

6. BIODIVERSITY

6.1 Introduction

This Chapter of the Environmental Impact Assessment Report (EIAR) describes the biodiversity impact assessment of the Proposed Development which is the subject of a proposed application for planning permission by Hibernian Wind Power to Wexford County Council.

Carnsore Wind Farm, located at Carnsore Point County Wexford, was constructed in 2002 and consists of 14 operational turbines. All elements of the existing wind farm were constructed in accordance with Hibernian Wind Power's specifications and requirements, and a full description is provided in Chapter 4 (Project Description) of this EIAR. The application by the Electricity Supply Board (ESB) limited seeks a fifteen (15) year planning permission for extension of the operational life of the wind farm from the date of expiration (August 2022) of the current An Bord Pleanála (ABP) permission (ABP Ref. PL26.116487).

In terms of biodiversity, this chapter assesses the potential impacts on habitats, bats and other mammals. Impacts relating to ornithology have been assessed separately in Chapter 7 of this EIAR and are therefore not discussed further here. Other protected species were scoped out of the impact assessment; as due to the nature of the proposals (which will not involve any changes to the current wind farm), no potential impact pathways have been identified.

6.2 Objectives

The key objectives of this assessment are to:

- Undertake a review of desktop and field survey information to inform an assessment of the current baseline ecological characteristics of the operational wind farm in relation to biodiversity;
- Evaluate the ecological significance of the proposals to extend the operational life of the wind farm in the context of biodiversity; and
- Assess the potential for direct, indirect and cumulative impacts of the proposals in the context of biodiversity.

6.3 Legislation and Ecological Guidance

This report has been prepared having regard to legislation aimed at the protection of wild flora and fauna and referenced throughout the Environmental Impact Statement:

- The Habitats Directive 92/43/EEC
- The Birds Directive 79/409/EEC
- EIA Directive 2011/92/EU and Directive 2014/52/EU
- EU Water Framework Directive (2000/60/EC)
- The European Communities (Birds and Natural Habitats) Regulations 2011 (transposes EU Birds Directive 2009/147/EC and EU Habitats Directive 2009/147/EC, 92/43/EC)
- Irish Wildlife Act 1976 (as amended)

The following ecological guidance documents were consulted during the preparation of this EIAR:

- Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater Coastal and Marine version 1.1. (CIEEM, 2018).

- Advice Notes on Current Practice (in preparation of Environmental Impact Statements) (Environmental Protection Agency (EPA), 2003).
- Guidelines on the information to be contained in Environmental Impact Statements (EPA, 2002).
- Scottish Natural Heritage (SNH) guidance Assessing the impact of repowered wind farms in nature (Consultation draft) (SNH, 2018).

6.4 Statement of Authority

Ecological baseline surveys were conducted by suitably qualified ecologists from Scott Cawley Ltd. on behalf of RSK Biocensus. This EIAR chapter has been prepared by Liz Turley and Laura Cawley of RSK Biocensus. Liz has a BSc (Hons) in Environmental Biology and is a full member of the Chartered Institute of Ecology and Environmental Management (MCIEEM). She has 18 years ecological consultancy experience, focussing on impact assessment. Laura has a BSc (Hons) in Zoology and an MSc in Conservation and Management of the Natural Environment, she is also a full member of CIEEM and a Chartered Environmentalist (CEnv). This chapter has been reviewed by Mark Lang, Bsc (Hons), MCIEEM, CEcol, CEnv.

6.5 Methodology and Limitations

A desk-based assessment was undertaken to identify sites of national and international nature conservation importance within 15km of the existing wind farm. Field surveys (habitats, bats and other mammals) were undertaken in 2020 and 2021 (see Section 6.5.3 below). Seasonal factors that affect distribution patterns and habits of species were considered when conducting the surveys and the potential of the site to support certain populations (in particular those of conservation importance that may not have been recorded during the field survey due to their seasonal absence or cryptic nature) was assessed.

6.5.1 Consultation

A planning meeting was held by Wexford County Council (July 2020) to discuss the proposed operational life extension of the existing wind farm. The minutes of this meeting stated that:

- The current wind farm has been a success and well accepted by the local community.
- An extended lifetime in its current form would be acceptable to the Planning Authority.
- A Natura Impact Statement (NIS) would be required.
- An Environmental Impact Assessment (EIA) would also be required.

6.5.2 Desktop Review

The desktop study undertaken for this assessment included a review of the Carnsore Point Windfarm Environmental Impact Assessment (1999/2000). Online data available on European sites and protected habitats/species as held by the National Parks and Wildlife Service (NPWS) (www.npws.ie), including conservation objectives documents, were reviewed to identify designated sites within 15km of the Proposed Development. Records of bats, other terrestrial mammals and non-native invasive plant species within 2km of the wind farm were obtained from the National Biodiversity Data Centre (NBDC).

6.5.3 Field surveys

Habitat, bat and other mammal surveys were undertaken during 2020 and 2021 by RSK/Scott Cawley to inform the current biodiversity baseline for the operational wind farm. The full survey reports are presented in Appendix 1, and the methodologies are summarised below.

6.5.3.1 Habitats

Full details of the habitat survey methodology are provided in the RSK/Scott Cawley Habitat report (Appendix 1). Habitat surveys were completed in July and September 2020 following the methodology described in Best Practice Guidance for Habitat Survey and Mapping (Smith *et. al*, 2011). All habitat types were classified using the Guide to Habitats in Ireland (Fossitt, 2000), recording the indicator species and abundance using the DAFOR scale and recording any species of conservation interest. Annex I habitat types were classified according to the Interpretation Manual of European Union Habitats EUR28 (CEC, 2013).

