target species was recorded to inform the evaluation of supporting habitat. The survey effort is presented in Appendix 7-2, including full details of dates, times and weather conditions.

7.2.4.1.2 Winter Walkover Surveys

Winter walkover surveys were undertaken to record the presence of bird species within the Site and to a 500m radius, including areas between vantage point locations. The methodology was adapted from the breeding walkover methodology outlined in Brown and Shepherd (1993) and Calladine ***et al.*** (2009), combined with Common Bird Census methods (British Trust for Ornithology, 2021). Transect routes were walked across different habitat complexes within the survey area where access allowed. All target species were recorded and mapped. In addition, the presence of any non-target species was recorded to inform the evaluation of supporting habitat.

Winter walkover surveys were conducted in daylight hours over four visits between October and March (i.e. four visits in Winter 2022/2023). Survey effort is presented in Appendix 7-2, including full details of dates, times and weather conditions for each survey. Figure 7-3 shows the transect routes.

7.2.4.1.3 Breeding Walkover Surveys

Breeding walkover surveys were undertaken to determine possible, probable or confirmed breeding bird activity within the Site and within a 500m radius. The methodology followed the adapted Brown and Shepherd (1993) and Calladine ***et al.*** (2009), combined with Common Bird Census methods (British Trust for Ornithology, 2021) for dense habitat. Transect routes were walked across different habitat complexes within the survey area where access allowed. Using binoculars, the surveyor regularly scanned the surroundings of each transect for target species. All target species were mapped and breeding status was assigned following British Trust for Ornithology (BTO) breeding status codes (https://www.bto.org/our-science/projects/birdatlas/methods/breeding-evidence). In addition, the presence of any non-target species was recorded to inform the evaluation of supporting habitat.

Breeding walkover surveys were conducted in daylight over four visits during the core breeding season months April to July. Survey effort is presented in Appendix 7-2, including full details of dates, times and weather conditions for each survey. Figure 7-4 shows the transect routes.

7.2.4.1.4 Waterbird Distribution and Abundance Surveys

Waterbirds include swans, geese and ducks; cormorant, shag, divers and grebes; auks and seabirds; gulls, terns and skuas; herons, egrets and crane; rails and crakes; waders; and kingfisher. Significant wetlands and waterbodies within 8km of the Proposed Development were surveyed for waterbirds during the 2022/2023 winter and passage seasons (October to May inclusive) to provide information on their distribution in relation to the Proposed Development. The area surveyed exceeds the 500m for foraging waterbirds and 1km for roosting waterbirds requirements of SNH (2017) and follows the recommendations of SNH (2016).

Survey methodology follows Gilbert ***et al.*** (1998) and the Irish Wetland Bird Survey (BirdWatch Ireland, 2021). Surveys were undertaken during daylight hours from suitable vantage points at wetlands and waterbodies. All target waterbird species were recorded and mapped. Survey effort, including details of survey duration and weather conditions, is presented in Appendix 7-2. Figure 7-5 shows the surveyed area.

7.2.4.1.5 Breeding Raptor Surveys

Raptors include all harrier, falcon, buzzard, eagle, hawk, owl, kite and osprey species. Breeding raptor surveys were undertaken within the Site and within a 2km radius to identify occupied territories and monitor their breeding success near or within the Site. Survey methodology followed Hardey ***et al.*** (2013). Breeding raptor watches of 3 hours were conducted during daylight at six breeding raptor

locations. All raptor species observed were recorded and mapped and breeding status was assigned following BTO breeding status codes. Surveyors did not approach nest sites to avoid disturbance.

Each breeding raptor location was surveyed on four occasions during the core breeding season between May and July. Survey effort is presented in Appendix 7-2, including full details of dates, times and weather conditions. Figure 7-6 shows the breeding raptor locations.

7.2.5 Collision Monitoring

Collision monitoring was conducted at the Proposed Development to estimate the number of individual birds and bats killed by collision with moving wind turbine rotor blades. All 12 no. turbines which exist on the existing Castledockrell Wind Farm site were surveyed once per month from November 2022 to September 2023 following a standardised dog-led carcass search methodology. A 120m-by-120m plot centred on the turbine bases were searched for an average of 60 minutes per month and all bird and bat carcasses detected within were recorded. If the cause of death was not apparent, the fatality was conservatively attributed to a collision with turbine blades.

To ensure a more accurate estimation of the total number of fatalities, dog-led searches were calibrated to account for the dog's ability to find bird and bat carcasses (searcher efficiency) and the likelihood of scavenging of carcasses by animals (scavenger removal). The searcher efficiency trial was conducted by planting carcasses within the Site and allowing the dog to search for them. One worker left carcasses in a trial plot within the search area, and the dog and trainer team searched that day. At the Proposed Development, a random number of bird and bat carcasses were planted within various habitats and searched for by the dog. Searcher efficiency was then based on the percentage retrieval success. The scavenger removal trial was conducted on eleven occasions by leaving carcasses in trial plots for 30 days or until scavengers removed the carcass. A determination on carcass removal was made when no body parts containing flesh or bone or >10 disarticulated feathers could be found (remaining carcass material was retrieved at the end of the trial). The scavenger removal rate was then determined by the amount of scavenging that occurred in the intervening period. Full survey methodology, including survey effort, is provided in Appendix 6-2.

