated based on the breeding season dates stated in NatureScot SNH, 2014) guidance **Sum of non-breeding and breeding season predicted collisions. Note that all figures have been rounded to two decimal places. ***As kestrel was recorded extremely rarely, it was not considered necessary to calculate collisions by season.					

**8.3.2 Determination of Important Ornithological Features**

**Table 8.21** provides rationale for the determination of whether a receptor should be considered an IOF. This considers the importance of the receptor and its presence (of a single species or qualifying species of designated sites) within and around the turbine layout. When determining whether a designated site is an IOF, the connectivity of designated sites to the Proposed Development has been considered. When determining whether a site has connectivity to the Proposed Development, this has considered the core foraging range of species using the following guidance and literature:

- Woodward, I., Thaxter, C.B., Owen, E., Cook, A.S.C.P. (2019). Desk-based revision of seabird foraging ranges used for HRA screening. BTO Research Report 724.
- SNH (2016a) Assessing connectivity with Special Protection Areas (SPAs) Guidance. Version 2.
- NatureScot (2023) Guidance Note 4: Guidance to Support Offshore Wind Applications: Ornithology - Determining Connectivity of Marine Birds with Marine Special Protection Areas and Breeding Seabirds from Colony SPAs in the Non-Breeding Season
- Using professional judgement, it is considered that the core foraging of waders during the non-breeding season is 15km

**Table 8.21: Avifauna Key Receptor Evaluations**

Species/Site	Conservation Status	IOF	Rationale
<b>Sites scoped into the assessment as IOFs</b>			
Dundalk Bay SPA <sup>6</sup>	N/A	Yes – likely connectivity to designated populations of non-breeding black-headed gull, common	Dundalk Bay SPA is designated under the Birds' Directive as it supports internationally significant numbers of several species of wintering birds, as listed in Table 8.7. The site is located approximately 8.3km north-east of the nearest turbine location, and therefore there is the potential for connectivity to the SPA, and impacts on qualifying species.  Dundalk Bay SPA has been included as an IOF as black-headed gull, common gull and herring gull were all recorded frequently during baseline surveys and are likely associated

<sup>6</sup> <https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004026.pdf> (Accessed 26/02/24)

Species/Site	Conservation Status	IOF	Rationale
		gull and herring gull.	<p>with the Dundalk Bay SPA based on their foraging range (Woodward <i>et al.</i>, 2019). Details of each species are outlined in separate species accounts within this table.</p> <p>Four other species (mallard, golden plover, lapwing and curlew) which are qualifying features of the SPA were recorded during baseline surveys, however it is considered that there is limited potential connectivity between the Proposed Development and the site for these features based on the very low activity recorded, and limited pathway for effects. Further justification is outlined for each species below.</p> <p>There is no potential connectivity between the Proposed Development and remaining qualifying species populations.</p>
North West Irish Sea SPA <sup>7</sup>	N/A	Yes - likely connectivity to designated populations of non-breeding black-headed gull and herring gull.	<p>North West Irish Sea SPA is designated under the Birds' Directive as it supports internationally significant numbers of several species of wintering birds, as listed in Table 8.7. In addition, it provides supporting habitat (for foraging and maintenance behaviours) for a range of breeding seabirds based on their foraging range (Woodward <i>et al.</i>, 2019). The site is located approximately 7.7km east of the Proposed Development, and therefore there is the potential for connectivity to the SPA and impacts on qualifying species. As it is designated as a supporting habitat only for breeding species which breed at nearby SPA colonies, breeding species are not considered to have connectivity to the Proposed Development.</p> <p>North West Irish Sea SPA has been included as an IOF as black-headed gull, common gull and herring gull were all recorded frequently during baseline surveys. Details of each species are outlined in separate species accounts within this table.</p> <p>There is no potential connectivity between the Proposed Development and remaining qualifying species populations.</p>
River Nanny Estuary and Shore SPA <sup>8</sup>	N/A	Yes - likely connectivity to designated populations of non-breeding herring gull	<p>River Nanny Estuary and Shore SPA is designated under the Birds' Directive as it supports internationally significant numbers of several species of wintering birds, as listed in Table 8.7. The site is located approximately 12.3km south-east of the Proposed Development, and therefore there is the potential for connectivity to the Proposed Development and impacts on qualifying species.</p>

<sup>7</sup> <https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004236.pdf> (Accessed 20/03/24)

<sup>8</sup> <https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004158.pdf> (Accessed 20/03/24)

Species/Site	Conservation Status	IOF	Rationale
			<p>River Nanny Estuary and Shore SPA has been included as an IOF as herring gull was recorded frequently during baseline surveys and are likely associated with the River Nanny and Estuary Shore SPA based on their foraging range (Woodward <i>et al.</i>, 2019). Further details of herring gull are outlined in a separate species account within this table.</p> <p>Four other species (mallard, golden plover, lapwing and curlew) which are qualifying features of the SPA were recorded during baseline surveys, however it is considered that there is limited connectivity between the Proposed Development and the site for these features based on the very low activity recorded, and limited pathway for effects. Further justification is outlined for each species below.</p> <p>There is no potential connectivity between the Proposed Development and remaining qualifying features populations.</p>
<b>Species scoped into the assessment as IOFs</b>			
Snipe	Red	Yes	<p>Snipe is a red-listed species of conservation concern due to a severe decline in the population of breeding birds in Ireland (Gilbert <i>et al.</i>, 2021). Despite population decline it is a widespread breeding species in Ireland, with an estimated population of 5,000 breeding pairs in 2008 (Lauder <i>et al.</i>, 2008). During the breeding season snipe typically breeds in wet habitats such as wet grassland, marsh and bogs. The wintering population is estimated at 5,700 individuals (Lewis <i>et al.</i>, 2019), however this could be an underestimate as it is acknowledged that Wetland Bird Survey methods are poor at detecting this species (BTO, 2004).</p> <p>As a crepuscular bird, snipe flight activity is difficult to record during standard VPS, and no flights were recorded during either year of surveys. However, snipe was resident within the Site and was recorded year-round during distribution surveys. Additional crepuscular surveys were undertaken to target breeding birds, with a maximum of three territories recorded during Year 1, and three territories recorded during Year 2. Snipe was also recorded during non-breeding season surveys, with a peak of ten birds recorded during a Winter Walkover Survey visit during January 2022.</p>
Black-headed Gull	Amber	Yes	<p>Black-headed gull is a common and widespread wintering bird in Ireland along the coast and inland. The peak monthly count from 2016/17 and 2018/19 Irish waterbird monitoring during the non-breeding season was 20,197 individuals (Fitzgerald <i>et al.</i>, 2021). I-WeBS data indicates that black-headed gull is present in large numbers during the non-breeding season at several sites in County Louth.</p> <p>Black-headed gull is also an amber-listed species of conservation concern (Gilbert <i>et al.</i>, 2021). Black-headed gull had a stated Irish breeding population of approximately 15,620</p>

Species/Site	Conservation Status	IOF	Rationale
			<p>individuals during the 2015-18 census<sup>9</sup>, based on 7,810 Apparently Occupied Nests (AONs).</p> <p>Black-headed gull is a qualifying feature of the Dundalk Bay SPA, which supports a population of 6,643 individuals during the non-breeding season (five-year mean peak between 1995/96-1999-2000 stated within the SPA citation). However, more recent data (from mean peaks between 2005/06 – 2009/10 indicate that the population has decreased by 27% (NPWS, 2011).</p> <p>Black-headed gull is also a qualifying feature of the North West Irish Sea SPA, designated for its population of wintering birds, with a stated population of 508 individuals based on surveys during autumn and winter 2016 as stated in the SPA citation<sup>7</sup>.</p> <p>High levels of flight activity were recording during both years of baseline surveys, with a total of 251 flights recorded, with the majority of activity in the non-breeding season. A number of large flocks (with a peak count of 270 birds) were recorded during FAS. Birds were recorded foraging (and in flight) during Winter Walkover Surveys and Winter Waterbird Surveys, with three records of foraging birds (flocks of 250, 24 and 9 individuals) within 500m of infrastructure. Black-headed gull was not recorded breeding during surveys.</p>
Common gull	Amber	Yes	<p>Common gull is a widespread and common wintering bird in Ireland, most commonly present at the coast, but also at some inland locations. The peak monthly count from 2016/17 and 2018/19 Irish waterbird monitoring during the non-breeding season was 8,032 individuals (Fitzgerald <i>et al.</i>, 2021). I-WeBS data indicates that common gull is present in large numbers during the non-breeding season at several sites in County Louth.</p> <p>Common gull is also an amber-listed species of conservation concern (Gilbert <i>et al.</i>, 2021). Common gull had a stated breeding population of approximately 3,896 individuals during the 2015-18 seabird census<sup>10</sup>, based on 1,948 AONs.</p> <p>Common gull is a qualifying feature of the Dundalk Bay SPA, which supports a population of 551 individuals during the non-breeding season (five-year mean peak between 1995/96-1999-2000 stated within the SPA citation)<sup>11</sup>. However, more recent data (from mean peaks</p>

<sup>9</sup> <https://jncc.gov.uk/our-work/black-headed-gull-chroicocephalus-ridibundus/> (Accessed 26/02/24)

<sup>10</sup> <https://jncc.gov.uk/our-work/common-gull-larus-canus/> (Accessed 05/09/24)

<sup>11</sup> <https://www.npws.ie/sites/default/files/protected-sites/syno11psis/SY004026.pdf> (Accessed 26/02/24)