6.5.3.2 Bats

Full details of the bat survey methodology along with figures showing survey locations are provided in the RSK/Scott Cawley Bat and Terrestrial Mammal report (Appendix 1) and are summarised below. The bat survey methodology, where appropriate, followed that set out for lifetime extension and repowering developments as detailed in Scottish Natural Heritage (SNH) guidance: Bats and onshore wind turbines: survey, assessment and mitigation (Version: January 2019) (SNH, 2019). Bat surveys were also undertaken in accordance with Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016). As operational monitoring surveys following construction had not been undertaken, the survey methodology followed guidelines set out for new developments. Surveys comprised a combination of dusk and dawn activity transect surveys, automated ground-level static surveys, bat casualty searches and an assessment of trees within the Proposed Development site for their potential to support roosting bats. A number of limitations to the bat surveys were identified and are set out in Section 6.5.6.

Activity surveys

The bat activity transect surveys are summarised in Table 6-1 below. Two routes were walked by a surveyor on each visit, focusing on surveying linear vegetation features and field boundaries where access allowed. Direct observations of how bats used the landscape was recorded, and handheld ultrasound detectors (Elekon Batlogger M) were used to identify the bat species by their calls. Data generated from the transect surveys was analysed using Elekon BatExplorer software, whereby calls were identified to species level, where possible.

Table 6-1 Summary of bat activity surveys

Date	Survey type	Survey time	Sunset/ Sunrise times	Weather conditions
16/07/2020	Dusk transect survey	21:32 – 00:10	21:39	Mild, clear skies, no wind or rain. Temperature 14 -15°C
27/08/2020	Dawn transect survey	04:43 – 06:34	06:30	Windy, overcast, wind chill, mild raining. Temperature 14 -16°C

Date	Survey type	Survey time	Sunset/ Sunrise times	Weather conditions
15/10/2020	Dusk transect Survey	18:30 – 20:18	18:32	North-westerly wind, scattered clouds, no rain. Temperature 9 - 12°C
24/05/2021	Dusk transect Survey	21:29 – 23:30	21:27	30% cloud cover, light westerly wind with wind speed increasing during the survey, no rain. Temperature 9.5°C
25/05/2021	Dusk transect Survey	21:15 – 23:23	21:28	70% cloud cover, light westerly wind throughout and no rain. Temperature 10°C

Automated ground-level static surveys

The activity transect surveys were supplemented by automated static bat detectors (Song Meter SM4). Detectors were deployed for a minimum period of 15 nights at 10 different locations within the site on separate occasions between the 16 July and 16 October 2020. Locations of these deployments were chosen with an emphasis on areas identified as being potentially suitable for commuting and/or foraging bats, whilst also ensuring the footprint of the site was covered as best as possible. Once the detectors had been deployed for a minimum period of 15 nights, they were collected and the data was analysed using Kaleidoscope bat analysis software. This software identifies each individual bat call picked up by the detectors, which can then be used to identify the species.

Bat casualty searches

The bat casualty searches were undertaken monthly between July and October 2020. They covered a radius of 30m under each turbine, which was systematically searched by surveyors walking a tight grid over the area and using sticks to search in the vegetation for any bat carcasses.

Potential Roost Feature (PRF) Surveys

In April 2021, trees within the proposed development site were assessed for their potential to support roosting bats, having regard to the following guidelines: Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016); Bat Mitigation Guidelines for Ireland (Kelleher & Marnell, 2006); and, Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes (NRA, 2006a). A small number of trees located in hedgerows across the site were examined from ground level for potential to support roosting bats. They were assessed for the presence of potential roost features (PRFs) based on the presence of features commonly used by bats. Examples of such features include natural holes, cracks/splits in major limbs, loose bark and hollows/cavities.

6.5.3.3 Other Mammals

A mammal survey was undertaken in April 2021. The habitats on site were assessed for their potential to support protected/red-listed mammal species; field signs (such as tracks, markings, feeding signs, and droppings) were searched for and recorded if encountered as well as incidental sightings. The survey included checks for the presence of badger (*Meles meles*) setts and otter (*Lutra lutra*) holts (e.g. resting places of these protected species). The survey area covered the wind farm site and the adjacent coastline habitats.

6.5.4 Receptor Valuation

Ecological receptors are valued with regard to the examples set out in Guidelines for Assessment of Ecological Impacts of National Roads Schemes: Revision 2 (NRA, 2009) and the guidance provided in Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2018). Value is assessed through consideration of attributes including rarity, legal status, population size, distribution and connectivity, and natural range.

6.5.5 Methodology for Assessment of Effects

The assessment of likely significant environmental effects as a result of the proposed development has taken into account the following:

6.5.5.1 Duration of Effect

The duration of the effect has been assessed as either 'short-term', 'medium-term' or 'long-term'. Short-term is considered to be up to 1 year, medium-term is considered to be between 1 - 10 years and long-term is considered to be greater than 10 years.

6.5.5.2 Determining Sensitivity of Receptor

The sensitivity of affected receptors has been considered on a scale of high, medium, low or negligible.

6.5.5.3 Determining the Magnitude of Change

The magnitude of change has been considered as the change experienced by the receptor from the baseline conditions and has been considered on a scale of large, medium, small or negligible.

6.5.5.4 Determining the Level of Effect

The importance of the ecological features identified within the study area was determined with reference to a defined geographical context. This was undertaken following a methodology that is set out in Chapter 3 of the 'Guidelines for Assessment of Ecological Impacts of National Roads Schemes' (NRA, 2009). These guidelines and the CIEEM (2018) guidelines set out the context for the determination of value on a geographic basis. These guidelines provide a basis for determination of whether any particular receptor is of importance on the following scales:

- International
- National (i.e. Ireland)
- County (i.e. Co.Wexford)
- Local Importance (lower or higher)

Where the value is considered less than this, it is considered 'negligible'. The RSK/Scott Cawley Bat and Terrestrial Mammal report (Appendix 1) provides examples of valuing important ecological features.

