Planning and Environmental Consultants

Appropriate Assessment Screening Report and Natura Impact Statement

Proposed Slievegrine Renewable Energy Development, Co. Waterford



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GLOSSARY OF TERMS

Term	Definition
Qualifying Interests	The specific habitats or species for which Special Areas of Conservation (SACs) are designated under the EU Habitats Directive
Biological Q-Rating	A scientific method used to assess water quality in rivers and streams, in Ireland; developed by the EPA
Proposed Biodiversity Enhancement Area	Area within the Site set aside exclusively to manage and enhancement biodiversity.
Special Areas of Conservation (SAC)	Designated for habitats (e.g., active raised bogs, reefs) and non-bird species (e.g., freshwater pearl mussel) listed under the EU Habitats Directive.
Special Conservation Interests	Specific species or habitats for which a site is designated as a Special Protection Area (SPA), primarily focusing on rare, vulnerable, or migratory birds, as well as wetlands
Special Protection Areas (SPA)	Designated specifically for the protection of wild birds and their habitats under the Birds Directive.

GLOSSARY OF ACRONYMS

Acronym	Definition
AASR	Appropriate Assessment Screening Report
BMEP	Biodiversity Management and Enhancement Plan
BTO	British Trust for Ornithology
DAU	Development Applications Unit
DEM	Digital Elevation Model
DTM	Digital Terrain Model
ECoW	Ecological Clerk of Works
EDNA	Environmental DNA
GWBs	Groundwater Bodies
IFI	Inland Fisheries Ireland
ITM	Irish Transverse Mercator
MS	Microsoft

MV	Medium Voltage
NIS	Natura Impact Statement
NHA	Natural Heritage Area
NPWS	National Parks and Wildlife Service
OPR	Office of the Planning Regulator
PCH	Potential Collision Height
pNHA	Proposed Natural Heritage Area
QI	Qualifying Interest
SAC	Special Area of Conservation
SCI	Special Conservation Interest
SSCO	Site Specific Conservation Objectives
SNH	Scottish Natural Heritage
SPA	Special Protection Area

1. INTRODUCTION

1.1 Background

MKO has been appointed to provide the information necessary to allow the competent authority to conduct an Article 6(3) Appropriate Assessment of the Proposed Project.

Screening for Appropriate Assessment is required under Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive). Where it cannot be excluded that a project or plan, either alone or in combination with other projects or plans, would have a significant effect on a European Site then same shall be subject to an appropriate assessment of its implications for the site in view of the site's conservation objectives. The Proposed Project is not directly connected with, or necessary for, the management of any European Site. Consequently, the Proposed Project has been subject to the Appropriate Assessment Screening process.

This Natura Impact Statement (NIS) has been prepared in accordance with:

- European Commission's Assessment of Plans and Projects Significantly affecting Natura 2000 Sites. Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC (EC, 2021)
- Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2018)
- Department of the Environment's Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DoEHLG, 2010)
- Appropriate Assessment Screening for Development Management. Office of the Planning Regulator, Dublin 7, Ireland OPR (2021).

1.1.1 References to Proposed Project

The following referencing is used within this NIS:

- The **'Proposed Project'** refers to the entire proposed development ('Proposed Wind Farm' and 'Proposed Grid Connection') for the purposes of this assessment, which is the subject of this planning application.
- The **'Proposed Wind Farm'** refers to the 23 no. turbines, meteorological mast, telecommunications relay mast, and all associated foundations and hard-standing areas, access roads and junctions, construction compounds, 33kV underground cabling, borrow pits, spoil management, site drainage, undergrounding of a section of the Dungarvan - Foxhole 38kV overhead line including associated 38kV end masts and a 38kV joint bay, biodiversity management and enhancement plan measures, tree felling and vegetation removal, operational stage signage, a 110kV onsite substation and all ancillary works and apparatus.
- The **'Proposed Turbines'** refers to the 23 no. wind turbines associated with the Proposed Wind Farm.
- The **'Proposed 110kV Substation'** refers to the 110kV onsite substation in the townland of Clashbrack within the Proposed Wind Farm site.
- The **'Proposed Grid Connection'** refers to the Proposed 220kV Loop-in Substation in the townland of Ballycullane and the Proposed 110kV Underground Cabling Route and all ancillary works and apparatus.
- The **'Proposed 220kV Loop-in Substation'** refers to the proposed 220kV loop-in substation complex and associated construction compound in the townland of Ballycullane connecting to the existing Knockraha-Cullenagh 220kV overhead line, the proposed 220kV underground cabling, 220kV end masts, screening planting, access roads and all ancillary works and apparatus.