Species/Site	Conservation Status	IOF	Rationale
			<p>between 2005/06 – 2009/10 indicate that the population has increased by 77% (NPWS, 2011).</p> <p>Common gull is also a qualifying feature of the North West Irish Sea SPA, designated for its population of wintering birds, with a stated population of 2,866 individuals based on surveys during autumn and winter 2016 as stated within the SPA citation<sup>10</sup>.</p> <p>High levels of flight activity were recording during both years of baseline surveys, with a total of 223 flights recorded, with the majority of activity in the non-breeding season. A number of large flocks (with a peak count of 250 birds) were recorded during FAS. Birds were recorded foraging and in flight during Winter Walkover Surveys and Winter Waterbird Surveys, with three records of foraging birds (flocks of 20, 20 and 13 individuals) within 500m of infrastructure. Common gull was not recorded breeding during surveys.</p>
Herring gull	Amber	Yes	<p>Herring gull is a common and widespread wintering bird in Ireland, largely present along the coast but also inland. The peak monthly count from 2016/17 and 2018/19 Irish waterbird monitoring during the non-breeding season was 14,060 individuals (Fitzgerald <i>et al.</i>, 2021). I-WeBS data indicates that herring gull is present in large numbers during the non-breeding season at several sites in County Louth.</p> <p>Herring gull is also an amber-listed species of conservation concern (Gilbert <i>et al.</i>, 2021) and has a stated breeding population of approximately 20,666 individuals during the 2015-18 seabird census<sup>12</sup>, based on 10,333 AONs, however urban gulls were not included in the census. Drogheda, Co. Louth held 246 Apparently Occupied Territories (AOTs) in 2021. This is greater than 2% of Ireland's known breeding population of herring gulls (Keogh &amp; Lauder, 2021).</p> <p>Herring gull is a qualifying feature of the Dundalk Bay SPA, which supports a population of 754 individuals during the non-breeding season (five-year mean peak between 1995/96-1999-2000 stated within the SPA citation). However, more recent data (from mean peaks between 2005/06 – 2009/10 indicate that the population has decreased by 33% (NPWS, 2011).</p> <p>Herring gull is a qualifying feature of the River Nanny Estuary and Shore SPA, which supports a population of 609 individuals during the non-breeding season (five-year mean peak between 1995/96-1999-2000 stated within the SPA citation<sup>11</sup>). However, more recent</p>

<sup>12</sup> <https://jncc.gov.uk/our-work/herring-gull-larus-argentatus/> (Accessed 26/02/24)

Species/Site	Conservation Status	IOF	Rationale
			<p>data (from mean peaks between 2005/06 – 2009/10 indicate that the population may have decreased by 92% to 52 individuals (NPWS, 2012), although it is stated that some caution in interpretation is urged due to the noted inconsistencies in data gathering.</p> <p>Herring gull is a qualifying feature of the North West Irish Sea SPA, designated for its population of wintering birds, with a stated population of 6,893 individuals based on surveys during autumn and winter 2016 as stated within the SPA citation.</p> <p>High levels of flight activity were recording during both years of baseline surveys, with a total of 206 flights recorded, with the majority of activity in the non-breeding season. A number of large flocks (with a peak count of 230 birds) were recorded during FAS. Birds were recorded foraging (and in flight) during Winter Walkover Surveys and Winter Waterbird Surveys, however there were no records of any foraging birds within 500m of infrastructure. Herring gull was not recorded breeding during surveys.</p>
Lesser black-backed gull	Amber	Yes	<p>Lesser black-backed gull is an amber-listed species in Ireland, however, it is not a qualifying interest of any designated sites with connectivity to the Site. Lesser blacked-back gull is a widespread breeding and wintering species in Ireland, with an estimated breeding population of 7,112 individuals during the 2015-18 census<sup>13</sup>. The peak monthly count from 2016/17 and 2018/19 Irish waterbird monitoring during the non-breeding season was 3,644 individuals (Fitzgerald <i>et al.</i>, 2021).</p> <p>Lesser black-backed gull was recorded frequently during surveys with a total of 48 flights recorded during VPS, however the number of birds recorded in each flight was low, with a peak count of 11 individuals.</p> <p>Birds were recorded foraging (and in flight) during Winter Walkover Surveys and Winter Waterbird Surveys, however there were no records of any foraging birds within 500m of infrastructure. Lesser black-backed gull was not recorded breeding during surveys.</p>
Kestrel	Red	Yes	<p>Kestrel is not listed on Annex I of the Birds' Directive, although it is a red-listed species of conservation concern due to a large decrease in the breeding population in recent years. Despite this, it is still a common and widespread breeding species in Ireland, with an estimated population of 13,500 individuals (Lewis <i>et al.</i>, 2019). It is a generalist species typical of open habitats including farmland, grassland and heathland where small mammal and avian prey are abundant.</p>

<sup>13</sup> <https://jncc.gov.uk/our-work/lesser-black-backed-gull-larus-fuscus/#references> (Accessed 27/02/24)

Species/Site	Conservation Status	IOF	Rationale
			<p>A total of 15 flights were recorded during VPS, with the majority of these (13 flights) during Year 2 surveys. Kestrel was not recorded as a breeding species during the Breeding Raptor Surveys but was recorded commuting and foraging within the Site.</p>
Peregrine	Green, Annex I	Yes	<p>Peregrine is listed on Annex I of the Birds' Directive, however, is a green-listed species of conservation concern in Ireland and is not a cited interest of any designated sites. Peregrine is a widespread breeding species in Ireland, both in typical coastal habitats and more recently colonising quarries and urban habitats (Burke <i>et al.</i>, 2012). The national peregrine population has increased steadily since the 1970s, with the most recent national survey in 2002 indicating a population of 390 individuals (Madden <i>et al.</i>, 2009). It is likely that the population has increased since the last national survey was undertaken.</p> <p>Peregrine was recorded frequently during FAS, with a total of 103 flights, and was present year-round. Peregrine was also a confirmed breeder within the Breeding Raptor Survey Area during both years of survey. Further details are presented within Appendix A8.3.</p>
<b>Sites scoped-out of further assessment</b>			
Dundalk Bay Ramsar site <sup>14</sup>	N/A	No	<p>Dundalk Bay Ramsar site is designated under the Birds' Directive as it supports internationally significant numbers of several species of wintering birds, as listed in Table 8.7. The site is located approximately 10.4km north-east of the Proposed Development, and therefore there is the potential for connectivity to the site, and impacts on qualifying species.</p> <p>Although species listed as qualifying features of the Ramsar site were recorded during surveys, it is considered that there is little to no connectivity between the Proposed Development and qualifying species populations.</p> <p>Little egret was recorded rarely during VPS, with five flights recorded within 500m of the turbine layout during baseline surveys. Of these flights, two were below the rotor height. This species was scoped out of CRM due to the low number of flights recorded, and the collision risk therefore being negligible. Little egret was not recorded breeding, and there was a single record of this species during each year of Winter Waterbird Surveys further than 500m from infrastructure. Based on the very few records of this species, it is considered that there is little connectivity between the Proposed Development and the SPA population. The Irish wintering little egret population has also grown considerably in recent years and based on the distance between the SPA and the Proposed Development, it is possible that some flights recorded were not associated with the SPA population.</p>

<sup>14</sup> [https://rsis.ramsar.org/RISapp/files/RISrep/IE834RIS\\_2207\\_en.pdf](https://rsis.ramsar.org/RISapp/files/RISrep/IE834RIS_2207_en.pdf) (Accessed 20/03/24)

Species/Site	Conservation Status	IOF	Rationale
			<p>Non-breeding snipe is a qualifying feature of the Ramsar site, which was recorded year-round during baseline surveys. However, based on the distance between the Ramsar site and the Proposed Development, it is considered very unlikely that snipe would commute to the Proposed Development to forage. Snipe are known to winter inland within suitable habitat across Ireland and therefore it is considered that birds recorded wintering within the Proposed Development are likely to be resident birds rather than associated with the SPA.</p> <p>Similar to snipe, little grebe is a qualifying feature of the Ramsar site, which was recorded on Drumshallon lough during baseline surveys, and was confirmed to have bred at this location. Based on the species ecology, and that there was only one record of this species during Winter Walkover Surveys, it is considered that there is no connectivity between the Proposed Development and the SPA wintering population.</p> <p>Four other species (mallard, whooper swan, golden plover, lapwing and curlew) which are qualifying features of the Ramsar site were recorded during baseline surveys, however it is considered that there is limited connectivity between the Proposed Development and the site for these features based on the very low activity recorded, and limited pathway for effects. Further justification is outlined in each species account.</p>
Other designated sites listed in Table 8.7	N/A	No	Based on the results of baseline surveys, and connectivity guidance, it is considered that there is limited or no connectivity to other designated sites listed in Table 8.7. Rationale for specific species scoped-out (some of which are qualifying species of designated sites) is outlined within this table.
<b>Species scoped-out of further assessment</b>			
Whooper swan	Amber, Annex I	No	Although whooper swan is an Annex I species, it was only recorded on two occasions during VPS. Neither flight was within 500m of the turbine layout, and therefore the species was scoped out of CRM. Whooper swan has not been considered an IOF due to the very low activity within and adjacent to the Site and therefore potential for significant effects is negligible.
Mallard	Amber	No	<p>Mallard is an amber-listed species of conservation concern due to a decline in the Irish wintering population (Gilbert <i>et al.</i>, 2021). Mallard is also a qualifying species of the Dundalk Bay SPA, designated for its non-breeding population.</p> <p>Mallard was occasionally recorded during VPS, with a total of 16 flights recorded during two years of baseline surveys. Of these flights, only six were within 500m of the turbine layout, of which five were during the breeding season, and therefore this species was scoped-out of CRM.</p>

Species/Site	Conservation Status	IOF	Rationale
			<p>Mallard was occasionally recorded during the distribution surveys, with two records during the 2022 BBS and 3 records during the 2023 BBS, however the species did not breed during either year. Although there were 11 records of mallard during two years of Winter Waterbird Surveys, there were no records of this species within 500m of the proposed site infrastructure. Given that there was only a single flight of this species within 500m of the Proposed Development infrastructure during the non-breeding season (and no records during winter distribution surveys) it is considered that there is no connectivity to the Dundalk Bay SPA population.</p> <p>Mallard has therefore not been considered an IOF due to the very low activity within and adjacent to the Site and therefore the potential for significant effects is negligible.</p>
Lapwing	Red	No	<p>Lapwing is a red-listed wader species of conservation concern primarily due to significant population declines to the breeding population, but also to non-breeding birds (Gilbert <i>et al.</i>, 2021). Lapwing is a qualifying feature of the Boyne Estuary and Dundalk Bay SPAs to the east of the Site.</p> <p>Lapwing was recorded very rarely during VPS, with a total of three flights recorded during Year 2 only. Of these flights, only one was within 500m of the turbine layout, and therefore this species was scoped out of CRM due to the collision risk being negligible. Lapwing was not recorded breeding, and although large flocks of lapwing were recorded during Wintering Waterbird Surveys, all flocks were more than 1.6km to the west of the Site. During Winter Walkover Surveys there was a single record of two lapwing in flight during the 2022-2023 non-breeding season.</p> <p>Therefore, although lapwing is a species of conservation concern, it has not been considered an IOF due to the very low activity within and adjacent to the Site and therefore potential for significant effects is negligible. It is considered that there is little connectivity between SPA populations and the Site.</p>
Golden plover	Red, Annex I	No	<p>Golden plover is a red-listed wader species of conservation concern primarily due to significant population declines to the breeding population, but also to non-breeding birds (Gilbert <i>et al.</i>, 2021). Golden plover is also listed on Annex I. Golden plover is a qualifying species of the River Nanny Estuary and Shore, Boyne Estuary and Dundalk Bay SPAs to the east of the Site, however due to the very low number of records recorded during baseline surveys it is considered that there is low connectivity between these SPA and the Site.</p> <p>Golden plover was recorded occasionally during VPS, with a total of 11 flights recorded, with all flights during the non-breeding season. Of these flights, only four were within 500m</p>