6.5.5.5 Determining the Significance of Effects

Following the classification of an effect, a clear statement is made as to whether the effect is "significant" or "not significant". Under the CIEEM 2018 guidelines the significance of effect on the ecological features has been determined based on the analysis of the factors that characterise the

impact. A significant effect is defined as “an effect that either supports or undermines biodiversity conservation objectives for the ecological feature or for biodiversity in general”. The assessment considers whether an effect has the potential to affect the integrity of a habitat or the conservation status of a species. Integrity of a habitat or site is defined as “the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified”. The conservation status of a species is, “the sum of the influences acting on it which may affect its long-term distribution and abundance, within the geographical area of interest”. Conservation status is considered to be favourable under the following circumstances:

- Population dynamics indicate that the species is maintaining itself on a long-term basis as a viable component of its habitats;
- The natural range of the species is not being reduced, nor is it likely to be reduced for the foreseeable future; and
- There is (and probably will continue to be) a sufficiently large habitat to maintain its population on a long-term basis.

To allow a consistent approach across all disciplines, the standard levels of significance defined in the 2018 CIEEM guidelines are set out in Table 6.2 alongside the equivalent definitions of effect used elsewhere in this EIAR. For example, a significant effect at the international level under the CIEEM guidance would equate to a ‘Major’ significant effect using the standard EIA assessment methodology. As a deviation from the standard EIA methodology, minor effects identified within this chapter have been classified as negligible to ensure that (as per the CIEEM guidelines) a clear statement is made as to whether the effect is “significant” or “not significant”.

The EPA draft guidelines on information to be included in Environmental Impact Statements (EPA, 2017) and the *Guidelines for assessment of Ecological Impacts of National Road Schemes*, (NRA, 2009) were also considered when determining significance and the assessment is in accordance with those guidelines.

Table 6-2 Summary and comparison between CIEEM and EPA guidelines for determining significance of ecological effects

Significance following CIEEM guidelines	Significance following EPA guidelines	Definition
Significant at international level	Profound effect	An effect which obliterates sensitive characteristics.
Significant at national level	Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
Significant at county level	Moderate effect	An effect that alters the character of the environment that is consistent with existing and emerging trends.
Significant at local level	Slight effect	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Not significant	Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.

6.5.6 Limitations

The information provided in this EIAR chapter accurately and comprehensively describes the baseline ecological environment and provides an accurate prediction of the likely ecological effects of the development. The specialist studies, analysis and reporting have been undertaken in accordance with the appropriate guidelines.

- Due to Covid 19 restrictions in Spring 2020¹ it was not possible to mobilise and deploy static detectors for the spring period. Given that the summer and autumn deployments were for 15 consecutive nights (the guidance states 10) it is considered sufficient coverage of the bat assemblage present has been undertaken.
- Two static detectors failed during the summer deployment but given that the other 8 detectors had a full deployment for 15 consecutive nights for the summer season it is considered sufficient coverage of the bat assemblage present has been undertaken.
- Static detectors were positioned in the areas of the site considered to support the most optimal foraging habitat rather than at the base of each turbine. In this way the maximum coverage of the foraging bat assemblage is likely to have been recorded.
- Given the bat habitat assessment from the Irish National bat database (Lundy *et al.*, 2011) that indicates the landscape surrounding Carnsore is of low suitability for foraging and roosting bats (general low level of bat activity, the lack of tree coverage and no roosting opportunities) it was considered that surveys at height would be unlikely to deliver any additional survey benefit, so these were not undertaken.
- Also given the low level of bat activity, an assessment of bat activity using the online data base tool Eco bat has not been undertaken.

Overall, it is considered that the level of survey coverage undertaken has been sufficiently robust to characterise the foraging bat assemblage using the site and to assess the potential impacts from the future life extension.

6.6 Baseline Conditions and Receptor Valuation

The results of the desk-based assessment and the field surveys undertaken during 2020 and 2021 are summarised below. The full survey results are outlined in the RSK/Scott Cawley reports for habitats, bats and other mammals (Appendix 1).

6.6.1 Designated Sites

The desktop study identified 14 sites of European importance for nature conservation within 15km of the Proposed Development. The sites comprise eight Special Areas of Conservation (SACs) and six Special Protection Areas (SPAs) as listed below:

- Carnsore Point SAC
- Lady's Island Lake SAC
- Tacumshin Lake SAC
- Saltee Islands SAC
- Long Bank SAC
- Blackwater Bank SAC
- Slaney River Valley SAC
- Ballyteige Burrow SAC

¹ <https://cieem.net/i-am/covid-19/>

- Lady’s Island SPA
- Tacumshin Lake SPA
- Wexford Harbour and Slobs SPA
- The Raven SPA
- Saltees Islands SPA

SPAs are protected areas for birds designated under the EU Habitats Directive and potential impacts associated with these sites are considered in Chapter 7 Ornithology. As such, they are not discussed further in this report. The SACs are of international importance for nature conservation Table 6-3 provides a summary of the qualifying Interests (QIs) and Special Conservation Interests (SCIs) of the SACs; the locations of which are shown on Figures 6.1 and 6.2 below.