- The **'Proposed 110kV Underground Cabling Route'** refers to the 9km of 110kV cabling route and associated joint bays connecting the Proposed 110kV Substation to the Proposed 220kV Loop-in Substation.
- The '**Site'** refers to the primary study area for this assessment, as delineated by the Red Line Boundary as shown on Figure 2-1.
- The '**Proposed Wind Farm site'** refers to the portion of the Site surrounding the Proposed Wind Farm infrastructure detailed above.
- The **'Proposed Grid Connection site'** refers to the portion of the Site excluding the Proposed Wind Farm site.

1.1.2 Statement of Authority

This report has been prepared by Julie Kohlstruck. Julie is a Project Ecologist at MKO with over six years' of professional ecological experience and holds a B.Sc. and M.Sc. in Landscape Ecology. Julie has extensive experience in ecological consultancy, conducting Ecological Impact Assessments and Stage 1 and Stage 2 Appropriate Assessment reporting for a wide range of infrastructure developments including renewable wind energy projects.

This report has been reviewed by Rachel Walsh (B.Sc., MCIEEM) of MKO. Rachel is a Senior Ecologist with over six years' experience in ecological consultancy and a full member of the Chartered Institute of Ecology and Environmental Management. Rachel has extensive experience in writing and review of Appropriate Assessment reporting, Ecological Impact Assessment and EIA inputs, and has worked widely on large scale renewable energy infrastructure projects, wastewater infrastructure projects, transport infrastructure, extractive industry and residential projects.

The Ecology Team at MKO is supported by Pat Roberts, who is a Principal Ecologist with MKO with over 20 years post graduate experience in providing ecological services in relation to a wide range of developments including renewable energy. Pat holds B.Sc.(Hons) in Environmental Science. He is currently responsible for staff development, training and ensuring that the outputs from the ecology team are of a high standard and meet the requirements of relevant legislation and guidelines. He is a full member of the Chartered Institute of Ecologists and Environmental Managers (CIEEM). Pat sits on the Irish Policy Group of the CIEEM and reviews and comments on Irish and European Policy and legislation in this capacity. He is also an assessor for CIEEM membership applications.

The baseline ecological surveys were conducted by MKO ecologists Colin Murphy (BSc., MSc.), David Mesarkick (BSc), Ciara Hackett (BSc), Nora Szijarto (BSC., MSc.), Niamh Rowan (BSc.) and Emily Fair (BSc., MSc.). All surveyors have relevant academic qualifications and are competent in undertaking habitat and ecological assessments.

Aquatic Baseline Surveys were undertaken by Niamh Rowan (B.Sc.), Aran von der Geest Moroney (B.Sc.), Mark Whelan (B.Sc., M.Sc.) of MKO. Dedicated Stage 1 and Stage 2 freshwater pearl mussel surveys were undertaken by Aran von der Geest Moroney, Kate O' Donnell (B.Sc.), Padraig Desmond (B.Sc.), Viorel Anitei (B.Sc.), Neansai O' Donovan (B.Sc.), and Pat Roberts (B.Sc., MCIEEM).

Hydrological assessments were conducted by Béhinn Anders (BSc, PhD), Colin Fitzgerald (BSc), and Henning Moe (PGeo, EurGeol).

Bird surveys were undertaken by surveyors from the Irish Ornithological Survey Group (IOSG): Aidan Duggan, Cian Cardiff, Joe Proudfort, John Deasy, John Hehir, John Murphy, Kevin Collins, Laura Hynes, Mark Shorten, Noel Linehan, Paul Archer, Páidí Cullinan, Sean Dundon and Stan Nugent. and by MKO surveyors Conor Berney, Donal Moriarty and Andrew McCarthy.