Species/Site	Conservation Status	IOF	Rationale
			<p>of the turbine layout, and therefore this species was scoped out of CRM due to the collision risk being negligible.</p> <p>Golden plover was not recorded breeding, however was present rarely during the Year 1 Wintering Waterbird Surveys, with two records of a single bird and a flock of 250 individuals to the west of the Site. The nearest record was 2.7km from the proposed infrastructure.</p> <p>Therefore, although golden plover is a species of conservation concern, it has not been considered an IOF due to the very low activity within and adjacent to the Site and therefore potential for significant effects is negligible.</p>
Curlew	Red	No	<p>Curlew is a red-listed wader species of conservation concern due to significant population declines of breeding and non-breeding birds (Gilbert <i>et al.</i>, 2021), however is not a qualifying interest of any designated sites with connectivity to the Site. Curlew was formerly a widespread and common breeding species in Ireland, however following the 2015-17 national survey the breeding population was estimated at 138 pairs (O'Donoghue <i>et al.</i>, 2019). The wintering population is estimated to be just over 35,000 (Lewis <i>et al.</i>, 2019).</p> <p>Curlew was recorded occasionally during VPS, with a total of nine flights recorded, all during Year 1 surveys, with the majority of flights during the non-breeding season. Of these flights, only one was within 500m of the turbine layout, and therefore this species was scoped out of CRM due to the collision risk being negligible.</p> <p>There was no evidence of any breeding curlew, and curlew was not recorded during Winter Walkover Surveys during either year. Although curlew was recorded occasionally during Wintering Waterbird Surveys, the closest record to the Site was more than 1.3km from proposed site infrastructure.</p> <p>Therefore, although curlew is a species of conservation concern, it has not been considered an IOF due to the very low activity within and adjacent to the Site and therefore potential for significant effects is negligible.</p>
Great black-backed gull	Green	No	<p>Great black-backed gull is a green-listed species of conservation concern, however it is a qualifying species of the North West Irish Sea SPA, designated for its non-breeding population.</p> <p>Great black-backed gull was recorded rarely during VPS, with a total of seven flights recorded during two years of baseline surveys. Of these flights, only five were within 500m of the turbine layout, all during the breeding season, and therefore this species was scoped-</p>

Species/Site	Conservation Status	IOF	Rationale
			<p>out of CRM due to collision risk being negligible. This species was not recorded during any Winter Walkover or Winter Waterbird Surveys. Given there were few records of the species within 500m of the turbine layout, of it is considered that there is very limited connectivity to the North West Irish Sea SPA population.</p> <p>Great black-backed gull has therefore not been considered an IOF due to the very low activity within and adjacent to the Site and therefore the potential for significant effects is negligible.</p>
Little egret	Green, Annex I	No	<p>Little egret is listed on Annex I and colonised Ireland relatively recently, first breeding in 1997<sup>15</sup> with an estimated wintering population of 1,274 individuals (Burke <i>et al.</i>, 2018). Little egret is a green-listed species.</p> <p>Little egret was recorded occasionally during VPS, with a total of five flights recorded, all of which were within 500m of turbine locations. This species was scoped out of CRM due to the low number of flights recorded, and the collision risk therefore being negligible. Little egret was not recorded breeding, and there was a single record of this species during each year of Winter Waterbird Surveys further than 500m from infrastructure.</p> <p>Therefore, although little egret is listed on Annex I, it has not been considered an IOF due to the very low activity within and adjacent to the Site and therefore potential for significant effects is negligible.</p>
Sparrowhawk	Green	No	<p>Sparrowhawk is a green-listed raptor species which is a widespread and common breeding raptor in Ireland. The population of sparrowhawk is estimated at 11,859 individuals (Lewis <i>et al.</i>, 2019). Sparrowhawk was regularly recorded during VPS, and bred during Year 1 surveys. As a common species which is not of conservation concern, sparrowhawk has not been considered an IOF.</p>
Buzzard	Green	No	<p>Buzzard is a green-listed raptor species which is a widespread and common breeding raptor in Ireland. The population of buzzard is estimated at 11,859 individuals. Buzzard was regularly recorded during VPS and bred during Year 1 and Year 2, with three to four territories recorded during Year 1, and a single territory recorded during Year 2. As a common species which is not of conservation concern, buzzard has not been considered an IOF.</p>
Long-eared owl	Green	No	<p>Long-eared owl is a green-listed raptor species which is a widespread and common breeding species in Ireland, most commonly breeding within coniferous woodland. Long-eared owl was considered to be breeding during both survey years, with a single territory</p>

<sup>15</sup> <https://birdwatchireland.ie/birds/little-egret/> [Accessed 28/02/24]

Species/Site	Conservation Status	IOF	Rationale
			recorded during each breeding season. As a common species which is not of conservation concern, long-eared owl has not been considered an IOF.
Merlin	Amber	No	Although merlin is an Annex I and amber-listed raptor species, it was only recorded on a single occasion during both years of VPS, and therefore was scoped out of CRM. Merlin has not been considered an IOF due to the very low activity within and adjacent to the Site and therefore potential for significant effects is negligible.
All other species		No	All other species were recorded very infrequently, and therefore the potential for significant effects is negligible, or are species which are not considered to be impacted by onshore wind developments, such as passerine species.

### 8.3.3 Valuation of IOFs Scoped into the Assessment

IOFs scoped into the assessment are listed below, alongside their importance.

- IOFs of international importance:
  - Dundalk Bay SPA;
  - North West Irish Sea SPA;
  - River Nanny Estuary and Shore SPA;
  - black-headed gull;
  - common gull; and
  - herring gull.
- IOFs of national importance
  - peregrine.
- IOFs of county importance
  - snipe;
  - lesser black-backed gull; and
  - kestrel.

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#### 8.3.4 Elements Scoped out of Assessment

Bird species considered to be of local or lower importance have not been defined as IOFs, and have been scoped out of the assessment. Embedded mitigation (described in Section 8.4) will be implemented to ensure that potential impacts to all breeding bird species, including those of local importance, are minimised.

Impacts on designated sites outwith 20km were scoped out of the assessment based on NatureScot (2016) connectivity guidance.

The Site Boundary includes Grid Connection routes which will connect the Proposed Development to a substation via underground 38kV cables, alongside existing roads. As these are buried cables alongside existing roads, impacts would be short-term and are not likely to be significantly more disturbing than baseline conditions, and therefore the potential for significant effects on ornithological receptors is negligible during construction, and there would be no impacts during the operational phase. An ECoW would be present to ensure that works are completed in compliance with relevant legislation and best practice.

Turbine delivery is not anticipated to have any impacts on ornithological receptors, and therefore has been scoped out of the assessment.

Potential effects during the decommissioning phase are likely to be similar to those during the construction phase. As decommissioning will take place more than 35 years from the baseline surveys, it is likely that the baseline conditions during decommissioning will be significantly altered, and therefore it is considered unsuitable to assess the effects at this time. It is recommended that further surveys are undertaken prior to decommissioning to determine the potential effects on IOF species, or any other notable species.

## 8.4 EMBEDDED MITIGATION

Ornithological features have been considered at all stages of the Proposed Development design, from initial feasibility to final layout. Minimising collision risk through design was one of the key considerations during the design process. This involved locating turbines away from breeding IOF territories and areas of regular flight activity, and a reduction in the number of turbines to account for increasing rotor size and the associated increased collision risk. The design process with regard to ornithological sensitivities is outlined in Section 2.4 of **Chapter 2: Description of the Proposed Development**.

Standard good practice measures will also be implemented during construction through adherence to a Bird Protection Plan to ensure compliance with relevant legislation protecting all breeding wild birds. These measures will cover all aspects of the Proposed Development, including Grid Connection routes. This will help to reduce impacts on IOFs and other ornithological features. Under the Wildlife Acts 1976 and 2000 (as amended) it is an offence to wilfully destroy, injure or mutilate the eggs or nest of a protected wild bird, and to wilfully disturb a protected wild bird on or near a nest containing eggs or unflown young.

As such, a Bird Protection Plan (BPP) will be produced prior to construction, to safeguard birds and ensure legislative compliance during all stages of the Proposed Development, a summary of which is provided below.

### **Bird Protection Plan**

#### *Construction Phase*

**Ecological Clerk of Works (ECoW):** To ensure that mitigation measures are reactive to changing conditions on Site and compliance with legislation protecting breeding birds, a suitably experienced ECoW will be present to identify any potential constraints to Proposed Development works and provide advice to comply with all legislation relative to breeding birds during the construction phase.

**Toolbox talk:** A 'toolbox talk' will be delivered prior to construction, and at regular intervals, by a suitably experienced ECoW to ensure that all contractors working on the Proposed Development are aware of ornithological sensitivities and relevant legislation.

**Timing of works:** Given the anticipated construction period, some construction work will take place during the peak breeding season (March to August). No works will start during the breeding season without first establishing the status of breeding birds within likely disturbance distances of the proposed works.

**Vegetation removal:** Where possible, any removal of vegetation, including grassland and moorland habitats, will take place outside of the breeding season. Any vegetation removal during breeding season will be subject to additional safeguards and nesting bird checks by the ECoW, with appropriate exclusion areas instated if any nests are located, following current disturbance guidance (Goodship and Furness, 2022).

**Pre-construction Surveys:**

Pre-construction surveys will be undertaken to identify the any breeding birds nesting within or close to working areas. Surveys will be undertaken by the ECoW, who will determine the scope of surveys required, which will be based on current disturbance guidance and professional judgement (Goodship and Furness, 2022).