Map Legend

- EIA Site Boundary
- 500m Radius of Turbines
- VP Locations
- Turbine Locations

N

Drawing Title
Vantage Point Survey Locations

Project Title
Castledockrell Wind Farm Extension of Operational Life

Drawn By	Checked By
AMcM	PM
Project No.	Fig.
210847	Fig. 7-1
Scale	Date
1:20,000	12/02/2024

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email info@mkoireland.ie
WebSite: www.mkoireland.ie

Map Legend

- EIA Site Boundary
- 500m Radius of Turbines
- VP Locations
- Turbine Locations
- Visible Area from VPs

N

Drawing Title: Vantage Point Viewsheds

Project Title: Castledockrell Wind Farm Extension of Operational Life

Drawn By	Checked By
AMcM	PM
Project No.	Fig.
210847	Fig. 7-2
Scale	Date
1:20,000	12/02/2024

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Map Legend

- EIA Site Boundary
- 500m Radius of Turbines
- Turbine Locations
- Walkover Transects

N

Drawing Title	Winter Walkover Transects
Project Title	Proposed Extension of Life of Castledockrell Wind Farm
Drawn By: AMcM	Checked By: PM
Project No.: 210847	Fig.: Fig. 7-3
Scale: 1:15,000	Date: 12/02/2024

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Map Legend

- EIA Site Boundary
- 500m Radius of Turbines
- Turbine Locations
- Walkover Transects

N

Drawing Title	Breeding Walkover Transects
Project Title	Castledockrell Wind Farm Extension of Operational Life
Drawn By: AMcM	Checked By: PM
Project No.: 210847	Fig.: Fig. 7-4
Scale: 1:15,000	Date: 12/02/2024

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Kildavin Quarry
Bunclody Bridge
Clonmahon Bridge
Ballycarney Bridge
Scarawalsh Bridge
R772 Bridge
Map Legend
EIA Site Boundary
8km Survey Radius
Survey Locations
N
Microsoft product screen shots reprinted with permission from Microsoft Corporation
Drawing Title
Waterbird Distribution & Abundance Survey Locations
Project Title
Castledockrell Wind Farm Extension of Operational Life
Drawn By
AMcM
Checked By
PM
Project No.
210847
Fig.
Fig. 7-5
Scale
1:110,000
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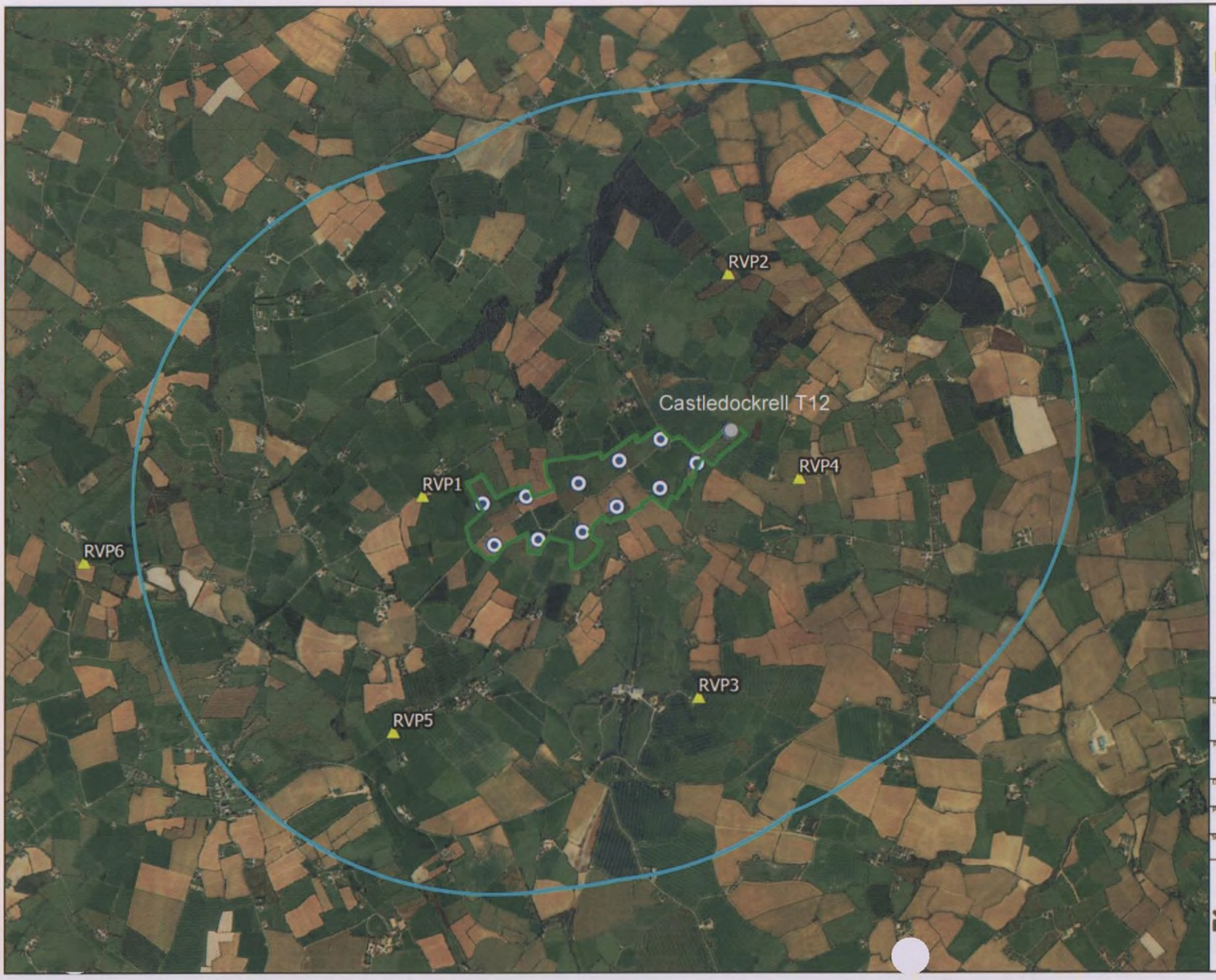