1.2 Appropriate Assessment Process

Screening - The purpose of the screening stage is to determine, on the basis of a preliminary assessment and objective criteria, whether a plan or project, either alone or in combination with other plans or projects, is likely to have significant effects on a European site in view of the site's conservation objectives.

There is no necessity to establish such an effect; it is merely necessary for the Competent Authority to determine that there may be such an effect. The need to apply the precautionary principle in making any key decisions in relation to the tests of Appropriate Assessment has been confirmed by the case law of the Court of Justice of the European Union (CJEU). Plans or projects that have no appreciable effect on a European site may be excluded. The threshold at this first stage is a very low one and operates as a trigger in order to determine whether Appropriate Assessment of a project is required. Therefore, where significant effects are likely, uncertain or unknown at screening stage, an AA of the project will be required.

Appropriate Assessment - This stage of the process is a focused and detailed examination, analysis and evaluation by the Competent Authority of the implications of the plan or project, either alone or in combination with other plans and projects, on the integrity of a European site in view of that site's conservation objectives. Case law has established that such an Appropriate Assessment, to be lawfully conducted must:

> (i) identify, in the light of the best scientific knowledge in the field, all aspects of the proposed project which may, by itself or in-combination with other plans or projects, affect the conservation objectives of the European site;
>
> (ii) contain complete, precise and definitive findings and conclusions and may not have lacunae or gaps; and
>
> (iii) may only include a determination that the proposed project will not adversely affect the integrity of any relevant European site where the competent authority decides (on the basis of complete, precise and definitive findings and conclusions) that no reasonable scientific doubt remains as to the absence of potential adverse effects. If adverse impacts can be satisfactorily avoided or successfully mitigated at this stage, so that no reasonable doubt remains as to the absence of the identified potential effects, then the process is complete. If the assessment is negative, i.e. adverse effects on the integrity of a site cannot be excluded, then the process must proceed to stage three (assessment of alternative) and, if necessary, stage four (IROPI[1]).

[1] *IROPI - 'imperative reasons of overriding public interest', the test found in Article 6(4) of the Habitats Directive.*

1.3 Scoping and Consultation

Scoping and consultation were undertaken with the relevant statutory and non-statutory organisations to inform this NIS as outlined in Table 1-1.

Table 1-1 Organisations consulted with regard to the NIS.

Consultee	Date of Response	Details of Response
Department of Agriculture, Food and the Marine (DAFM)	-	No response received to date
An Taisce	-	No response received to date
Bat Conservation Ireland	-	No response received to date
Birdwatch Ireland	-	No response received to date
Waterford County Council Environment Department	02/07/2025	An acknowledgement of the request was received, however, no comments on the scope of the EIAR have been received.
Inland Fisheries Ireland	-	No response received to date
Department of Housing, Local Government and Heritage (Development Applications Unit)	10th of October 2025	A detailed written response was received from the Department in relation to archaeology. Two meetings were held by MKO with the National Parks and Wildlife Service (NPWS) in relation to biodiversity, which are detailed in section 1.3.1 in the context of Appropriate Assessment.

1.3.1 NPWS Consultation

Members of the project team, including Environmental Scientists, Ecologists and Ornithologists met with representatives of the National Parks and Wildlife Service (NPWS) on the 22nd of January 2026 and the 14th of July 2026 to discuss the Proposed Project. The main topics discussed in the meeting included the following:

- An overview of the Proposed Project.
- Ecological surveys which have been undertaken to date and their findings.
- Ornithological surveys which have been undertaken to date and their findings.
- The Key Ecological Receptors identified at the Site.
- Proposed plans for habitat enhancement and management measures.
- Proposed drainage and construction management measures for the protection of water quality and aquatic habitats and species.

The outcome of the meeting included the following feedback and recommendations from the NPWS detailed in the sections below.