**Protection of nesting birds:** It is an offence to wilfully destroy, injure or mutilate the eggs or nest of a protected wild bird, and to wilfully disturb a protected wild bird on or near a nest containing eggs or unflown young. If any active nests are identified during pre-construction surveys which could be damaged or destroyed, an exclusion zone around the nest/breeding territory will be established which would be informed by current guidance (Goodship and Furness, 2022). No works will be permitted within the exclusion zone and no personnel or vehicles will be allowed to enter or pass through until the ECoW has confirmed that the nesting attempt has reached a natural conclusion.

**Minimising disturbance from Site vehicles:** Where construction works are required during the breeding bird season, mitigation measures to limit the impact of vehicular disturbance will be implemented. This will include no idling of vehicles, appropriate speed restrictions and dust suppression measures on Site.

*Operational Phase*

Routine maintenance required during operation is expected to be minimal, limited to small areas and of temporary duration. However, should significant operational works (for example widespread track upgrades or turbine replacement) be required during the breeding bird season, the mitigation measures outlined above for the construction phase will be implemented to ensure compliance with the relevant legislation.

### *Decommissioning Phase*

As decommissioning works are likely to be of a similar nature and duration as construction activities, the mitigation measures outlined above for the construction phase will be implemented to ensure compliance with relevant legislation.

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## **8.5 ASSESSMENT OF EFFECTS ON IMPORTANT ORNITHOLOGICAL FEATURES**

Potential effects of the Proposed Development on each IOF are assessed below. The assessment considers the significance of potential impacts following implementation of the embedded mitigation proposed in Section 8.4

### **8.5.1 Species of International Importance**

#### **8.5.1.1 Black-headed Gull**

Black-headed gull was recorded frequently during VPS, with a total of 251 flights, of which 241 flights were during Year 1 surveys, and 10 during Year 2 surveys. Although flight activity was high, including within the Proposed Development Site Boundary, there were only three records of foraging flocks within 500m of proposed site infrastructure. Black-headed gull was only recorded during the non-breeding season.

Black-headed gull mean-max foraging range is 18.5km (Woodward *et al.*, 2019), therefore it is considered likely that birds recorded during surveys are connected to the North West Irish Sea and Dundalk Bay SPAs which are 7.7km east and 8.3km north-east of the nearest turbine location. The Irish wintering population is estimated to be 20,197 individuals, however no population estimate for County Louth could be found.

#### **Potential Construction Effects**

Black-headed gull was recorded frequently during Winter Walkover and Wintering Waterbird Surveys; however the majority of records were distant to the Proposed Development. There were three records of non-breeding birds foraging within 500m of proposed site infrastructure during two years of surveys, therefore there is no evidence that black-headed gull regularly forage close to or within the Site.

Records were of a flock of 250 individuals foraging approximately 225m east of Site Entrance 2, nine individuals foraging and associating with a tractor approximately 315 m from Site Entrance 1, and another record of a flock of 24 gulls foraging approximately 490m from the Site Entrance 2. Foraging gulls are relatively tolerant of disturbance, and as shown will

associate with potential sources of disturbance related to agriculture. As there are existing sources of potential disturbance relating to agriculture and from surrounding roads which birds foraging within the site will be habituated to, it is considered that additional disturbance during the construction phase will be imperceptible and not significant.

There would be no effects on this species due to habitat loss, as no birds were recorded foraging in areas where there would be habitat loss.

### **Potential Operational Effects**

As this species was only recorded foraging within 500m of the proposed site infrastructure on three occasions during baseline surveys, there is limited potential for disturbance or displacement during the operational phase. Although there were three records of flocks (totalling 283 birds) within 500m of the proposed site infrastructure, there were no records within 500m of turbine locations. The only infrastructure present within 500m of foraging records is access tracks, and given records are closer to existing roads, it is considered that disturbance and/or displacement to foraging birds during the operational phase would be imperceptible and not significant.

Based on the VPS data, the CRM has predicted 0.77 collisions annually (or one collision every 1.31 years) in a worst-case scenario. This would equate to 26.79 collisions during the 35-year lifespan of the Proposed Development. As flight activity was only recorded during the non-breeding season, all collision effects would be related to the wintering black-headed gull population.

Black-headed gull flight activity varied between survey years, with 241 flights recorded during the 2021-22 non-breeding season, and with 10 flights recorded during the 2022-23 non-breeding season. This species was not recorded foraging within 500m of the proposed site infrastructure frequently, however there were a number of records of foraging birds beyond this distance, and it is likely that flight activity related to birds commuting to or between areas of suitable foraging habitat.

It is possible that annual variation was the result of land-use change, as agricultural fields will be most suitable when grassland sward is shorter (Isaksson *et al.*, 2016), or just after bare fields have been tilled (Schwemmer *et al.*, 2008). As well as land-use, weather conditions are also likely to influence behaviour, with fields most likely to be utilised after rainfall when foraging for favoured invertebrate prey such as earthworms (Isaksson *et al.*, 2016). Birds are also more likely to loaf in fields which have been flooded. It is considered likely that use of

habitats in the wider area will vary throughout the operational phase of the Proposed Development, which may influence flight activity.

A predicted annual collision of 0.77 black-headed gull would equate to <0.01% (20,197 individuals<sup>16</sup>) of the Irish wintering population or <0.01% of the Irish breeding population (15,620 individuals<sup>9</sup>).

0.77 annual collisions would equate to approximately 0.01% of the Dundalk Bay SPA population (6,643 individuals, as stated in the SPA citation<sup>6</sup>). However, more recent data (from mean peaks between 2005/06 – 2009/10 indicate that the population has decreased by 27% (NPWS, 2011). 0.77 annual collisions would equate to approximately 0.1% of the North West Irish Seas SPA (609 individuals, as stated in the SPA citation<sup>7</sup>), for which this species is a qualifying feature.

Due to the low number of collisions predicted in relation to the national and designated site populations, it is considered that collision effects would be imperceptible and not significant.

Evidence indicates that small gulls do not exhibit macro-avoidance, and therefore barrier effects are considered to be imperceptible and not significant for black-headed gull (Furness, 2019).

#### **8.5.1.2 Common Gull**

Common gull was recorded frequently during VPS, with a total of 223 flights, of which 183 flights were during Year 1 surveys, and 40 during Year 2 surveys. Although flight activity was high, including within the Site Boundary, there were only two records of foraging flocks within 500m of proposed site infrastructure.

Common gull mean-max foraging range is 50km (Woodward *et al.*, 2019), therefore it is considered likely that birds recorded during surveys are connected to the North West Irish Sea and Dundalk Bay SPAs which are located 7.7km east and 8.3km north-east of the Proposed Development respectively.

#### **Potential Construction Effects**

Common gull was recorded frequently during Winter Walkover and Wintering Waterbird Surveys, however the majority of records were distant to the Proposed Development. There

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<sup>16</sup> As stated by Lewis *et al.*, (2019)

were only three records of non-breeding birds foraging within 500 m of the proposed site infrastructure during two years of survey, therefore there is no evidence that common gull regularly forage close to the Proposed Development.

Records were of flocks of 20, 20 and 13 gulls foraging to the east of the Proposed Development, the closest of which was approximately 200m from proposed site infrastructure. Foraging gulls are relatively tolerant of disturbance and will associate with potential sources of disturbance related to agriculture (Schwemmer *et al.*, 2008). As there is existing disturbance relating to agriculture and from surrounding roads which birds foraging within the Site will be habituated to, it is considered that additional disturbance during the construction phase will be imperceptible and not significant.

There would be no effects on this species due to habitat loss, as no birds were recorded foraging in areas where there would be habitat loss.

### **Potential Operational Effects**

As this species was only recorded foraging within 500m of the proposed site infrastructure twice during baseline surveys, there is limited potential for disturbance or displacement. Although there were three records of small flocks (totalling 53 birds) foraging within 500m of the proposed site infrastructure, there were no records within 500m of turbine locations. Given that records of foraging birds during baseline surveys were closer to existing roads and disturbance associated with agriculture than to the proposed site infrastructure, it is considered that disturbance and/or displacement to foraging birds during the operational phase would be imperceptible and not significant.

Based on the VPS data, the CRM has predicted 0.66 collisions annually (or one collision every 1.52 years) in a worst-case scenario. This would equate to 23.03 collisions during the 35-year lifespan of the Proposed Development. The majority of collision risk (0.53 collisions per non-breeding season) is associated with the non-breeding season.

Common gull flight activity varied between survey years, with 201 flights recorded during Year 1, and 40 flights recorded during the Year 2. This species was not recorded foraging within 500m of the proposed site infrastructure, however as there were records of foraging birds beyond this distance, it is likely that flight activity related to birds commuting to or between areas of suitable foraging habitat. As stated in Section 8.5.1.1 for black-headed gull, it is likely that common gull activity is related to land-use and weather, and therefore fields used by

common gull within the wider area will vary over time. This in turn may influence flight activity within the Proposed Development Site Boundary.

A predicted annual collision of 0.66 common gulls would equate to <0.01% (8,032 individuals<sup>17</sup>) of the Irish wintering population or 0.02% of the Irish breeding population (3,896 individuals<sup>10</sup>).

0.66 annual collisions would equate to 0.11% of the Dundalk Bay SPA population of 551 individuals (as stated in the SPA citation<sup>6</sup>). However, more recent data (from mean peaks between 2005/06 – 2009/10 indicate that the population has increased by 77% (NPWS, 2011). 0.66 annual collisions would equate to 0.02% of the North West Irish Seas SPA (2,866 individuals, as stated in the SPA citation, for which this species is a qualifying feature.

Due to the low number of collisions predicted in relation to the national and designated site populations, it is considered that collision effects would be imperceptible and not significant.

Evidence indicates that common gull do not exhibit macro-avoidance, and therefore barrier effects are considered to be imperceptible and not significant for this species (Furness, 2019).

### 8.5.1.3 Herring Gull

Herring gull was recorded frequently during VPS, with a total of 206 flights, of which 177 flights were during Year 1 surveys, and 24 during Year 2 surveys. Although flight activity was high, including within the Proposed Development Site Boundary, there were no records of herring gull breeding, or foraging, within 500m of proposed site infrastructure.

Herring gull mean-max foraging range is 18.5km (Woodward *et al.*, 2019), therefore it is considered likely that birds recorded during surveys are connected to the North West Irish Sea, Dundalk Bay and River Nanny Estuary and Shore SPAs which are located 7.7km east, 8.3km north-east and 12.3km south-east of the Proposed Development respectively.