Table 6-3 Qualifying Interests and Special Conservation Interests of SACs within 15km of the Proposed Development

European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	Distance from Proposed Development Site
<p>Lady’s Island Lake SAC Coastal lagoons [1150] Reefs [1170] Perennial vegetation of stony banks [1220] NPWS (2019) Conservation Objectives: Lady’s Island Lake SAC 000704. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.</p>	<p>The Proposed Development lies within the European site boundary</p>
<p>Carnsore Point SAC Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170] NPWS (2011) Conservation Objectives: Carnsore Point SAC 002269. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.</p>	<p>The Proposed Development lies immediately adjacent to the European site boundary</p>
<p>Tacumshin Lake SAC Coastal lagoons [1150] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] NPWS (2018) Conservation Objectives: Tacumshin Lake SAC 000709. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.</p>	<p>c. 3.8km west</p>
<p>Saltee Islands SAC Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160] Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Submerged or partially submerged sea caves [8330] <i>Halichoerus grypus</i> (Grey Seal) [1364]</p>	<p>c. 9.2km west</p>

European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	Distance from Proposed Development Site
<p>NPWS (2011) Conservation Objectives: Saltee Islands SAC 000707 and Saltee Islands SPA 004002. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.</p>	
<p>Long Bank SAC Sandbanks which are slightly covered by sea water all the time [1110] NPWS (2013) Conservation Objectives: Long Bank SAC 002161. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.</p>	c. 9.6km north
<p>Blackwater Bank SAC Sandbanks which are slightly covered by sea water all the time [1110] NPWS (2013) Conservation Objectives: Blackwater Bank SAC 002953. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.</p>	c. 9.6km north
<p>Slaney River Valley SAC Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0] <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029] <i>Petromyzon marinus</i> (Sea Lamprey) [1095] <i>Lampetra planeri</i> (Brook Lamprey) [1096] <i>Lampetra fluviatilis</i> (River Lamprey) [1099] <i>Alosa fallax fallax</i> (Twaite Shad) [1103] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355] <i>Phoca vitulina</i> (Harbour Seal) [1365] NPWS (2011) Conservation Objectives: Slaney River Valley SAC 000781. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.</p>	c. 12.5km northwest
<p>Ballyteige Burrow SAC Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Salicornia and other annuals colonising mud and sand [1310] Spartina swards (<i>Spartinion maritima</i>) [1320] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]</p>	c. 14.7km west

European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	Distance from Proposed Development Site
Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] Mediterranean and thermo-Atlantic halophilous scrubs (<i>Sarcocornetea fruticosi</i>) [1420] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Atlantic decalcified fixed dunes (<i>Calluno-Ulicetea</i>) [2150] Humid dune slacks [2190] NPWS (2014) Conservation Objectives: Ballyteige Burrow SAC 000696. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht	

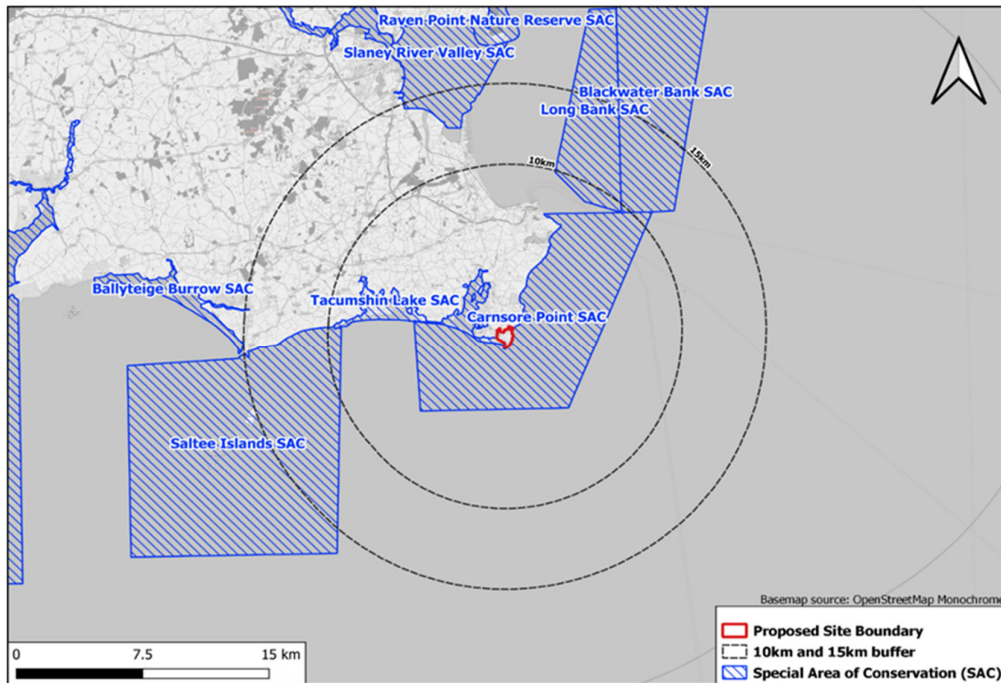


Figure 6-1 Special Areas of Conservation in the vicinity of the Proposed Development