Map Legend

- EIA Site Boundary
- 2km Survey Radius
- RVP Locations
- Turbine Locations

N

Drawing Title: Breeding Raptor Survey Locations	
Project Title: Castledockrell Wind Farm Extension of Operational Life	
Drawn By: AMcM	Checked By: PM
Project No.: 210847	Fig.: Fig. 7-6
Scale: 1:35,000	Date: 12/02/2024

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7.2.6 Receptor Evaluation and Impact Assessment

7.2.6.1 Potential Impacts Associated with Proposed Development

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

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

For each of these three risks, the detailed knowledge of bird distribution and flight activity within and surrounding the Site has been used to predict the potential effects of the Proposed Development on birds. These impacts are also assessed cumulatively with other projects. The geographical framework and description of impacts are described below. As no new infrastructure is proposed, there is no potential for habitat loss as part of the Proposed Development.

7.2.6.2 Geographical Framework

Guidance on Ecological Impact Assessment (CIEEM, 2019) recommends categories of ornithological value that relate to a geographical framework (e.g. international through to local). This EIAR utilises the geographical framework described in 'Guidelines for Assessment of Ecological Impact of National Road Schemes' (NRA, 2009). The following geographic frame of reference should be used when determining the value of a bird population:

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

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

7.2.6.3 Description of Impacts

The sensitivity, magnitude and significance of impacts on bird populations resulting from the Proposed Development was quantified according to two assessment criteria: Percival (2003) and the Environmental Protection Agency (EPA, 2022). The two assessment criteria have been used to independently characterise impacts to inform a robust assessment of potential impacts. EPA impact assessment criteria has been used for consistency between the Biodiversity and Ornithology chapters of this EIAR, while Percival (2003) has also been followed given its specific focus on birds.

Percival (2003) criteria

The Percival (2003) methodology quantifies the sensitivity of a given species to the development type, the magnitude of the effect and the significance of the potential impact. Table 7-3 (Sensitivity), Table 7-4 (Magnitude of effect) and

Table 7-5 (Determination of significance) outline the assessment criteria for each stage.

Table 7-3 Evaluation of sensitivity for birds (from Percival, 2003)

Sensitivity	Determining Factor
Very High	Species that form the cited interest of SPAs and other statutorily protected nature conservation areas. Cited means mentioned in the citation text for the site as a species for which the site is designated.
High	Species that contribute to the integrity of a SPA but which are not cited as a species for which the site is designated. Ecologically sensitive species including the following: divers, common scoter, hen harrier, golden eagle, red necked phalarope, roseate tern and chough. Species present in nationally important numbers (>1% of the Irish population)
Medium	Species listed on Annex 1 of the EU Birds Directive. Species present in regionally important numbers (>1% county population). Other species on BirdWatch Ireland's Red List of Birds of Conservation Concern
Low	Any other species of conservation interest, including species on BirdWatch Ireland's Amber List of Birds of Conservation Concern, not covered above.

Table 7-4 Determination of magnitude of effects (from Percival, 2003)

Sensitivity	Description
Very High	Total loss or very major alteration to key elements/ features of the baseline conditions, such that the post development character/composition/attributes will be fundamentally changed and may be lost from the site altogether. Guide: < 20% of population / habitat remains
High	Major loss or major alteration to key elements/features of the baseline (pre-development) conditions such that post development character/composition/attributes will be fundamentally changed. Guide: 20-80% of population/ habitat lost
Medium	Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/composition/attributes of baseline will be partially changed. Guide: 5-20% of population/ habitat lost
Low	Minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible but underlying character/composition/attributes of baseline condition will be similar to pre-development circumstances/patterns. Guide: 1-5% of population/ habitat lost
Negligible	Very slight change from baseline condition. Change barely distinguishable, approximating to the "no change" situation. Guide: < 1% population/ habitat lost

Table 7-5 Significance matrix combining magnitude and sensitivity to assess significance (from Percival, 2003)

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

EPA (2022) Criteria

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

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

The significance of the effect is quantified as:

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

The duration of effects can be:

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

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

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

The probability of the effect may be:

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

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

7.2.7 Assessment Justification

7.2.7.1 Survey Data

A comprehensive suite of bird surveys was undertaken at the Proposed Development site between October 2022 and September 2023. Results derived from a continuous year of surveying at the Proposed Development site and hinterland, undertaken in line with NatureScot guidance, are analysed to inform this assessment. As such, the surveys undertaken provide the information necessary to allow a complete, comprehensive and robust assessment of the potential impacts of the Proposed Development on avian receptors.

7.2.7.2 Mitigation

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

7.2.7.3 Limitations

The information provided in this EIAR chapter accurately and comprehensively describes the baseline environment and provides an informed prediction of the likely impacts of the Proposed Development. It also prescribes mitigation as necessary and describes the predicted residual effects. Furthermore, the desk study, analysis and reporting have been undertaken in accordance with the appropriate guidelines. One very minor limitation in the surveys undertaken was identified. For a very small proportion of vantage point surveys (six surveys total or 25%) between May and July 2023 did not include a 30-minute break between three hour survey blocks. This is a very minor limitation, particularly in the context of an existing wind farm.