#### **Potential Construction Effects**

As this species was not recorded either breeding or foraging during the non-breeding season within 500 m of proposed site infrastructure during baseline surveys, no disturbance or displacement effects are predicted during construction. There would also be no effects on this species due to habitat loss.

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<sup>17</sup> As stated by Lewis *et al.*, (2019)

### **Potential Operational Effects**

As this species was not recorded breeding or foraging within 500m of the proposed site infrastructure during baseline surveys, no operational disturbance or displacement is predicted.

Based on the VPS data, the CRM has predicted 0.48 collisions annually in a worst-case scenario (0.23 collisions per non-breeding season and 0.25 collisions per breeding season). This would equate to 16.70 collisions during the 35-year lifespan of the Proposed Development.

Herring gull flight activity varied between survey years, with 177 flights recorded during the 2021-22 non-breeding season, and with 24 flights recorded during the 2022-23 non-breeding season. This species was not recorded foraging within 500m of the proposed site infrastructure, however as there were records of foraging birds beyond this distance, it is likely that flight activity relating to birds commuting to or between foraging habitats. As stated in Section 8.5.1.1 for black-headed gull, it is likely that herring gull activity is related to land-use and weather, and therefore fields used by herring gull within the wider area will vary over time. This in turn may influence flight activity within the Proposed Development Site Boundary.

A predicted annual collision of 0.48 herring gulls would equate to <0.01% (14,060 individuals<sup>18</sup>) of the Irish wintering population or 0.02% of the Irish breeding population (20,666 individuals<sup>12</sup>).

0.48 annual collisions would equate to 0.06% of the Dundalk Bay SPA population of 754 individuals (as stated in the SPA citation<sup>6</sup>). However, more recent data (from mean peaks between 2005/06 – 2009/10 indicate that the population has decreased by 33% (NPWS, 2011)).

0.48 annual collisions would equate to 0.08% of the River Nanny Estuary and Shore SPA population of 609 individuals (as stated in the SPA citation<sup>8</sup>). However, more recent data (from mean peaks between 2005/06 – 2009/10 indicate that the population has decreased by 33% (NPWS, 2011)). Recent I-WeBS data shown in Section 8.3.1.1 shows that the mean counts from 2019/20 and 2020/21 were 211 and 321 individuals respectively, which suggests that the

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<sup>18</sup> As stated by Lewis *et al.*, (2019)

2005/06-2009/10 population may have been an underestimate, or that the population using the site has increased in recent years.

0.48 annual collisions would equate to <0.01% of the North West Irish Seas SPA population of 6,893 individuals (as stated in the SPA citation<sup>7</sup>). Due to the low number of collisions predicted in relation to national and designated site populations, it is considered that collision effects would be imperceptible and not significant.

Evidence indicates that herring gull do not exhibit macro-avoidance, and therefore barrier effects are considered to be imperceptible and not significant for this species (Furness, 2019).

## 8.5.2 Species of National Importance

### 8.5.2.1 Peregrine

Peregrine is an Annex I raptor, with an estimated population of 390 individuals based on the most recent 2002 national survey, however it is likely that numbers have increased subsequently (Madden *et al.*, 2009). No estimated population for County Louth could be obtained during the desk study.

Peregrine was recorded frequently during both years of VPS survey, with flights recorded in both the breeding and non-breeding season. A total of 103 flights were recorded, with 41 flights recorded during Year 1 surveys, and 62 during Year 2 surveys. Peregrine was also confirmed to have bred within the Breeding Raptor Survey Area during both the 2021 and 2022 breeding seasons, with young fledged during both years. Peregrine core foraging range is 2km (NatureScot, 2016). The location of the breeding territory, details of VPS flights, and the full assessment of effects are outlined in **Appendix A8.3**.

#### **Potential Construction Effects**

The peregrine nest site would not be lost due to construction of the Proposed Development. Habitat loss associated with the Proposed Development will impact avian prey species, however the loss of habitat will be minimal in the context of this species foraging range and given that this species will predate a diverse range of species (Brown, 1976), it is considered that any indirect effects associated with habitat loss would be imperceptible and not significant.

The detailed assessment of disturbance and/or displacement effects is contained within the **Appendix A8.3**. It is considered that there would be no disturbance and/or displacement effects on peregrine during the construction phase.

### **Potential Operational Effects**

Peregrine was recorded frequently during VPS, with a total of 103 flights recorded across the two-year survey period. A predicted 0.16 collisions per year (or a collision once every 5.52 years) would equate to loss of 0.04% of the Irish breeding population annually (based on an estimated 390 individuals [Madden *et al.*, 2009]). Based on the predicted collisions, it is considered that collision risk to peregrine is imperceptible and not significant.

The detailed assessment of disturbance and/or displacement effects is contained within **Appendix A8.3**. It is considered that there would be no disturbance and/or displacement effects on peregrine during the construction phase.

There is relatively little research into the displacement effects of turbines on peregrine, and whether there is any macro-avoidance of wind farms which would impact on foraging peregrine. However, Madders and Whitfield (2006) cite two studies which suggest that the risk of displacement effects on peregrine is low. Given the low risk, and the suitable foraging habitat present beyond the Proposed Development Site Boundary, it is considered that barrier effects on breeding peregrine would be imperceptible and not significant.

## **8.5.3 Species of County Importance**

### **8.5.3.1 Snipe**

Snipe is a red-listed wader species due to recent declines, however is still a relatively widespread and common breeding wader in Ireland. There were an estimated 5,000 breeding pairs in Ireland in 2008 (Lauder *et al.*, 2008). The wintering population is estimated at 5,700 individuals (Lewis *et al.*, 2019), however this could be an underestimate as it is acknowledged that Wetland Bird Survey methods are poor at detecting this species (BTO, 2004). No information on the Co. Louth breeding or wintering population could be found.

Snipe was resident within and adjacent to the Site and was recorded year-round during distribution surveys. Additional crepuscular surveys were undertaken to target breeding birds, with two or three territories recorded during Year 1, and three territories recorded during Year 2. Snipe was also recorded during non-breeding season surveys, with a peak of ten birds recorded during a Winter Walkover Survey visit during January 2022.

### **Potential Construction Effects**

Snipe typically breed within wet or boggy habitats which provide optimal foraging and require tussocky or rank vegetation for nesting (Newton, 2020). Snipe habitat has been largely

avoided by infrastructure, and therefore effects of habitat loss on snipe are considered to be imperceptible and not significant.

As snipe were recorded breeding within 500m of the proposed site infrastructure, with a peak of three territories recorded during a single breeding season which were all within approximately 250m of proposed works, there is the potential to displace breeding snipe during the construction phase.

There is no stated disturbance distance for snipe within recent guidance (Goodship and Furness, 2022), however it is considered that snipe is likely relatively tolerant of disturbance due to their secretive nature, generally flushing only when closely approached. However, based on the disturbance distance stated for other wader species, it is considered that there is the potential to displace breeding pairs within 300m of works. In a worst-case scenario, up to three breeding pairs could be displaced for the duration of the construction phase. As the construction phase will be short-term in duration, any displacement effects would be reversible.

A loss of three pairs from the breeding population would equate to <0.1% of the national breeding population (5,000 pairs (Lauder *et al.*, 2008)). Implementation of embedded mitigation would avoid damage, destruction or disturbance of nests if breeding was confirmed during the construction phase. Therefore, the impacts of displacement on breeding snipe are considered not significant.

There is also the potential for displacement of non-breeding snipe during construction. There is no stated disturbance distance for non-breeding birds, however it is considered likely that non-breeding birds would be less susceptible to disturbance effects. Based on guidance from Cutts *et al.* (2013) on waterbird disturbance, it is considered that ringed plover is a suitable proxy species, which has low sensitivity to disturbance, and is only likely to be disturbed within 100m. Although there was a peak of seven wintering birds recorded during one survey, other records of wintering birds were of four birds or fewer, with the majority of one or two individuals.

Distribution of wintering snipe were more widespread across the Proposed Development site, indicating that there was no favoured location utilised by non-breeding birds. Of the nine records of non-breeding birds, two were within 100m of proposed site infrastructure. The peak count of wintering birds present within 100m of proposed site infrastructure during a single visit was one individual. Therefore, in a worst-case scenario there is the potential for displacement of one bird. Based on the size of the Irish non-breeding population (5,700

individuals [Lewis *et al.*, 2019]), displacement of three individuals would equate to 0.02% of the population. Effects would be short-term, and there is alternative suitable habitat present within the Proposed Development Site Boundary. Therefore, displacement effects on non-breeding snipe would be imperceptible and not significant.

### **Potential Operational Effects**

No snipe flights were recorded during VPS, and therefore no CRM has been undertaken for this species. Although snipe is difficult to detect during VPS, it is considered that the collision risk posed to this species is imperceptible and not significant. As no flights were recorded, it is considered that there would be no barrier effects on this species.

Evidence suggests that snipe are displaced by wind turbines, with Pearce-Higgins *et al.* (2009) stating that there is the potential for displacement of 50% of breeding snipe present within 400m of turbine locations. During Year 1 and Year 2 surveys, there was a peak of three breeding territories recorded within 400m of proposed turbine locations. Based on a 50% reduction in breeding pairs, in a worst-case scenario there is the potential for the displacement of two snipe pairs during the operational phase. The loss of two breeding pairs would equate to <0.1% of the national breeding snipe population (Lauder *et al.*, 2008)). It is therefore considered that displacement effects on breeding snipe are not significant.

### **8.5.3.2 Lesser black-backed Gull**

Lesser black-backed gull was recorded regularly during VPS, although less frequently than other gull species, with a total of 54 flights recorded. During VPS, 41 flights were during Year 1 surveys, and 13 during Year 2 surveys. Although flight activity was high, including within the Proposed Development Site Boundary, there were no records of lesser black-backed gull breeding, or foraging, within 500m of proposed site infrastructure.

Lesser black-backed gull mean-max foraging range is 236km (including one standard deviation as stated in Woodward *et al.*, 2019), however there are no statutory designated sites for which lesser black-backed gull is a feature within 20km of the Proposed Development, and it is considered that there would be limited connectivity to sites outwith this distance.

### **Potential Construction Effects**

As this species was not recorded either breeding or foraging during the non-breeding season within 500m of proposed site infrastructure during baseline surveys, no disturbance or displacement effects are predicted during construction. There would also be no effects on this species due to habitat loss.