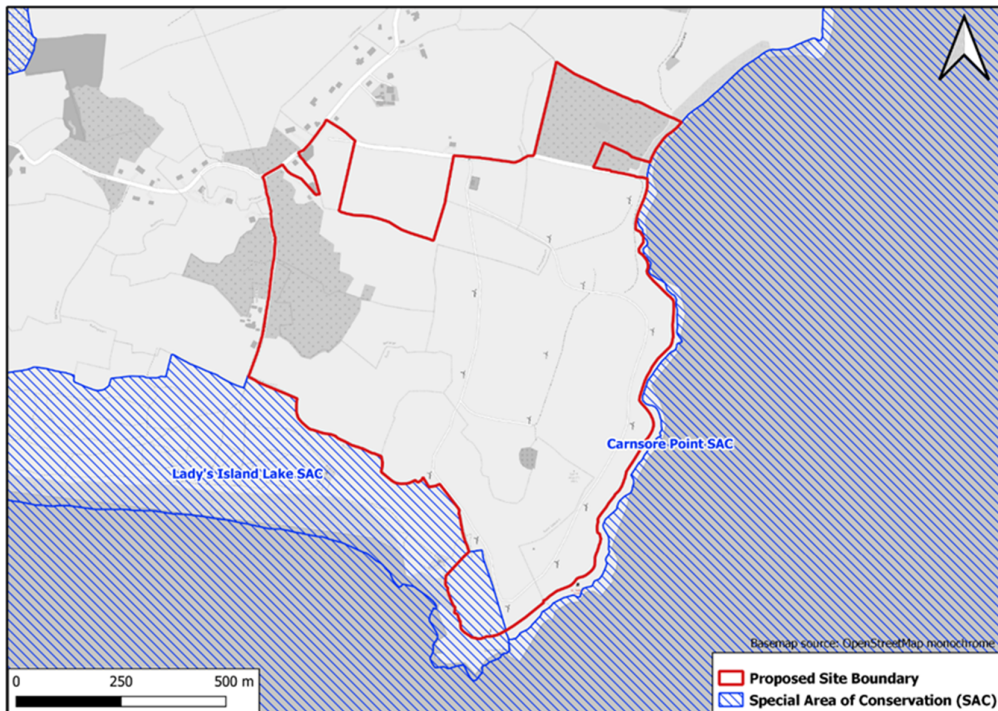


Figure 6-2 The proposed site boundary in relation to Lady's Island Lake SAC and Carnsore Point SAC

Natural Heritage Areas (NHAs) are sites of **national** importance for nature conservation designated under the Wildlife (Amendment) Act 2000 and their management and protection is provided for by this legislation and planning policy. Proposed Natural Heritage Areas (pNHAs) were designated on a non-statutory basis in 1995 but have not since been statutorily proposed or designated. A review the National Parks and Wildlife Service website indicates that there is one ecological pNHA located within 15km of Carnsore Wind Farm. St. Helen's Burrow pNHA is located approximately 6km from the site; given this distance it has not been considered further in the assessment as no impact pathways between it and the Proposed Development have been identified.

6.6.2 Habitats

Habitats within the site include mostly agricultural fields grazed by livestock, hedgerows forming field boundaries and areas of scattered bramble and gorse scrub throughout the site, with a larger area dominated by scrub in the west of the site.

Table 6-4 provides a summary of the habitat types, as described in Fossitt (2000), which were identified within the Proposed Development site boundary; an ecological valuation has been given to each habitat type (RSK/Scott Cawley 2021, Appendix 1). A review of the survey results suggests that one of the habitats recorded, rocky sea cliffs (CS1), could potentially be classified as the Annex 1 habitat 'Vegetated Sea Cliff'; however, given the small area and lack of species diversity the ecological valuation of local (higher) is appropriate, it will in any case not be directly affected. The boundary of Lady's Island Lake SAC overlaps with the Proposed Development boundary (as noted in Section 6.6.1); this area does not comprise any QI habitats and no disturbance of this overlap area occurred during construction of the existing wind farm.

Table 6-4 Ecological valuation of habitats present within Carnsore Wind Farm

Habitat type	Ecological Valuation
Arable crops (BC1)	Local importance (lower value)
Stonewalls and other stonework (BL1)	Local importance (lower value)
Earth banks (BL2)	Local importance (lower value)
Buildings and artificial surfaces (BL3)	Local importance (lower value)
Rocky sea cliffs (CS1)	Local importance (higher value)
Spoil and bare ground (ED2)	Local importance (lower value)
Recolonising bare ground (ED3)	Local importance (lower value)
Reed and large sedge swamps (FS1)	Local importance (higher value)
Improved agricultural grassland (GA1)	Local importance (lower value)
Dry calcareous and neutral grassland (GS1)	Local importance (higher value)
Dry meadows and grassy verges (GS2)	Local importance (higher value)
Wet grassland (GS4)	Local importance (higher value)
Dense bracken (HD1)	Local importance (lower value)
Shingle and gravel shores (LS1)	Local importance (higher value)
Moderately exposed rocky shores (LR2)	Local importance (higher value)
Mixed substrata shores (LR4)	Local importance (higher value)
Hedgerow (WL1)	Local importance (lower value)
Scrub (WS1)	Local importance (lower value)

6.6.3 Non-native Invasive Species

The data search did not return any records of non-native invasive plant species within 2km of the Proposed Development. During the habitat survey of the Proposed Development, a localised stand of the non-native invasive plant species Montbretia (*Crocsmia x crocosmiiiflora*) was identified near the shore of a large reedbed in the northernmost area of the site. No other invasive non-native invasive species were recorded during the survey.

6.6.4 Bats

Records of bat species recorded within 2km of the Proposed Development were obtained from the NBDC. The data search returned three records of three species all located 1.9km northwest of the site; Leisler's bat (*Nyctalus leisleri*), soprano pipistrelle (*Pipistrellus pygmaeus*) and Natterer's bat (*Myotis nattereri*). Both Leisler's bat and soprano pipistrelle were also recorded during the bat surveys, as detailed below.

A bat landscape assessment provided by the Irish National Bat Database (Lundy *et. al*, 2011) has indicated that the majority of the Carnsore windfarm is of low suitability for bats (14 on a scale of 0 to 100, with 0 being least favourable and 100 most favourable for bats) and aerial photographs show this as being open, windswept fields with no trees and no bat roost potentials. Although the western edge of the site has a slightly higher suitability (29.56) with more coverage of gorse scrub but still open

windswept fields; overall, the landscape in which the proposed life extension will occur is of low suitability for foraging bats.