In summary, no significant limitations were identified and the comprehensive survey scope undertaken provides an accurate and robust description of the baseline condition.

7.3 Baseline Ornithological Conditions

7.3.1 Designated Sites within the Likely ZOI of the Development

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

Sites designated for nature conservation within the potential ZOI of the Proposed Development were identified using GIS software. The ZOI is derived utilising a precautionary approach. Initially, sites within a 15km radius of the proposed works are identified. Then designated sites located outside the 15km buffer zone are accounted for and assessed for pathways for impacts. In addition (and in the absence of any specific European or Irish guidance), the guidance document 'Assessing Connectivity with Special Protection Areas' (SNH, 2016) was consulted. This document provides guidance on identifying of connectivity between the Proposed Development and SPAs. It considers the distances some species may travel beyond the boundary of their SPAs and outlines dispersal and foraging ranges. Potential effects on wetlands and supporting habitats associated with SPAs and potential indirect pathways in the form of surface water pollution are considered in the Appropriate Assessment and NIS and summarised below.

One SPA was located within 15km of the Proposed Development. The SPA is listed and summarised in Table 7-6. No other nationally designated sites of ornithological significance occur within the potential ZOI. In this case, no significant supporting habitat for any SCI of the SPA was recorded within the Proposed Development site and therefore, there is no potential for ***ex-situ*** effects on this European Site. However, whilst there are no mapped watercourses within or adjacent to the Proposed Development site, several tributaries of the River Slaney, which drains into this SPA 16.9 km downstream, are located down gradient of Site.

Therefore, taking a precautionary approach, there is a potential pathway for indirect significant effects on the SCI species via impact to their supporting habitat, Wetlands [A999], through deterioration of water quality as a result of the operational and decommissioning phases of the Proposed Development.

Table 7-6 Designated sites in the Zone of Influence

Site Name	Distance from proposed works	Special Conservation Interests for which the site has been designated	Conservation Objectives	Zone of Influence Determination and Identification of Pathways for Effect
Special Protection Area				
Wexford Harbour and Slobs SPA	11.2km from the Site	› **Little Grebe** (*Tachybaptus ruficollis*) [A004] › **Great Crested Grebe** (*Podiceps cristatus*) [A005] › **Cormorant** (*Phalacrocorax carbo*) [A017] › **Grey Heron** (*Ardea cinerea*) [A028] › **Bewick's Swan** (*Cygnus columbianus bewickii*) [A037] › **Whooper Swan** (*Cygnus cygnus*) [A038] › **Light-bellied Brent Goose** (*Branta bernicla hrota*) [A046] › **Shelduck** (*Tadorna tadorna*) [A048] › **Wigeon** (*Anas penelope*) [A050] › **Teal** (*Anas crecca*) [A052] › **Mallard** (*Anas platyrhynchos*) [A053] › **Pintail** (*Anas acuta*) [A054] › **Scaup** (*Aythya marila*) [A062] › **Goldeneye** (*Bucephala clangula*) [A067] › **Red-breasted Merganser** (*Mergus serrator*) [A069]	Detailed conservation objectives for this site (Version 1, March 2012) were reviewed as part of the assessment and are available at www.npws.ie	**This SPA is within the Likely Zone of Impact and further assessment will be provided in the NIS.**

Site Name	Distance from proposed works	Special Conservation Interests for which the site has been designated	Conservation Objectives	Zone of Influence Determination and Identification of Pathways for Effect
Special Protection Area				
		> **Hen Harrier** (*Circus cyaneus*) [A082] > **Coot** (*Fulica atra*) [A125] > **Oystercatcher** (*Haematopus ostralegus*) [A130] > **Golden Plover** (*Pluvialis apricaria*) [A140] > **Grey Plover** (*Pluvialis squatarola*) [A141] > **Lapwing** (*Vanellus vanellus*) [A142] > **Knot** (*Calidris canutus*) [A143] > **Sanderling** (*Calidris alba*) [A144] > **Dunlin** (*Calidris alpina*) [A149] > **Black-tailed Godwit** (*Limosa limosa*) [A156] > **Bar-tailed Godwit** (*Limosa lapponica*) [A157] > **Curlew** (*Numenius arquata*) [A160] > **Redshank** (*Tringa totanus*) [A162] > **Black-headed Gull** (*Chroicocephalus ridibundus*) [A179] > **Lesser Black-backed Gull** (*Larus fuscus*) [A183] > **Little Tern** (*Sterna albifrons*) [A195]		

Site Name	Distance from proposed works	Special Conservation Interests for which the site has been designated	Conservation Objectives	Zone of Influence Determination and Identification of Pathways for Effect
Special Protection Area				
		› Greenland White-fronted Goose (*Anser albifrons flavirostris*) A395]		

7.3.2 Breeding and Wintering Bird Atlas Records

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

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

The Proposed Development site lies within hectad S94. Table 7-7 and

Table 7-8 present a list of species of conservation interest recorded from the relevant hectads, with regard to breeding and wintering respectively.