### **Potential Operational Effects**

As this species was not recorded breeding or foraging within 500m of the proposed site infrastructure during baseline surveys, no operational disturbance or displacement is predicted.

Based on the VPS data, the CRM has predicted 0.04 collisions annually (0.02 collisions in the breeding and non-breeding seasons). This would equate to 0.77 collisions during the 35-year lifespan of the Proposed Development or a collision every 45.17 years. Therefore it is considered there is potential for a single collision during the operational lifespan of the Proposed Development.

Lesser black-backed gull flight activity varied between survey years, with 36 flights recorded during Year 1 surveys, and with 12 flights recorded during Year 2 surveys. This species was not recorded foraging within 500m of the proposed site infrastructure, however as there were records of foraging birds beyond this distance, it is likely that flight activity related to birds commuting to or between foraging habitat. As stated in Section 8.5.1.1 for black-headed gull, it is likely that lesser black-backed gull activity is related to land-use and weather, and therefore fields used by lesser black-backed gull within the wider area will vary over time. This in turn may influence flight activity within the Proposed Development Site Boundary.

A predicted annual collision of 0.04 lesser black-backed gulls would equate to <0.01% (3.644 individuals<sup>19</sup>) of the Irish wintering population or <0.01% of the Irish breeding population (7,122 individuals<sup>13</sup>). Due to the low number of collisions predicted in relation to national and populations, it is considered that collision effects would be imperceptible and not significant.

Evidence indicates that lesser black-backed gull does not exhibit macro-avoidance, and therefore barrier effects are considered to be imperceptible and not significant for this species (Furness, 2019).

#### **8.5.3.3 Kestrel**

Kestrel is a red-listed species of conservation concern due to a large decrease in the breeding population in recent years (Gilbert *et al.* 2021). A total of 15 flights were recorded during VPS, with the majority of these (13 flights) during Year 2 surveys. Kestrel was not recorded as a

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<sup>19</sup> As stated by Lewis *et al.*, (2019)

breeding species during the Breeding Raptor Surveys but was recorded occasionally commuting and foraging within the Site.

### **Potential Construction Effects**

Kestrel was not recorded breeding during either year of Breeding Raptor Surveys, therefore is only likely to use the Proposed Development and surrounding area for foraging or commuting. As only 12 flights were recorded across two years of surveys, with only 12 flights recorded within 500m of turbines during two years of survey, habitats within the Proposed Development and surrounding area are unlikely to be a key foraging resource for this species.

Habitat loss will result in loss of small areas of foraging habitat (grassland suitable for small mammal prey), which would reduce the foraging habitat available to kestrel, however due to the low levels of flight activity recorded, relatively low habitat loss, and availability of suitable foraging habitat outwith the Proposed Development, it is considered that impacts of habitat loss would be imperceptible and not significant.

As kestrel was not recorded breeding within 500m of the proposed site infrastructure, no disturbance and / or displacement effects are predicted during the construction phase. There were limited records during the non-breeding season, and therefore no impacts on non-breeding birds are predicted.

### **Potential Operational Effects**

As this species was not recorded breeding within 500m of the Proposed Development infrastructure during baseline surveys, no operational disturbance or displacement of breeding birds is predicted. Due to the relatively low flight activity recorded, it is considered that any displacement effects on foraging birds, or barrier effects, would be imperceptible.

Based on the VPS data, the CRM has predicted 0.01 collisions annually (or one collision every 100.96 years) in a worst-case scenario. This would equate to 0.35 collisions during the 35-year lifespan of the Proposed Development, and therefore it is unlikely that there would be any collisions of this species. Therefore, collision risk effects are considered imperceptible and not significant.

## 8.5.4 Sites of International Importance

### 8.5.4.1 Dundalk Bay SPA

Dundalk Bay SPA is a large open bay, which includes extensive saltmarsh and intertidal sand/mudflat habitat which extends along approximately 16km of the coastline to the east of the Proposed Development. The site is designated for a number of non-breeding species (listed in **Table 8.7**) which use the site for foraging, loafing and roosting.

Black-headed gull, common gull and herring gull were recorded frequently during baseline surveys with 251, 223 and 206 flights recorded for each species respectively during VPS surveys. As the Proposed Development is within the mean-max foraging range of all three SPA qualifying species, it is considered likely that there is connectivity between the SPA populations and the Proposed Development.

The stated populations of each species within the SPA citation<sup>6</sup> are as follows:

- Black-headed gull – 6,643 individuals;
- Common gull – 551 individuals; and
- Herring gull – 754 individuals.

The populations stated within the SPA citation are based on five-year mean peaks from 1995/96 – 1999/00. It is stated within the SPA supporting document (NPWS, 2011) that based on more recent site data from 2005/06 - 2009/10 the black-headed gull population has decreased to 4,833 individuals, the common gull population had increased to 973 individuals and the herring gull population had decreased to 505 individuals. However, it is stated within this document that this is based on I-WeBS data, and that gull species are not routinely counted during these surveys. Recent I-WeBS data shown in Section 8.3.1.1 also shows considerable variation between years, which could be due to annual variation, or due to the lack of routine counting of gull species. For this reason, the SPA citation populations have been used during the assessment.

There was very limited foraging activity recorded within 500m of the proposed site infrastructure, with three flocks of black-headed gull and three flocks of common gull (totalling counts of 283 black-headed gull individuals and 53 common gull individuals for each species) recorded during two years of survey.

Full details are provided within the assessment of effects on each individual species in Section 8.5.1. To simplify the assessment, the potential species-level effects on black-headed gull, common gull and herring gull have not been duplicated here. Effects on these species in the context of the SPA population are outlined below.

Due to the absence or very low activity within and adjacent to the Proposed Development by other qualifying species, all other species have been scoped-out of the assessment. Justification of this approach is provided within **Table 8.21**.

### **Potential Construction Effects**

As stated in Section 8.5.1., there was no herring gull foraging activity recorded during baseline surveys, and very limited foraging activity by black-headed and common gull within 500m of the proposed site infrastructure. Accordingly, there would be no construction phase effects arising from habitat loss or displacement/disturbance for herring gull, and imperceptible and not significant effects arising from habitat loss or displacement/disturbance for black-headed gull and common gull.

### **Potential Operational Effects**

As stated in Section 8.5.1., there was no herring gull foraging activity recorded during baseline surveys, and very limited foraging activity by black-headed and common gull. Accordingly, there would be no operational displacement/disturbance effects for herring gull, and imperceptible and not significant operational displacement/disturbance effects for black-headed gull and common gull.

Due to the high flight activity within 500m of turbine locations, there is collision risk for black-headed gull, common gull and herring gull. Details are provided within Section 8.5.1 for each species. In a worst-case scenario, the following annual collisions are predicted for each species:

- Black-headed gull – 0.77 collisions per year (all during the non-breeding season), or one collision every 1.31 years;
- Common gull – 0.66 collisions per year (0.53 collisions during the non-breeding season and 0.13 collisions during the breeding season), or one collision every 1.52 years; and
- Herring gull – 0.48 collisions per year (0.23 collisions during the non-breeding season and 0.25 collisions during the breeding season), or one collision every 2.10 years.

Given the distance between the SPA and the Proposed Development, which is within the mean-max foraging range (Woodward *et al.*, 2019) for all three species, it is likely that there

is connectivity between the Site and the SPA populations. It is considered likely that a proportion of birds recorded during VPS are associated with the SPA.

Although each species was not recorded using habitats within 500m of the Proposed Development for regular foraging, commuting flights through the Proposed Development were recorded. It is likely that birds were recorded in flight when travelling between the SPA and foraging habitat in the wider area, or when moving between areas of suitable foraging habitat.

Assuming that all flights recorded are associated with the SPA population, and therefore that all annual collision risk is attributed to the SPA population, then collision effects would be as outlined below for each species.

A predicted 0.77 annual black-headed gull collisions would equate to approximately 0.01% of the Dundalk Bay SPA population (6,643 individuals as stated in the SPA citation<sup>6</sup>) Due to the low number of collisions predicted in relation to the designated site population, it is considered that collision effects would be imperceptible and not significant.

A predicted 0.66 annual common gull collisions would equate to approximately 0.12% of the Dundalk Bay SPA population (551 individuals). Due to the low number of collisions predicted in relation to the designated site population, it is considered that collision effects would be not significant.

A predicted 0.48 annual herring gull collisions would equate to approximately 0.06% of the Dundalk Bay SPA population (754 individuals) Due to the low number of collisions predicted in relation to the designated site population, it is considered that collision effects would be imperceptible and not significant.

It should be acknowledged that the predicted collision risk effects outlined above assume that all flights recorded during VPS were of birds associated with the Dundalk Bay SPA. However, as there is more than one SPA designated for these species within the stated mean-max foraging range of each species (Woodward *et al.*, 2019), it is likely that some of the flights are associated with these further sites, and therefore the collision risk associated with the Dundalk Bay SPA would be reduced. Additionally, some flights recorded may have been associated with non-SPA birds.

It should also be noted that the predicted collisions will be an overestimate due to the way that VPS data was collected and used for CRM. Flights recorded during VPS were given a flight

height range and a flight duration, rather than splitting the flight into discrete height bands. For this reason, where a flight was recorded with a height range overlapped partially with the rotor swept height of a turbine, the entire flight duration was considered to have been at potential collision height and included in the model when calculating collision risk.

It is likely that a proportion of the flight seconds included at collision height within the model were in fact above or below rotor height, and therefore the predicted collisions will have been overestimated. Further details on survey flights, and the CRM methodology are provided within Section 8.2.5 and the relevant Technical Appendix.

As gull species are not considered to exhibit macro-avoidance in relation to onshore wind developments, it is considered that barrier effects for these species would be imperceptible and not significant (Furness, 2019).

#### **8.5.4.2 North West Irish Sea SPA**

North West Irish Sea SPA is a large marine site which extends along the coasts of counties Louth, Meath and Dublin to the east of the Proposed Development. The site covers a number of intertidal estuaries and bays, while it also extends offshore. The site is designated as it provides foraging and roosting habitat for non-breeding birds, as well as supporting foraging birds which breed at nearby SPAs.

Black-headed gull, common gull and herring gull were recorded frequently during baseline surveys, 251, 223 and 206 flights recorded for each species during VPS surveys. As the Proposed Development is within the mean-max foraging range of all three SPA qualifying species, it is considered likely that there is connectivity between the SPA populations and the Proposed Development.