During the transect and static bat surveys six species were recorded foraging and commuting: common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle, Nathusius' pipistrelle (*Pipistrellus nathusii*), Leisler's bat, brown long-eared bat (*Plecotus auritus*) and Myotis spp. No features suitable for roosting bats were observed on site and no bat carcasses were retrieved during the searches undertaken under each turbine.

Data from the automated ground-level static bat recorders showed a similar trend to that shown in the transect data. Common pipistrelle were the most represented species of bat across the site with greatest levels of activity attributed to this species throughout the site. In July 2020, common pipistrelle activity was more prevalent in the northern section of the site, while in October there appeared to be greater levels of activity in the north-western section of the site.

Soprano pipistrelle and Leisler's bats comprised the next highest number of recordings, with activity levels greatest in July but with no apparent area of the site being favoured by these species. Activity across the July and October 2020 automated surveys appeared widespread across the site.

Nathusius' pipistrelle, Myotis spp., and brown long-eared bats were recorded in low numbers and sporadically across the site. This may be due to a lack of suitable foraging habitats for these species and much smaller national population sizes compared to more common bat species discussed above.

In comparison to transect data, the northern section of the site returned the highest bat activity for the ground-level static detectors during the summer season i.e. the July period. Statics deployed in the northeast of the site recorded the highest activity on site in comparison to other statics across the site. This may indicate a higher density of preferred foraging habitats within this area, or a more sheltered location which would be favourable for foraging bats.

The survey report (RSK/Scott Cawley, 2021, Appendix 1) concluded that the presence of an operational wind farm has not deterred bats from utilising the lands surrounding the turbines for foraging and commuting. Overall, the site was valued as **local (higher)** value for bats, given the level of activity and use of the site by foraging and commuting bats, the range of species recorded during surveys with common species (common pipistrelle, soprano pipistrelle and Leisler's bat) being recorded in greatest numbers.

6.6.5 Other Mammals

The desk study returned a small number of records of other terrestrial mammals within the site and surrounding area, these comprised Irish stoat (*Mustela erminea hibernica*), Irish hare (*Lepus timidus* subsp. *hibernicus*), pygmy shrew (*Sorex minutus*) and otter.

Irish hare were sighted on three occasions during the field survey. Evidence of three other mammal species also protected under the Wildlife Acts was recorded on site; badger (footprints), pygmy shrew (*Sorex minutus*) (heard calling), and Irish stoat (footprints). Habitat suitable for breeding and foraging for these species is present within the site. No evidence of a badger sett was observed, and no signs of otter were recorded during surveys.

Overall, the site has been valued as **local (higher)** value for other mammals (RSK/Scott Cawley 2021, Appendix 1) given that evidence of four protected mammal species (badger, pygmy shrew, Irish stoat and Irish hare) was recorded on site and the suitability of habitats within the site for breeding and foraging by all four protected species. Although protected, these species are widespread across Ireland and therefore are not being valued higher than local (higher) importance.

6.6.6 Future baseline

The predicted baseline conditions during the proposed operational extension period of 15 years (the 'future baseline') have been considered.

Land use and management (i.e livestock grazing under existing turbines, with no alterations to existing windfarm infrastructure) are likely to remain the same during the proposed extension period and as such, would not be expected to give rise to any conditions that would directly alter the ecological resources within the site.

Long-term climatic predictions suggest that wetter winters and drier summers could prevail, with current typical spring temperatures occurring earlier and the onset of winter being delayed. An increase in the frequency of extreme weather events, which could have a direct impact on the ecological resources within the site are also predicted in the long-term. Impacts on ecology and nature conservation that could result from climate change are likely to include changes in the timings of seasonal events, leading to loss of synchrony between species and the availability of food; changes in species abundance and range; and changes in the habitats which species occupy (Hopkins et al., 2007). However, it is considered unlikely that any such impacts would result in a material alteration to the ecological resources within the Proposed Development site during the proposed extension period.

It is therefore predicted that the value of the habitats and species present within the Proposed Development boundary are unlikely to differ significantly from the baseline conditions, as described above. Therefore, the current biodiversity baseline informed by surveys undertaken in 2020 and 2021 has been used as both the current and the future baseline, against which any potential impacts have been assessed.

6.7 Scoping

6.7.1 Potential impacts

6.7.1.1 Construction Phase

As detailed within Chapter 4: Description of this EIA, all elements of the project are pre-existing and it is not proposed to make any alterations to the current site layout, wind turbines or associated infrastructure. As such, there will be no construction associated with the planning permission and therefore potential impacts resulting from construction phase activities (including habitat loss; hydrological/ hydrogeological change due to groundworks; and the introduction or spreading of non-native invasive species) have been scoped out of further assessment.

6.7.1.2 Operational Phase

Potential impacts associated with extending the operational phase of the existing wind farm have been scoped into this assessment. The following potential impacts relevant to biodiversity have been identified:

- Habitat degradation resulting from potential pollution incidents during site maintenance activities;
- Avoidance of foraging areas and/or commuting routes (bats); and
- Collision with wind turbines (bats).

6.7.1.3 Decommissioning Phase

In relation to decommissioning, Condition 9 of the original Planning Application (ABP Ref. PL26.116487) states the following:

‘On full or partial decommissioning of the wind farm or if the wind farm ceases operation for a period of more than one year the masts and turbines concerned (including foundations) shall be dismantled and removed from the site. The site shall be reinstated (including all access roads) and all decommissioned structures shall be removed within three months of decommissioning.’