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

Species Name	Breeding Atlas 1968-1972	Breeding Atlas 1988-1991	Breeding Atlas 2007-2011
	S94	S94	S94
Barn Owl	-	Seen	-
Buzzard	-	-	Probable
Coot	Possible	-	-
Curlew	-	Breeding	-
Grey Heron	Confirmed	Breeding	Possible
Grey Partridge	-	Breeding	-
Grey Wagtail	Confirmed	Breeding	Confirmed
Kestrel	Probable	Breeding	Possible
Kingfisher	Possible	-	-
Lapwing	Possible	Seen	-
Little Egret	-	-	Possible
Long-eared owl	-	Breeding	-
Mallard	Possible	Breeding	Confirmed
Meadow Pipit	Confirmed	Breeding	Possible
Snipe	Probable	-	-
Sparrowhawk	Confirmed	Seen	Possible
Stock Dove	Possible	Breeding	Probable
Swift	Possible	Breeding	Confirmed
Teal	-	Breeding	-
Yellowhammer	Probable	Breeding	Confirmed

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

Species Name	Wintering Atlas 1981-1984	Wintering Atlas 2007-2011
	S94	S94
Barn Owl	Present	Present
Black-headed Gull	-	Present
Buzzard	-	Present
Coot	-	Present

Species Name	Wintering Atlas 1981-1984	Wintering Atlas 2007-2011
	S94	S94
Cormorant	-	Present
Golden Plover	Present	Present
Grey Heron	-	Present
Grey Wagtail	Present	Present
Kestrel	-	Present
Kingfisher	Present	Present
Lapwing	Present	Present
Lesser Black-Backed Gull	Present	Present
Little Egret	-	Present
Mallard	Present	Present
Meadow Pipit	Present	Present
Peregrine Falcon	-	Present
Redwing	Present	Present
Snipe	Present	Present
Sparrowhawk	Present	Present
Stock Dove	-	Present
Woodcock	Present	Present
Yellowhammer	Present	Present

7.3.3 Bird Sensitivity Mapping Tool

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

The Proposed Development is located within areas of **low** bird sensitivity to wind energy developments. The Site is approximately 24km from the nearest area of high sensitivity at its closest point.

7.3.4 National Biodiversity Data Centre Records

The National Biodiversity Data Centre (NBDC) Biodiversity Maps provide records of flora and fauna within 10km hectads across Ireland. Data is available from the map viewer on the NBDC website (https://maps.biodiversityireland.ie/Map). The Site lies within hectad S94.

Table 7-9 lists the bird species have been recorded in these 10km Grids.

Table 7-9 National Biodiversity Data Centre records of birds present in hectad S94 (Breeding and Wintering).

Common Name	NBDC Dataset
Barn Owl	Birds of Ireland
Black-crowned Night Heron	Rare Birds of Ireland
Black-headed Gull	Birds of Ireland
Buzzard	Birds of Ireland

Common Name	NBDC Dataset
Dipper	Birds of Ireland
Glossy Ibis	Rare Birds of Ireland
Great Egret	Rare Birds of Ireland
Grey Heron	Birds of Ireland
Herring Gull	Birds of Ireland
Hobby	Rare Birds of Ireland
Kestrel	Birds of Ireland
Kingfisher	Birds of Ireland
Lapwing	Birds of Ireland
Little Bittern	Rare Birds of Ireland
Mute Swan	Birds of Ireland
Redwing	Birds of Ireland
Sparrowhawk	Birds of Ireland
Woodcock	Birds of Ireland
Yellowhammer	Birds of Ireland

7.3.5 Irish Wetland Bird Survey Records

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

- Bannow Bay
- Barrow Estuary
- Cahore Marshes
- Lady's Island Lake
- River Slaney
- Tacumshin Lake
- The Cull and Killag (Ballyteige)
- Wexford Bay
- Wexford Harbour & Slobs

7.3.6 Rare and Protected Species Dataset

An information request was sent to NPWS requesting records from the Rare and Protected Species Database. Records were obtained from the NPWS on the September 28th, 2023, and no bird species were included in the returned dataset.

7.3.7 Castledockrell Wind Farm Operational Bird Monitoring Reports

Bird surveys were undertaken at Castledockrell Wind Farm during the operational phase of the development between 2013 and 2023. A review of the Castledockrell bird survey reports (prepared by

Ted Walsh & Associates Ltd.) was carried out to determine the results of strike monitoring and transect surveys undertaken between 2013 and 2023. Survey methodology comprised casualty monitoring surveys over two sessions per year and were undertaken in conjunction with activity surveys over three to six sessions per year. Search areas for the casualty monitoring surveys covered a 100m radius around each of the 11 no. turbines where the crane pad, turbine assembly area, foundation area and adjoining farmland were searched by the surveyor for signs of bird strikes. Bird activity surveys comprised walking transects along existing site roads and access roads. During the survey period, there were seven probable/confirmed bird strikes and six possible strikes. There was one probable/confirmed strike of a red-listed species (yellowhammer) in 2018. All other strikes were of non-target species (woodpigeon, rook, magpie, linnet). Target species observed within the Site during the surveys included herring gull, lesser black-backed gull, great black-backed gull, kestrel, meadow pipit, yellowhammer, buzzard and sparrowhawk.

7.3.8 Field Survey Results

There were observations of nine SCI species recorded within 8km of the viable area of the Proposed Development during surveys. Of these, significant populations (national importance or county importance) of peregrine falcon, black-headed gull and lesser black-backed gull were observed. There were observations of four Annex I species, nine BOCCI Red list species and three raptor species.