Table 1-2 NPWS Meetings and Consultation

Meeting Date	Topics	Section of report where this is addressed
22nd of January 2026	**Freshwater pearl mussel (FPM)** The NPWS stated that FPM will be a key species for assessment and request a salmonid suitability survey and lamprey at tributaries within the site. Springs, seepages and flushes should be assessed and mapped in particular around the River Licky, including smaller spring habitats beneath the forestry canopy. Wetland features within forestry should be included in the EIAR/ NIS, as they can be important for FPM. A risk characterisation should be undertaken for the site in terms of sedimentation and nutrient pollution within the site using EPA Pollution Impact Potential (PIP) maps, as glade soils with flow paths going through them are susceptible to sedimentation. This could be used for identifying construction mitigation measures as well as highlighting areas where best to avoid spoil management. NPWS recommends an ECoW to be contracted by the developer and site-specific triggers to be identified in advance, as well as the use of turbidity monitoring sondes with specific triggers.	Site-specific mitigation for water quality is provided in Section 6.2.1.1 as well as the Freshwater Pearl Mussel Management Plan in Appendix 5
	Riparian planting The NPWS encourages planting of riparian areas with cognisance of PIP mapping, and sedimentation studies. Springs, seepages and flushes should be avoided in replanting areas. The fencing off of watercourses to avoid impacts through agriculture is encouraged.	Proposed planting measures and fencing measures are outlined in the BMEP (Appendix 3)
14th of July 2026	**Riparian planting** Following recommendations from the first NPWS meeting, the site selected for riparian planting was selected following a PIP assessment of the Site. The selection was discussed with NPWS and it was noted to assess the area for species rich grassland which would be unsuitable for planting. In relation to tree planting, it was noted that, while 3m x 3m planting and allowing the ground floor to colonise is good in principle, the grassland may be fertile which will encourage bramble growth, therefore 2m x 2m or 1.5m x 1.5m may be more appropriate.	An assessment of the existing habitat to IVC level is presented in Section 3.2.1.1.6. Planting measures are outlined in the BMEP in Appendix 3.

	NPWS recommended mechanical measures or spot spraying to manage bramble encroachment in the replanting area.	
	Hedgerow planting NPWS recommended the installation of stock proof fencing to protect the proposed hedgerow planting. Fences should be installed at least 1m from the hedging. NPWS recommended fencing of watercourses as an enhancement measure to prevent livestock poaching. Water pumps may be required if livestock are reliant on the river for water supply.	Planting measures are outlined in the BMEP in Appendix 3.
	Freshwater Pearl Mussel NPWS noted that Siltbuster should not be used with chemical dosing, in particular near the Licky River as this can change the pH of the river. NPWS referred to the guidance document from Evelyn Moorkens, NPWS, on FWPM. In high risk areas for FWPM, there should be a list of triggers established when the construction works commence. This shouldn't just be seasonal as the weather can be unpredictable. Triggers should be specific to the site which is overseen by the ECoW who is working for the developer and not the contractor. Contingency measures should also be identified, and a threshold figure should also be identified in relation to turbidity monitoring.	Site-specific mitigation and monitoring are provided in the Freshwater Pearl Mussel Management Plan, Appendix 5.
	Bird Species NPWS noted that cumulative assessment should be done for all proposed and built wind farms within core foraging ranges of identified bird species, as well as potential effects on collision mortality. NPWS noted that there can be a lack of data from other wind farm projects and recommended to use general information for the assessment where no data is available. NPWS recommended characterising the site in terms of site use (roosting, nesting, foraging) rather than just based on flyovers when considering the collision risk modelling, e.g., if there is an area near to a known roost and it was a feeding site, this would be a higher risk site to a site where birds might come in intermittently. In addition, if there is connectivity with a colony, then the colony should be used as the reference population. Assume that the colony is connected with the SPA, if there is any uncertainty.	Assessment of the potential for adverse effects on relevant SCI bird species are provided in Sections 6.1.1.1, 0, 6.2.2.2, and a cumulative collision risk assessment is provided in Sectuion 1

1.4 Methodology

The following sections describe the methodologies followed to establish the baseline ecological condition of the site and surrounding area.