The impacts associated with the decommissioning phase activities (described in Condition 9) were fully assessed in the Carnsore Wind Farm Environmental Impact Statement (1999/2000). As detailed in Chapter 4: Project Description of this EIAR, the current plan for decommissioning would include leaving the turbine foundations and cabling in place underground and the site roadways remaining in situ. The potential impacts associated with the revised plan, if taken forward at the time of decommissioning, would be less than those assessed in the Carnsore Wind Farm Environmental Impact Statement (1999/2000). This would be subject to a separate planning application (including agreeing a decommissioning plan with the local authorities) and therefore the decommissioning phase has been scoped out and is not considered further in this assessment.

6.7.2 Identification of Key Ecological Receptors

In accordance with Guidelines for Assessment of Ecological Impacts of National Roads Schemes: Revision 2 and the guidance provided in Guidelines for Ecological Impact Assessment in the UK and Ireland, ‘Key Ecological Receptors’ (KERs) are important ecological features within what is referred to as the Zone of Influence (Zoi) of the Proposed Development, which are “both of sufficient value to be material in decision making and likely to be affected significantly”. For this assessment KERs have been identified as ecological receptors with a value of local importance (higher value) or greater, which may be subject to significant effects from the potential operational impacts associated with the Proposed Development (see section 6.8.1.1.2). Since the field survey reports (RSK/Scott Cawley 2020/2021, Appendix 1) were written, the project description has been updated and the identification of KERs has been amended accordingly, based on the details of the Proposed Development. Table 6-55 provides a summary of KERs identified.

Table 6-5 Identification of KERs

Receptor	Value	Potential impacts	KER?
Designated sites	International	Habitat degradation resulting from potential pollution incidents	Yes – potential for significant effects
Habitats (rocky sea cliffs, reed and large sedge swamps, dry calcareous and neutral grassland, dry meadows and grassy verges, wet grassland, shingle and gravel shores, moderately exposed	Local importance (higher value)	Habitat degradation resulting from pollution incidents	Yes - potential for significant effects

Receptor	Value	Potential impacts	KER?
rocky shores, mixed substrata shores			
Bats	Local importance (higher value)	Avoidance of foraging areas and/or commuting routes Mortality due to collision with wind turbines	Yes - potential for significant effects
Badger, Pygmy shrew, Irish stoat, Irish hare and otter	Local importance (higher value)	No impact pathways from the extension of operation of the existing wind farm have been identified	No – No potential for significant effects. Impacts on badger, pygmy shrew, Irish stoat, Irish hare and otter have been scoped out of further assessment

6.8 Assessment of effects

6.8.1 Do-Nothing Scenario

It is considered that under the do-nothing scenario the existing turbines would be decommissioned with no significant impacts identified (see Section 6.7 Scoping).

6.8.2 Operational Phase

This section assesses the potential operational phase impacts associated with the Proposed Development (see Section 6.8.1) on the KERs identified (see Section 6.8.2).

6.8.2.1 Designated Sites and Habitats

Habitat degradation resulting from potential pollution incidents

The operational wind farm does not require on-site storage of materials or liquids likely to cause a pollution incident. Chapter 4 (Description) of the EIAR states that there will be no ground disturbing works associated with the operational phase, no natural drainage features will be altered and there will be no direct or indirect discharges to natural watercourses during the continued operation of the wind farm.

While pollution incidents could arise from staff welfare facilities, this is considered unlikely as wastewater from the staff welfare facilities in the control buildings is managed by means of an existing septic tank with no untreated foul water discharged into adjacent surface or coastal waters. The existing septic tank will continue to be maintained according to current best practice guidance and is inspected and maintained at regular intervals. Only waste collectors holding valid waste collection permits under the Waste Management (Collection Permit) Regulations, 2007 (as amended), will be employed to transport wastewater away from the site to a licensed facility. Spillages could

arise from maintenance vehicles visiting the site; however, this is also considered unlikely as all such vehicles are regularly maintained in good working condition and park on areas of hard standing away from surface water features. In addition, each vehicle carries a spill kit.

The SACs are of International value for nature conservation and would have a high sensitivity to changes in water quality. However, given the measures in place to protect water quality detailed above, in the unlikely event that a pollution incident occurred, it would be localised, small-scale, short-term, with a negligible magnitude of change. This potential impact has therefore been assessed as **not significant**.

The habitat KERs were assessed as being of local (higher) value and would have a high sensitivity to changes in water quality. However, given the measures in place to protect water quality detailed above, in the unlikely event that a pollution incident occurred, it would be localised, small-scale, short-term, with a negligible magnitude of change. This potential impact has therefore been assessed as **not significant**.

A Natura Impact Statement (NIS) has been carried out for the Proposed Development (RSK Biocensus, 2021). The NIS concludes that there would be no adverse effects on the integrity of the European sites considered in the assessment as a result of the continued operation of the wind farm.

6.8.2.2 Bats

Avoidance of foraging areas and or commuting routes

The bat activity surveys recorded bats foraging and commuting across the site, which indicates that the presence of the existing wind farm is not preventing bats using the site. Furthermore, as no suitable roost features were identified within the site, the presence of the wind farm would not be preventing access to current/potential roost sites.

Bats were assessed as being of local (higher) value. Given that there is evidence that bats are using the existing wind farm site, and that there are large areas of suitable foraging habitat in the surrounding area, any avoidance effect associated with the extension to the operation of the wind farm (although long-term), is likely to be localised, small-scale, with a negligible magnitude of change. This potential impact has therefore been assessed as **not significant**.