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

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

Species	Overall breeding status	Overall wintering status
Golden Plover	**No observations during the breeding season**	**No regularly used roosts identified.** There was no evidence of roosting at the Site during surveys.
Kingfisher	**No observations during the breeding season**	**No regularly used roosts identified.** There was no evidence of roosting at the Site during surveys.
Peregrine Falcon	**Non-breeding.** There was no evidence of breeding at the Site during surveys.	**No regularly used roosts identified.** There was no evidence of roosting at the Site during surveys.
Black-headed Gull	**No observations during the breeding season**	**No regularly used roosts identified.** There was no evidence of roosting at the Site during surveys.
Brent Goose	**No observations during the breeding season**	**No regularly used roosts identified.** There was no evidence of roosting at the Site during surveys.
Cormorant	**Non-breeding.** There was no evidence of breeding at the Site during surveys.	**No regularly used roosts identified.** There was no evidence of roosting at the Site during surveys.
Grey Heron	**Non-breeding.** There was no evidence of breeding at the Site during surveys.	**No regularly used roosts identified.** There was no evidence of roosting at the Site during surveys.
Lapwing	**No observations during the breeding season**	**No regularly used roosts identified.** There was no evidence of roosting at the Site during surveys.
Lesser Black-backed Gull	**Non-breeding.** There was no breeding habitat present and no evidence of breeding at the Site during surveys.	**No regularly used roosts identified.** There was no evidence of roosting at the Site during surveys.

Species	Overall breeding status	Overall wintering status
Mallard	**Non-breeding.** There was no evidence of breeding at the Site during surveys.	**No regularly used roosts identified.** There was no evidence of roosting at the Site during surveys.
Teal	**No observations during the breeding season**	**No regularly used roosts identified.** There was no evidence of roosting at the Site during surveys.
Kestrel	**Probable Breeding.** There was a probable breeding territory located approximately 500m from the nearest turbine (see Confidential Appendix 7-5, Figure 7-5-2).	**No regularly used roosts identified.** There was no evidence of roosting at the Site during surveys.
Snipe	**Non-breeding.** There was no evidence of breeding at the Site during surveys.	**No regularly used roosts identified.** There was no evidence of roosting at the Site during surveys.
Buzzard	**Confirmed Breeding.** There were four confirmed breeding territories located between approximately 800m to 2.3km from the nearest turbine (see Confidential Appendix 7-5, Figure 7-5-6).	**No regularly used roosts identified.** There was no evidence of roosting at the Site during surveys.
Sparrowhawk	**Non-breeding.** There was no evidence of breeding at the Site during surveys.	**No regularly used roosts identified.** There was no evidence of roosting at the Site during surveys.

In addition to the species listed above, little egret were recorded infrequently and in low numbers during waterbird distribution and abundance surveys, with the closest observation 3.6km from nearest turbine. This species was not observed on or near the Site and therefore, there is no potential for impact from the Proposed Development.

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

- Summary of vantage point survey records
- Summary of winter walkover survey records
- Summary of breeding walkover survey records
- Summary of waterbird distribution and abundance survey records
- Summary of breeding raptor survey records
- Summary of non-target species recorded

7.3.8.1 Golden Plover

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

Vantage Point Surveys

Golden plover were observed on four occasions during the vantage point surveys (see Appendix 7-4, Figure 7-4-1). Golden plover were infrequently recorded, the species was observed on average once every 36 hours of vantage point surveys, with an average flock size of 117 birds and a peak count of 150 individuals. Observations were of birds circling over agricultural fields. All observations were within 500m of the turbine layout and three were within the potential collision height. All observations were during the non-breeding season (October to March).

7.3.8.2 Kingfisher

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

Waterbird Distribution and Abundance Surveys

Kingfisher were recorded on three occasions during Waterbird Distribution and Abundance Surveys (see Appendix 7-4, Figure 7-4-2). The species was observed on 19% of 16 Waterbird Distribution and Abundance Surveys, with a peak count of two individuals. Observations ranged from 3.7km to 10.4km from the nearest turbine and were of birds travelling along rivers, perched or foraging.

7.3.8.3 Peregrine Falcon

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

Vantage Point Surveys

Peregrine falcon were observed on two occasions during the vantage point surveys (see Appendix 7-4, Figure 7-4-3). Peregrine were infrequently recorded, the species was observed on average once every 72 hours of vantage point surveys, with only an individual bird observed. Observations were of birds hunting over grassland. All observations were within 500m of the turbine layout and one was within the potential collision height. All observations were during the core breeding season for this species (April to July).

Winter Walkover Surveys

Peregrine falcon were observed on one occasion during the winter walkover surveys (see Appendix 7-4, Figure 7-4-4). Peregrine were infrequently recorded, the species was observed on one occasion in four winter walkover surveys, with only an individual bird observed hunting over grassland. The observation was within 500m of the turbine layout and was recorded during the non-breeding season.

Breeding Raptor Surveys

Peregrine falcon were observed on one occasion during the breeding raptor surveys (see Appendix 7-4, Figure 7-4-5). Peregrine were infrequently recorded, the species was observed at one of the six survey locations, with only an individual bird observed soaring over grassland. The observation was greater than 500m of the turbine layout and was recorded during the core breeding season for this species (April to July).

Incidental Observations

Peregrine was recorded once as an incidental observation throughout the survey period, with an individual repeatedly calling (see Appendix 7-4, Figure 7-4-6). The observation was recorded 7.8km from the nearest turbine during the non-breeding season.