1.4.1 Desk Study

The desk study undertaken for this assessment included a thorough review of the available ecological data associated with the screened-in European Sites within the likely zone of impact of the Proposed Project. Sources of data included the following:

- Review of NPWS Conservation Objectives supporting documents, site synopsis, standard data forms and supporting documents for European Designated Sites,
- Review of online web-mappers: National Parks and Wildlife Service (NPWS), Environmental Protection Agency (EPA),
- Review of the publicly available National Biodiversity Data Centre (NBDC) web-mapper,
- Review of NPWS Article 17 metadata and GIS database.

1.4.2 Field Surveys

1.4.2.1 Multidisciplinary Walkover Surveys

Multidisciplinary walkover surveys were undertaken on the following dates:

- 19th November 2024
- 5th December 2024
- 14th January 2025
- 23rd January 2025
- 27th August 2025
- 28th August 2025
- 5th May 2026
- 6th May 2026
- 7th May 2026

Habitat and botanical surveys were undertaken within the recognised optimum period for vegetation surveys/habitat mapping, i.e. April to September (Smith *et al.*, 2011). The walkover surveys are designed to detect the presence, or likely presence, of a range of protected species and invasive species. All habitats recorded within the Proposed Project site and described in this NIS have been classified in accordance with 'A guide to Habitats in Ireland (Fossitt, 2000). Habitat mapping was undertaken with regard to guidance set out in 'Best Practice Guidance for Habitat Survey and Mapping' (Smith et al., 2011).

The multi-disciplinary walkover surveys comprehensively covered the entire Site and based on the survey findings, further detailed targeted surveys were carried out for features and locations of ecological significance. These surveys were carried out in accordance with TII *Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna* on National Road Schemes (TII, 2009).

1.4.2.2 Otter Surveys

Otter surveys were conducted in September 2025 and May 2026, incidental records were taken during fresh water pearl mussel surveys in October 2025, adhering to best practice guidance (TII, 2009) and

CIEEM best practice competencies for species surveys[2]. All watercourses within the Proposed Wind Farm site, and along the Proposed 110kV Underground Cabling Route were identified as providing potential habitat for otter and were subject to targeted surveys for this species. This involved a search for all otter signs (e.g. spraints, scat, prints, slides, trails, couches and holts) within 150m of each survey site. Where otter signs were observed these were mapped.

1.4.2.3 Aquatic surveys

Dedicated aquatic baseline surveys were undertaken by MKO in September and October 2025, and May 2026. The baseline assessment focused on aquatic ecology including fisheries and biological water quality, as well as protected aquatic species and habitats in the vicinity of the Proposed Wind Farm. Undertaken on a catchment-wide scale, the baseline surveys focused on the detection of freshwater habitats and species of high conservation value. These included surveys for white-clawed crayfish (*Austropotamobius pallipes*), freshwater pearl mussel (*Margaritifera margaritifera*) (eDNA only), macro-invertebrates (biological water quality) and fish species, inclusive of supporting nursery and spawning habitat. The surveys also documented macrophyte and aquatic bryophyte communities including Annex I habitat associations in the vicinity of the project. This holistic approach informed the overall aquatic ecological evaluation of each site in context of the Proposed Project and ensured that any habitats and species of high conservation value would be detected. Details of the locations of survey sites is shown in Figure 1-1. Full details of the methodology followed for the aquatic surveys is provided in the Aquatic Baseline Report, Appendix 1.

1.4.2.3.1 *Aquatic Baseline Study Area*

The aquatic baseline Study Area consists of the Water Framework Directive (WFD) hydrological catchments and subcatchments in which the Proposed Project is located, and the freshwater habitats therein. Focus has been placed on those watercourses which interact directly with the Proposed Project, and those watercourses which are located upstream and downstream of the Proposed Project. Therefore, the Study Area is defined as follows:

The aquatic ecology Study Area consists of freshwater habitats located within the Proposed Project, as well as freshwater habitats within select watercourses located upstream and downstream of the Proposed Project, as shown in (Figure 1-1).

A total of nineteen survey locations were selected across EPA watercourses for assessment within the Study Area (Figure 1-1) relating to Proposed Wind Farm infrastructure. Fourteen of these survey locations were located within the Goish subcatchment (EPA ID: 18_27), which is situated within the wider WFD Blackwater (Munster) catchment. Five of the survey sites were located within the Colligan subcatchment (EPA ID: 17_6), situated within the WFD Colligan-Mahon catchment.