Mortality due to collision with wind turbines

There is always an inherent risk of bat species colliding with turbines and barotrauma (damage to tissues from air pressure changes around turbines). Carcass surveys undertaken in 2020 did not identify any bat casualties.

Bats were assessed as being of local (higher) value. Given that the activity surveys have confirmed that bats are using the site following almost 20 years of being operational; the lack of bat casualties recorded would suggest that although some undetected bats may have been killed due to collisions with turbines, mortality due to the proposed extension to the operational phase of the wind farm is likely to be localised, small-scale, with a small magnitude of change. This potential impact has therefore been assessed as **not significant**.

Cumulative Effects

The potential for the Proposed Development to contribute to in-combination effects in relation to other plans and projects within 15km was assessed. Tables 6-6 and 6.7 list the projects and plan policies that were considered, along with other small residential developments (not listed below).

Table 6-6 Development proposals included in the in combination assessment

Development	Distance from Proposed Development
WCC caravan park at Castlepalister; Wexford County Council Planning Ref: 20210655.	1.7km
Granted development at Rosslare Harbour; Wexford County Council planning ref: 20200725.	7.8km
Granted solar PV energy developments at Ballycarran; Wexford County Council planning ref: 20160008; and, 20160009.	8km
Granted solar PV energy development at Ballykereen; Wexford County Council planning ref: 20160644.	8.3km
Proposed solar PV energy development at Ballycarran; Wexford County Council planning ref: 20210793.	8.6km
Granted solar PV energy development at Gardmaus Great, Mayglass; Wexford County Council planning ref: 20181768.	14.1km
Granted development for a new wastewater treatment plant in Kilmore Quay to be constructed in two phases; Wexford County Council planning ref: 20191633.	15.5km

From a review of available information for these proposed developments, it is considered that there would be no potential impact pathways associated with the solar farm developments which could give rise to likely significant in combination effects with the Proposed Development. The re-development at Rosslare Harbour includes demolition of existing port sheds and construction of new buildings as well as associated new access roads and infrastructure. The proposed new wastewater treatment works at Kilmore Quay includes new below ground pumping stations with above ground kiosks and new connecting pipelines. None of the activities associated with either of these new developments would give rise to likely significant in combination effects. Therefore, in combination effects can be scoped out of further assessment.

Table 6-7 Review of plans and policies

Plans	Information considered in the in-combination assessment
Wexford County Development Plan 2013-2019	The Wexford County Development Plan 2013-2019 sets out Wexford County Council's intentions for the future development of land, including measures for the improvement of the natural and physical environment and the provision of infrastructure. The County Council have a number of policies and objectives

Plans	Information considered in the in-combination assessment
	<p>relating to the protection, conservation and restoration natural heritage sites including specific objectives as described below:</p> <p>Objective WQ01: To protect existing and potential water resources for the county, in accordance with the EU Water Framework Directive (2000/60/EC), Bathing Water Directive (2006/7/ EC) the South-East River</p> <p>Basin Management Plan 2009-2015 and any updated version, the Pollution Reduction Programmes for designated shellfish waters, the provisions of Groundwater Protection Scheme for the county any other protection plans for water supply sources, with an aim to improving all water quality.</p> <p>Objective WQ04: To ensure that developments permitted comply with the requirements of the EU Water Framework Directive, the relevant River Basin Management Plans and the Habitats Directive.</p> <p>Objective WQ05: To ensure that development permitted would not have an unacceptable impact on water quality and quantity, including surface water, ground water, designated source protection areas, river corridors and associated wetlands, estuarine waters, coastal and transitional waters.</p> <p>Objective AQ01: To have regard to the Air Quality Standards Regulation 2011 (S.I. No. 180 of 2011) when assessing planning applications for development which may have effects on air quality.</p> <p>Objective EN01: To facilitate the achievement of a secure and efficient energy supply and storage for County Wexford.</p> <p>Objective EN02: To promote County Wexford as a low carbon county by 2019 as a means of attracting inward investment and to facilitate the development of energy sources which will achieve low carbon outputs.</p> <p>Objective EN11: To promote and facilitate wind energy development in accordance with Guidelines for Planning Authorities on Wind Energy Development (Department of Environment, Heritage and Local Government, 2006) and the Wind Energy Strategy which forms part of this Plan, subject to compliance with normal planning and environmental criteria and the development management standards contained in Chapter 18.</p> <p>Objective NH01: To conserve and protect the integrity of sites designated for their habitat/wildlife or geological/geomorphological importance and prohibit development which would damage or threaten the integrity of these sites, including SACs, cSACs.</p>
<p>County Wexford Biodiversity Action Plan 2013-2018</p>	<p>The overall aim for this Biodiversity Action Plan for County Wexford is;</p> <p>To protect County Wexford’s Biodiversity through actions and raising awareness.</p> <p>Relevant key 5 objectives of the Wexford Biodiversity Action Plan include:</p>

Plans	Information considered in the in-combination assessment
	<p>Objective 1 - To identify Biodiversity information and fill data gaps for the County, to prioritise habitats and species for protection and to inform conservation action and decision making.</p>

In relation to the plans and policies set out in Table 6-7, there are no policies within the Wexford County Development Plan or the Wexford Biodiversity Action Plan which would give rise to adverse in combination effects with the Proposed Development.

6.10 Summary

In summary, the desk-based assessment and survey work have established that the Carnsore Wind Farm comprises a diverse range of habitats which are used by several protected mammal species, including bats, which were recorded foraging and commuting. It is considered that extending the operational phase of the wind farm will not give rise to significant effects on the KERs identified (designated sites, habitats and bats), and no additional monitoring or mitigation measures are required.