7.3.8.4 Black-headed Gull

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

Vantage Point Survey

Black-headed gull were observed on 19 occasions during the vantage point surveys (see Appendix 7-4, Figure 7-4-7). Black-headed gull were regularly recorded, the species was observed on average once every eight hours of vantage point surveys, with an average flock size of 15 birds and a peak count of 105 individuals. Observations were of birds travelling, circling over agricultural fields or foraging. There were nine observations within 500m of the turbine layout, one of these were of birds landing in grassland. Three observations were within the potential collision height. All observations were during the non-breeding season (October to March).

Winter Walkover Survey

Black-headed gull were observed on five occasions during the winter walkover surveys (see Appendix 7-4, Figure 7-4-8). Black-headed gull were regularly recorded, the species was observed on five occasions in four winter walkover surveys, with an average flock size of 47 birds and a peak count of 215 individuals. Observations were of birds travelling, circling over agricultural fields or foraging. There were three observations within 500m of the turbine layout, one of these was of birds foraging on grassland.

Waterbird Distribution Survey

Black-headed gull were observed on 22 occasions during the waterbird distribution and abundance surveys (see Appendix 7-4, Figure 7-4-9). Black-headed gull were observed on 44% of 16 waterbird distribution and abundance surveys, with an average flock size of 11 birds and a peak count of 45 individuals. Observations ranged from 3.8km to 10.5km from the nearest turbine and the majority were of birds travelling, circling, foraging or roosting.

7.3.8.5 Brent Goose

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

Waterbird Distribution and Abundance Surveys

Brent geese were observed on one occasion during waterbird distribution and abundance surveys, with a flock size of seven birds (see Appendix 7-4, Figure 7-4-10). The observation was 3.8km from the nearest turbine and was of birds travelling.

7.3.8.6 Cormorant

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

Waterbird Distribution and Abundance Surveys

Cormorant were observed on 41 occasions during the waterbird distribution and abundance surveys (see Appendix 7-4, Figure 7-4-11). Cormorant were observed on 81% of surveys, with a peak count of six individuals. Observations ranged from 3.3km to 7.6km from the nearest turbine and were of birds travelling, perched, roosting or foraging.

7.3.8.7 Grey Heron

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

Vantage Point Surveys

Grey heron was observed on one occasion during 144 hours of vantage point surveys (see Appendix 7-4, Figure 7-4-12). An individual was observed travelling over grassland fields. The observation was within 500m of the turbine layout and below potential collision height. The observation was during the breeding season (April to September).

Waterbird Distribution and Abundance Surveys

Grey heron were observed on 73 occasions during the waterbird distribution and abundance surveys (see Appendix 7-4, Figure 7-4-13). Grey heron were observed on 100% of 16 Waterbird Distribution and Abundance Surveys, with a peak count of ten individuals. Observations ranged from 3.1km to 10.4km from the nearest turbine and were of birds travelling, perched, roosting or foraging.

7.3.8.8 Lapwing

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

Waterbird Distribution and Abundance Surveys

Lapwing were observed on seven occasions during the waterbird distribution and abundance surveys (see Appendix 7-4, Figure 7-4-14). Lapwing were observed on 38% of surveys, with an average number of 65 birds and a peak count of 359 individuals. Observations ranged from 5.4km to 7.3km from the nearest turbine and were of birds roosting or foraging.

7.3.8.9 Lesser Black-backed Gull

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

Vantage Point Surveys

Lesser black-backed gull were observed on 40 occasions during the vantage point surveys (see Appendix 7-4, Figure 7-4-15). Lesser black-backed gull were regularly recorded, the species was observed on average once every 3.7 hours of vantage point surveys, with an average flock size of 11 birds and a peak count of 73 individuals. Observations were of birds travelling, landing or circling over agricultural fields. There were 29 observations within 500m of the turbine layout and 18 were within the potential collision height. No. 27 observations were during the non-breeding season (October to March) and no. 13 during the breeding season (April to September).

Winter Walkover Surveys

Lesser black-backed gull were observed on 14 occasions during the winter walkover surveys (see Appendix 7-4, Figure 7-4-16). Lesser black-backed gull were regularly recorded, the species was observed on 14 occasions in four winter walkover surveys, with an average flock size of 18 birds and a peak count of 71 individuals. Observations were of birds travelling, foraging or roosting. There were 13 observations within 500m of the turbine layout, eight of these was of birds foraging or roosting on agricultural land.

Breeding Walkover Surveys

Lesser black-backed gull were observed on nine occasions during the breeding walkover surveys (see Appendix 7-4, Figure 7-4-17). Lesser black-backed gull were regularly recorded, the species was observed on nine occasions in four breeding walkover surveys, with a peak count of four individuals. Observations were of birds travelling or circling. All observations within 500m of the turbine layout.

Waterbird Distribution and Abundance Surveys

Lesser black-backed gull were observed on 31 occasions during the Waterbird Distribution and Abundance Surveys (see Appendix 7-4, Figure 7-4-18). This species was observed on 94% of 16 Waterbird Distribution and Abundance Surveys, with an average number of 14 birds and a peak count of 200 individuals. Observations ranged from 3.9km to 10.7km from the nearest turbine and were of birds travelling, circling roosting or foraging.

Incidental Observations

Lesser black-backed gull was recorded on ten occasions as incidental observations throughout the survey period (see Appendix 7-4, Figure 7-4-19). One observation was recorded within 500m of the turbine layout and all observations were recorded during the breeding season.