The two EPA mapped watercourse crossings associated with the Proposed Grid Connection infrastructure were surveyed as part of the aquatic ecology Study Area. These survey sites were located within the Goish subcatchment (EPA ID: 18_27). Eight watercourse crossings located within the Proposed Wind Farm site were also surveyed as part of the Study Area. A summary of aquatic surveys undertaken is provided below:

1.4.2.3.2 *River Habitat Assessment*

Aquatic habitat assessments were undertaken in order to determine the riverine habitat types present at each of the survey locations within and in the vicinity of the Site. The survey design and methodologies

[2] *CIEEM, 2013, Technical Guidance Series – Competencies for Species Survey: Otter, Online, Available at: https://cieem.net/wp-content/uploads/2019/02/CSS-EURASIAN-OTTER-April-2013.pdf*

were derived from current ecological best practice guidance documents. Habitats were classified in accordance with the national habitat classification system used in Ireland - A Guide to Habitats in Ireland (Fossitt, 2000).

Riverine habitat assessments were conducted utilising elements of the following methodologies and literature to characterise the selected sites along the watercourse:

- Environment Agency's *'River Habitat Survey in Britain and Ireland Field Survey Guidance Manual 2003'* (EA, 2003),
- *'Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes (PE-ENV-01113)'* (TII, 2009),

All sites were assessed in terms of the following variables:

- Channel width and depth.
- Bank profiles, including bank height and riparian vegetative composition.
- Substrate type, listing substrate fractions in order of dominance.
- Flow type.
- Occurrence and abundance of instream macrophytes and aquatic bryophytes (DAFOR scale).
- Water clarity and colouration.
- Riparian vegetation composition.

The survey was devised to gather ecological baseline information including any habitat features that could potentially support protected Qualifying Interest species associated with EU designated sites within the wider area. In addition, surveys considered the potential presence of problematic invasive alien species, with an emphasis on Invasive Alien Species (IAS) listed on the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. No. 374 of 2024) and Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011). The assessments have regard to the TII guidance document - The Management of Invasive Alien Plant Species on National Roads – Technical Guidance (GE-ENV-01105) (TII, 2020).

During the site visit, additional information on any other species of local biodiversity value occurring within the Site was recorded in order to provide a complete baseline understanding of the Site.

1.4.2.3.3 *Fisheries Habitat Assessment*

An assessment of the riverine habitats at each survey site was undertaken to determine the potential for watercourses within the Study Area to support fish species, including salmonids, lamprey species, and European eel, among other fish species likely to utilise watercourses within the Study Area.

Fisheries habitat assessments were conducted utilising elements of the following methodologies and literature to characterise the selected sites along the watercourse:

- Environment Agency's 'River Habitat Survey in Britain and Ireland Field Survey Guidance Manual 2003' (EA, 2003)
- Irish Heritage Council's 'A Guide to Habitats in Ireland' (Fossitt, 2000).
- Channels & Challenges. Enhancing Salmonid Rivers. Irish Freshwater Fisheries Ecology & Management Series (O'Grady, 2006)
- Life Cycle Unit method (Kennedy, 1984; O'Connor & Kennedy, 2002)
- NPWS Irish Wildlife Manuals lamprey surveys (O'Connor, 2004; O'Connor, 2006; and O'Connor, 2007)
- Evaluation of Habitat for Salmon and Trout. Department of Agriculture Fisheries Division. EU Salmonid Enhancement Programme (DOA-NI, 2005)
- Restoration of Riverine salmon habitats (Hendry, K. & Cragg-Hine, D., 1997)
- Ecology of the Atlantic Salmon, Conserving Natura 2000 Rivers (Hendry, K & Cragg-Hine, D., 2003)

- Habitat requirements of Atlantic salmon and brown trout in rivers and streams (Armstrong. J.D. et al., 2003)
- Ecology of the River, Brook, and Sea Lamprey (Maitland, 2003)
- Monitoring the River, Brook and Sea Lamprey, *Lampetra fluviatilis, L. planeri* and *Petromyzon marinus* (Harvey J. & Cowx I. 2003).
- The Eel: Biology and Management of Anguillid Eels (Tesch, F.W., 2007)