The stated populations of each species, within the 2023 SPA citation<sup>7</sup> are as follows:

- Black-headed gull – 508 individuals;
- Common gull – 2,866 individuals; and
- Herring gull – 6,893 individuals.

There was very limited foraging activity recorded within 500m of the proposed site infrastructure, with three flocks of black-headed gull and three flocks of common gull (totalling counts of 283 black-headed gull individuals and 53 common gull individuals for each species) recorded during two years of survey.

Full details are provided within the assessment of effects on each individual species in Section 8.5.1. To simplify the assessment, the potential species-level effects on black-headed gull, common gull and herring gull have not been duplicated here. Effects on these species in the context of the SPA population are outlined below.

Due to the absence or very low activity within and adjacent to the Proposed Development by other qualifying species, these have been scoped-out of the assessment. Justification of this approach is provided within **Table 8.21**.

### **Potential Construction Effects**

As stated in Section 8.5.1., there was no herring gull foraging activity recorded during baseline surveys, and very limited foraging activity by black-headed and common gull within 500m of the proposed site infrastructure. Accordingly, there would be no construction phase effects arising from habitat loss or displacement/disturbance for herring gull, and imperceptible and not significant effects arising from habitat loss and displacement/disturbance to black-headed gull and common gull.

### **Potential Operational Effects**

As stated in Section 8.5.1., there was no herring gull foraging activity was recorded during baseline surveys, and very limited foraging activity was black-headed and common gull observed. Accordingly, there would be no operational displacement/disturbance effects for herring gull, and imperceptible and not significant operational displacement/disturbance effects for black-headed gull and common gull.

Due to the high flight activity within 500m of turbine locations, there is collision risk for black-headed gull, common gull and herring gull. Details are provided within Section 8.5.1 for each species. In a worst-case scenario, the following annual collisions are predicted for each species:

- Black-headed gull – 0.77 collisions per year, or one collision every 1.31 years;
- Common gull – 0.66 collisions per year, or one collision every 1.52 years; and
- Herring gull – 0.48 collisions per year, or one collision every 2.10 years

Given the distance between the SPA and the Proposed Development, which is within the mean-max foraging range for all three species, it is likely that there is connectivity to the SPA. It is considered likely that a proportion of birds recorded during VPS are associated with the SPA.

Although each species was not recorded using habitats within 500m of the Proposed Development for regular foraging, commuting flights through the Proposed Development were recorded. It is likely that birds were recorded in flight when travelling between the SPA and foraging habitat in the wider area, or when moving between areas of suitable foraging habitat.

Assuming that all flights recorded are associated with the SPA population, and therefore that all annual collision risk is attributed to the SPA population, then collision effects would be as outlined below for each species.

A predicted 0.77 annual black-headed gull collisions would equate to approximately 0.15% of the Dundalk Bay SPA population (508 individuals) Due to the low number of collisions predicted in relation to the designated site population, it is considered that collision effects would be not significant.

A predicted 0.66 annual common gull collisions would equate to approximately 0.02% of the Dundalk Bay SPA population (2,866 individuals) Due to the low number of collisions predicted in relation to the designated site population, it is considered that collision effects would be imperceptible and not significant.

A predicted 0.48 annual herring gull collisions would equate to approximately <0.01% of the Dundalk Bay SPA population (6,893 individuals) Due to the low number of collisions predicted in relation to the designated site population, it is considered that collision effects would be imperceptible and not significant.

As stated in Section 8.5.4.1, the predicted collisions are likely overestimated due to the precautionary nature of the CRM methodology, and it is unlikely that all collisions would be attributed to the North West Irish Sea SPA populations.

As gull species are not considered to exhibit macro-avoidance in relation to onshore wind developments, it is considered that barrier effects for these species would be imperceptible and not significant (Furness, 2019).

#### **8.5.4.3 River Nanny Estuary and Shore SPA**

River Nanny Estuary and Shore SPA covers the estuary of the River Nanny and sections of the shoreline to the north and south of the estuary, totalling approximately 3km of coastline. The SPA also extends approximately 2km upstream of the river mouth. The site is designated

for a number of non-breeding species (listed in **Table 8.21**) which roost and forage within the SPA boundary.

Herring gull was recorded frequently during baseline surveys, with a total of 223 flights recorded during VPS. As the Proposed Development is within the mean-max foraging range of herring gull, it is considered likely that there is connectivity between the SPA populations and the Proposed Development. There were no records of foraging or roosting herring gull within 500m of the proposed site infrastructure during the two years of baseline surveys.

The stated herring gull population for the site within the SPA citation<sup>8</sup> is 609 individuals, which is based on five-year mean peak data from 1995/96 – 1999/00. It is stated within the SPA supporting document (NPWS, 2012) that based on more recent site data from 2005/06 - 2009/10 the herring gull population had decreased to 51 individuals. It is stated however that this is based on I-WeBS data, and that gull species are not routinely counted during these surveys. The document therefore states that caution should be taken when interpreting this data. Recent I-WeBS data shown in Section 8.3.1.1 shows that the mean counts from 2019/20 and 2020/21 were 211 and 321 individuals respectively, which suggests that the 2005/06-2009/10 population may have been an underestimate, or that the population using the site has increased in recent years. Due to potential uncertainties, the SPA citation population has been used during the assessment.

Full details are provided within the assessment of effects on herring gull in Section 8.5.1. To simplify the assessment, the potential species-level effects on herring gull have not been duplicated here. Effects on this species in the context of the SPA population are outlined below.

Due to the absence or very low activity within and adjacent to the Proposed Development by other qualifying species, these have been scoped-out of the assessment. Justification of this approach is provided within **Table 8.21**.

### **Potential Construction Effects**

As stated in Section 8.5.1., there was no herring gull foraging activity recorded during baseline surveys. Accordingly, there would be no construction phase effects arising from habitat loss or displacement/disturbance for herring gull.

### **Potential Operational Effects**

As stated in Section 8.5.1., there was no herring gull foraging activity recorded during baseline surveys. Accordingly, there would be no operational displacement/disturbance effects for herring gull.

Due to the high flight activity within 500m of turbine locations, there is collision risk for herring gull. Details are provided within Section 8.5.1. In a worst-case scenario, 0.48 herring gull collisions are predicted annually, or one collision every 2.10 years

Given the distance between the SPA and the Proposed Development, which is within the mean-max foraging range for herring gull, it is likely that there is connectivity to the SPA. It is considered likely that a proportion of birds recorded during VPS are associated with the SPA.

Although herring gull was not recorded using habitats within 500m of the Proposed Development for foraging, commuting flights through the Proposed Development were recorded. It is likely that birds were recorded in flight when travelling between the SPA and foraging habitat in the wider area, or when moving between areas of suitable foraging habitat.

Assuming that all flights recorded are associated with the SPA population, and therefore that all annual collision risk is attributed to the SPA population, then a predicted 0.48 annual herring gull collisions would equate to approximately 0.08% of the SPA population (609 individuals<sup>8</sup>) Due to the low number of collisions predicted in relation to the designated site population, it is considered that collision effects would be imperceptible.

As stated in Section 8.5.4.1, the predicted collisions are likely overestimated due to the precautionary nature of the CRM methodology, and it is unlikely that all collisions would be attributed to the River Nanny Estuary and Shore SPA population.

As gull species are not considered to exhibit macro-avoidance in relation to onshore wind developments, it is considered that barrier effects for herring gull would be imperceptible and not significant (Furness, 2019).

## **8.6 CUMULATIVE EFFECT ASSESSMENT**

Potential cumulative effects can include direct habitat loss, disturbance, barrier effects and collision risk. The potential for the Proposed Development to make a material contribution to

cumulative effects on IOFs is assessed below following NatureScot guidance (SNH, 2018b). The potential for each of these potential effects is considered in turn below.

### 8.6.1 Onshore Wind Developments

A search was made for onshore wind developments (either operational or consented) within 20km of the Proposed Development (based on the connectivity distance for geese outlined in NatureScot [SNH, 2016] guidance) which could result in cumulative effects on IOFs. The following operational sites within 20km were identified:

**Table 8.22: Wind Farms within 20km of the Proposed Development**

Wind Farm Name	Number of Turbines	Distance and Direction from the Proposed Development Site Boundary	Status
Dunmore Wind Farm (Part 1)	2 (rotor diameter 52m)	11.4km west of the Proposed Development	Operational
Dunmore Wind Farm (Part 2)	2 (rotor diameter 44m)	11.4km west of the Proposed Development	Operational
Collon Wind Farm	1 (rotor diameter 82m)	12.9km west of the Proposed Development	Operational
Meade Potato Company	1 (rotor diameter 29m)	17km west of the Proposed Development	Operational
WuXi Biologics	1 (rotor diameter 90m)	19.5km north of the Proposed Development	Permitted

No EIA was required for WuXi Biologics due to the small size of the development, the requirement for EIA was therefore screened out. The Screening for Appropriate Assessment Report identified no potential impacts on sites designated for avian features.

A search was made for the EIA Reports for the remaining sites on the relevant county planning portal, however no documents could be sourced, and therefore these sites have not been included within a quantitative cumulative assessment. Based on the very small number of turbine, and their small size, it is unlikely that these developments have had major impacts on the Co. Louth bird population, and that there would be no significant cumulative impacts, given that there are no significant impacts from the Proposed Development in isolation.

### 8.6.2 Kilsaran Quarry

#### 8.6.2.1 Quarry Extension

On 27<sup>th</sup> November 2023 Kilsaran Quarry was granted planning permission (Louth County Council Planning Ref. 22/190) to extend the existing quarry and continue operations for a further 25 years. Following this, the site would be restored.

Permission has been granted to extend the current extraction area by 10ha, to the east of the currently approved extraction area. This would result in loss of scrub and grassland habitat which is of relatively low ecological value. Loss of this habitat is unlikely to have more than an imperceptible impact on IOF species, as scrub is unlikely to be used by any IOF species other than kestrel where there may be limited foraging potential. Given the very low kestrel activity within the Site and wider area, it is considered that cumulative habitat loss would have a negligible impact on kestrel.