7.3.8.10 Mallard

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

Waterbird Distribution and Abundance Surveys

Mallard were observed on 39 occasions during the waterbird distribution and abundance surveys (see Appendix 7-4, Figure 7-4-20). This species was frequently recorded, with observations on every survey date. All observations were on or in floods/drains adjacent to the River Slaney and were between 4.3km and 10.4km from the nearest turbine. Flocks ranged from an individual to 36 birds, with an average flock size of 5 birds. Most observations were of birds foraging.

7.3.8.11 Teal

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

Waterbird Distribution and Abundance Surveys

Teal were observed on only three occasions during the waterbird distribution and abundance surveys (see Appendix 7-4, Figure 7-4-21). This species was infrequently recorded, with observations on only 19% of survey dates. All observations were on the River Slaney, at Scarawalsh, approximately 7km from the nearest turbine. Observations ranged from two to 12 birds and were of birds foraging and roosting on the river.

7.3.8.12 Kestrel

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

Vantage Point Surveys

Kestrel were observed on 25 occasions during the vantage point surveys (see Appendix 7-4, Figure 7-4-22). Kestrel were observed, on average, once every 5.7 hours of surveys. All observations were of individuals commuting, hunting or perched. There were 21 observations within 500m of the turbines, this represents 84% of observations during these surveys. There were only two observations during the core breeding season for this species (April to August). There was no evidence of breeding recorded during these surveys.

Winter Walkover surveys

Kestrel were observed on three occasions during the winter walkover surveys (see Appendix 7-4, Figure 7-4-23). Kestrel were recorded on 50% of survey dates. All observations were of individuals and were of birds perched, hunting or flushed. All observations were of birds flying within 50m of the turbines.

Breeding Walkover surveys

Kestrel were observed on six occasions during the breeding walkover surveys (see Appendix 7-4, Figure 7-4-24). Kestrel were recorded on 25% of survey dates. Observations were of between one and two birds hunting or travelling. Additionally, there was one observation of a kestrel showing agitated behaviour towards a buzzard, indicating probable breeding at this location, approximately 500m from the nearest turbine (see Confidential Appendix 7-5, Figure 7-5-1). There were five observations within 500m of the turbines.

Breeding Raptor surveys

Kestrel were observed on three occasions during the breeding raptor surveys (see Appendix 7-4, Figure 7-4-25). Kestrel were recorded at two of the six survey locations (to southwest and northwest of site). At the locations where kestrel were observed, birds were recorded on one out of four visits. All observations were of individuals hunting or soaring. Observations were between approximately 800m and 1.5km from the nearest turbine. There was no evidence of breeding recorded during these surveys.

Incidental Observations

Kestrel were observed on three occasions as incidental records during waterbird distribution and abundance surveys (see Appendix 7-4, Figure 7-4-26). All observations were of individuals and there were two observations of birds perched and one of a bird commuting. Observations ranged from approximately 3.2km to 7.5km from the nearest turbine.

Breeding Summary

In summary, there was one probable breeding territory identified during the survey period approximately 500m from the nearest turbine. The breeding territory is presented in Confidential Appendix 7-5, Figure 7-5-2.

7.3.8.13 Snipe

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

Vantage Point Surveys

Snipe were observed on only three occasions during the vantage point surveys (see Appendix 7-4, Figure 7-4-27). Snipe were recorded infrequently, averaging only one observation every 48 hours of surveys. All observations were during the winter months and were of between one and six birds commuting. All observations were greater than 800m from the nearest turbine.

Breeding Walkover Surveys

Snipe were observed on only one occasion during the breeding walkover surveys (see Appendix 7-4, Figure 7-4-28). Snipe were recorded on only 12% of survey dates. This observation was of an individual flushed by the observer, approximately 50m from the nearest turbine. No evidence of breeding was recorded during these surveys.

Waterbird Distribution and Abundance Surveys

Snipe were observed on only one occasion during the waterbird distribution and abundance surveys (see Appendix 7-4, Figure 7-4-29). This species was infrequently recorded, with observations on only 6% of survey dates. This observation was of two birds flushed from the River Slaney, at Scarawalsh, approximately 7.5km from the nearest turbine.

7.3.8.14 Buzzard

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

Vantage Point Survey

Buzzard were observed on 173 occasions during the vantage point surveys (see Appendix 7-4, Figure 7-4-30). Buzzard were observed, on average, once every 50 minutes of surveys. Observations were of between one and eight birds, with most observations being of birds commuting, hunting, soaring or perched. Additionally, there were two observations of birds displaying, indicating probable breeding at these locations, one immediately adjacent to the Site, and one approximately 1.2km from the nearest turbine(see Confidential Appendix 7-5, Figure 7-5-3). There were 125 observations within 500m of the turbines, this represents 72% of observations during these surveys.

Winter Walkover Survey

Buzzard were observed on 20 occasions during the winter walkover surveys (see Appendix 7-4, Figure 7-4-31). Buzzard were recorded on all survey dates, with an average of five observations per survey. All observations were of one or two birds commuting, hunting, soaring or perched. There were 15 observations within 500m of the turbines, this represents 75% of observations during these surveys.

Breeding Walkover Survey

Buzzard were observed on 60 occasions during the breeding walkover surveys (see Appendix 7-4, Figure 7-4-32). Buzzard were recorded on all survey dates, with an average of ten observations per survey. Observations were of between one and two birds commuting, hunting, soaring or perched. Additionally, there was one observation of a pair displaying, indicating probable breeding at this location, immediately adjacent to the Site (see Confidential Appendix 7-5, Figure 7-5-4). There were 47 observations within 500m of the turbines, this represents 78% of observations during these surveys.