Works to excavate the additional quarry area would result in disturbance and/or displacement of IOF species. Given that use of the Proposed Development Site by foraging gull species (black-headed and common gull) was very occasional, it is considered that disturbance to these species during construction would be negligible. There is the potential for snipe to be disturbed and/or displaced within 500m of construction. There were no snipe territories within 500m of the quarry extension area, therefore no disturbance and/or displacement of breeding snipe is predicted. There was a single record of a single wintering snipe within 500m of the quarry extension area, and therefore disturbance and/or displacement effects on wintering snipe are considered to be not significant. Disturbance and/or displacement effects on peregrine are discussed within the Confidential **Appendix A8.3**.

Cumulative effects on peregrine are outlined in full within **Appendix A8.3: Confidential Appendix**, where no impact is predicted. Following excavation of the quarry extension area, there will be additional suitable nesting habitat for peregrine during the operational phase.

Cumulative effects arising from the Kilsaran Quarry extension are predicted to be imperceptible and not significant.

#### **8.6.2.2 Restoration Plan**

Following the 25-year operational phase, a restoration plan will be implemented which would take two years to complete. The proposed restoration includes flooding the excavated area to create a man-made waterbody. Additionally, there will be 5.5ha of grassland planting, hedgerow planting, and woodland/wetland species planting along the edge of the quarry boundary.

There is the potential for cumulative displacement and/or disturbance effects as a result of any works required to implement the restoration plan. Given the impacts are likely to be equivalent in magnitude to the existing disturbance associated with the quarry operation, it is

considered unlikely there would be any additive disturbance effects, and no cumulative assessment is required for this phase.

Given the timescales for restoration, this would be implemented during the operational phase of the development. The proposed restoration would result in a significant change from the baseline conditions, particularly with the creation of a waterbody immediately adjacent to the Site, and approximately 200m from the nearest turbine.

Given the high black-headed, common and herring gull flight activity recorded during baseline surveys, it is likely that this waterbody would attract gull species who could utilise the resource for loafing and roosting. This would likely include birds associated with SPA populations. There is also the potential that wildfowl species could be attracted to the waterbody, which could include Annex I species such as whooper swan or birds of conservation concern. Potential cumulative effects on peregrine are discussed within **Appendix A8.3**, it is considered that there would be no cumulative disturbance or displacement effects.

Creation of a waterbody would likely increase flight activity within and adjacent to the Site, and would likely result in an increased collision risk for IOF gull species, and other species. Given the fundamental change to the current baseline conditions that would result from the restoration, at this stage it is not possible to predict the increased collision risk which would arise, or the impact which this could have on species populations (including those associated with designated sites).

It is stated within the Kilsaran EIAR that “*further advice from an ecologist will be obtained on cessation of the quarry and will also be incorporated into the restoration process*”. It is recommended that consultation is undertaken between Kilsaran Quarry and Kellystown Wind Farm representatives to confirm the final proposed restoration plan. It is recommended that a further assessment of potential cumulative effects is completed at this stage, and that monitoring surveys are undertaken to determine changes in bird activity (particularly IOF species) following restoration.

Recommendations for monitoring are outlined in Section 8.7.3. If monitoring undertaken indicates that there is a significant risk to IOF species, then additional mitigation may be required, which could include curtailment of high-risk turbines, which could include smart curtailment depending on available technology at that time.

As the restoration would be undertaken during the operational phase of the Proposed Development, no cumulative assessment of disturbance and/or displacement effects for species other than peregrine has been undertaken.

Given the uncertainty over the potential cumulative effects due to the fundamental change to the baseline conditions following restoration, no cumulative assessment on impacts following restoration has been completed at this stage, and will be undertaken prior to any restoration being completed.

### **8.6.3 Conclusion**

Following the cumulative assessment undertaken, it is considered that any cumulative impacts arising from the Proposed Development in combination with other existing or proposed developments is of negligible magnitude, imperceptible and not significant for all receptors.

## **8.7 MITIGATION AND MONITORING**

### **8.7.1 Mitigation**

Due to the lack of significant effects on IOF species and sites, no additional mitigation is recommended.

### **8.7.2 Biodiversity Enhancement and Management Plan**

As part of the Development, a relatively small area of wet grassland (c.500 m<sup>2</sup>), which is part of an extensive wetland habitat that includes a lake, marsh and transition mire, will be directly impacted as a result of the proposed development of a track leading from Turbine T034 to Turbine T05. As the wetland complex is rated of National Importance, mitigation is being provided to offset the habitat loss through the implementation of a Biodiversity Enhancement and Management Plan (BEMP).

Mitigation is also required to offset the loss of hedgerows (estimated at 300 m) as a result of the Proposed Development. This will be achieved by a replanting programme which forms part of the BEMP. This will benefit a range of breeding passerine species which use hedgerows for foraging and breeding.

In order to preserve and enhance the existing quality of the wetland habitats, stock grazing will be excluded and gorse scrub will be controlled in Management Area. This is detailed fully within the BEMP. Enhancement of wetland habitat will benefit a range of breeding birds, particularly breeding snipe which is an IOF.

### 8.7.3 Monitoring

In order to confirm how IOF species are affected by the Proposed Development (including the proposed habitat management outlined in **Appendix 6.1** Biodiversity Enhancement and Management Plan), and how this compares to predicted effects, ornithological monitoring will take place during and post-construction. An Ornithological Monitoring Plan will be produced providing details of the methods and survey effort required, and will be agreed with consultees including NPWS prior to commencement of construction. Surveys will include the following:

- Raptor monitoring between March and August to identify any breeding raptor territories within 1km of the Proposed Development, following the methods described in Hardey *et al.* (2013);
- Breeding snipe surveys with a minimum of three survey visits between March and July to identify any breeding wader territories within 500m of the Proposed Development. Surveys should be undertaken following methods outlined in Gilbert *et al.* (1998);
- Non-breeding season collision monitoring: carcass searches, carcass persistence trials and observer efficiency trials will be completed at least once per month throughout the non-breeding season, to determine whether actual bird collisions are in line with predicted values. Carcasses of all species found on Site will be recorded.

In line with NatureScot guidance (2009), the above monitoring is proposed to take place annually during construction, and after the Proposed Development becomes operational during years 1-3, 5, 10 and 15.

It is recommended that additional collision monitoring is undertaken following Kilsaran Quarry restoration to determine the effects on the avian population. It is recommended that VPS are undertaken from a suitable VP to determine any changes in flight activity within 500m of the Proposed Development. Surveys should be undertaken for six hours per month for a single non-breeding season following restoration, with methods replicating those used for baseline surveys (or best practice at the time of survey). It is considered that surveys from a single VP location should be sufficient, however this would be confirmed by a suitably experienced ornithologist when designing the survey scope.

In addition, it is recommended that Non-breeding season collision monitoring outlined above is repeated alongside VPS.

### 8.8 RESIDUAL EFFECTS

Following implementation of the embedded mitigation measures described in Section 8.4, no significant effects on any IOFs during any phase of the Proposed Development life cycle are predicted.

### 8.9 STATEMENT OF SIGNIFICANCE

An assessment has been made of the potential for significant effects of the Proposed Development on IOFs. By implementing the embedded measures detailed in Section 8.4 and following best practice guidance during construction, the significance of effects on IOFs both alone and in combination with other schemes are assessed as not significant.

Table 8.23 provides a summary of the effects detailed within this chapter.

**Table 8.23: Summary of effects**

IOF species	Potential effect	Significance of effect (EPA)	Significance of effect (CIEEM)	Residual effect (CIEEM)
<b>Construction phase effects</b>				
Black-headed gull	Disturbance/displacement	Imperceptible	Not significant	Not significant
Common gull	Disturbance/displacement	Imperceptible	Not significant	Not significant
Herring gull	None	N/A	N/A	N/A
Peregrine	Disturbance/displacement	None	Not significant	Not significant
	Habitat loss (indirect effects)	Imperceptible	Not significant	Not significant
Snipe	Disturbance/displacement	Imperceptible	Not significant	Not significant
	Habitat loss	Imperceptible	Not significant	Not significant
Lesser black-backed gull	None	N/A	N/A	N/A
Kestrel	Disturbance/displacement	Imperceptible	Not significant	Not significant
	Habitat loss (indirect effects)	Imperceptible	Not significant	Not significant
Dundalk Bay SPA	Disturbance/displacement	Imperceptible	Not significant	Not significant
North West Irish Sea SPA	Disturbance/displacement	Imperceptible	Not significant	Not significant
River Nanny Estuary and Shore SPA	Disturbance/displacement	Imperceptible	Not significant	Not significant
<b>Operational phase effects</b>				
Black-headed gull	Disturbance/displacement	Imperceptible	Not significant	Not significant
	Collision risk	Imperceptible	Not significant	Not significant
	Barrier effects	Imperceptible	Not significant	Not significant
Common gull	Disturbance/displacement	Imperceptible	Not significant	Not significant
	Collision risk	Imperceptible	Not significant	Not significant

IOF species	Potential effect	Significance of effect (EPA)	Significance of effect (CIEEM)	Residual effect (CIEEM)
	Barrier effects	Imperceptible	Not significant	Not significant
Herring gull	Collision risk	Imperceptible	Not significant	Not significant
	Collision risk	Imperceptible	Not significant	Not significant
	Barrier effects	Imperceptible	Not significant	Not significant
Peregrine	Disturbance/displacement	None	Not significant	Not significant
	Collision risk	Not significant	Not significant	Not significant
	Barrier effects	Not significant	Not significant	Not significant
Snipe	Disturbance/displacement	Not significant	Not significant	Not significant
Lesser black-backed gull	Collision risk	Imperceptible	Not significant	Not significant
	Barrier effects	Imperceptible	Not significant	Not significant
Kestrel	Disturbance/displacement	Imperceptible	Not significant	Not significant
	Collision risk	Imperceptible	Not significant	Not significant
	Barrier effects	Imperceptible	Not significant	Not significant
Dundalk Bay SPA	Disturbance/displacement	Imperceptible	Not significant	Not significant
	Collision risk	Imperceptible	Not significant	Not significant
	Barrier effects	Imperceptible	Not significant	Not significant
North West Irish Sea SPA	Disturbance/displacement	Imperceptible	Not significant	Not significant
	Collision risk	Imperceptible / not significant	Not significant	Not significant
	Barrier effects	Imperceptible	Not significant	Not significant
River Nanny Estuary and Shore SPA	Disturbance/displacement	Imperceptible	Not significant	Not significant
	Collision risk	Imperceptible / not significant	Not significant	Not significant
	Barrier effects	Imperceptible	Not significant	Not significant

## 8.10 BIBLIOGRAPHY

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