1.4.2.3.4 Electrofishing Surveys

Electrofishing operations for the purpose of forming baseline fisheries data of select sites in the vicinity of the Proposed Wind Farm site were undertaken on the 23rd, 24th, and 25th of September 2025. Electrofishing was carried out under Section 14 Licence (Section 14 Authorisation Application under Section 14 of the Fisheries (Consolidation) Act 1959, as substituted by section 4 of the Fisheries (Amendment) Act 1962).

A 5-minute timed electrofishing survey was undertaken at each of the survey sites where feasible, to determine the presence or absence of fish species within the Study Area while adhering to best practice methodology (Electric Fishing in Wadeable Reaches, Central Fisheries Board (CFB, 2008)), as well as European standards for electrofishing (CEN, 2003). Two suitably qualified ecologists conducted electrofishing operations at the electrofishing locations using an E-fish EF-500B-SYS Electric Fishing Backpack System.

Fish captured during electrofishing operations at each site were kept in a holding container with oxygenated water. Stress to fish via temperature and low oxygen levels was reduced via frequent freshwater changes and monitoring of water temperature within the holding container, ensuring temperatures of 20°C were not surpassed. All fish temporarily captured during the survey were identified to species level and measured. All fish temporarily captured were allowed to recover and subsequently returned to the watercourse in the vicinity of where they were collected.

1.4.2.3.5 Macroinvertebrate Surveys

A two-minute kick-sample and stone-wash, as well as a one-minute hand search of larger substrata or organic material (e.g., submerged tree limbs/vegetation) were performed at each of the survey sites as per methodology used by the Environmental Protection Agency (EPA) as part of the Water Framework Directive (WFD) River Monitoring Programme (Toner *et al.,* 2005).

Dislodged fauna were caught in a standard hand net (250 mm x 250 mm, 300 mm bag depth, 1 mm mesh size) situated downstream of the sampler disturbing the stream/riverbed substrate. The sampler moved upstream and across the channel while performing the kick-sample to ensure all microhabitats presents within the watercourse were surveyed. All material collected in the net was transferred via rinsing to a white heavy duty plastic tray (485 mm x 335 mm x 80 mm) filled with water for identification of macroinvertebrates in situ. Large stones and organic material within the sample such as leaves, twigs, algae or bryophytes were examined for any macroinvertebrates present and subsequently removed from the tray.

1.4.2.3.6 eDNA Surveys

The Proposed Wind Farm site is drained to the southwest by the Licky River within the wider Munster Blackwater catchment area. The Licky is part of the Blackwater River (Cork/Waterford) Special Area of Conservation [002170], with an identified population of freshwater pearl mussel *(Margaritifera margaritifera)* present within the River Licky. The Licky population is separated from the population of

freshwater pearl mussel within the main channel of the Munster Blackwater by brackish water and a hydrological distance of ~30 km. Therefore, the freshwater pearl mussel present within the Licky are listed as a distinct population (Munster Blackwater-Licky population) within the European Communities Environmental Objectives (Freshwater Pearl Mussel) S.I. No. 296/2009.

Freshwater pearl mussel are protected in Ireland under the Wildlife Acts and the Habitats Directive (92/43/EEC) where they are designated under Annex II and V. White-clawed crayfish *(Austropotamobius pallipes)* is another freshwater species occurring in Ireland that are listed under the Wildlife Acts, as well as Annex II and V of the Habitats Directive. Given the potential ecological sensitivity and legislative protection afforded to both species, environmental DNA (eDNA) surveys for freshwater pearl mussel and white-clawed crayfish were conducted at 12 of the survey sites located within the Goish_SC_010 subcatchment (Figure 1-1).

To detect populations of freshwater pearl mussel or white-clawed crayfish within the Study Area, a composite water sample was collected from the watercourse at each of the selected eDNA survey sites in September 2025 and analysed for freshwater pearl mussel and white-clawed crayfish. eDNA sampling sites were strategically chosen to maximise longitudinal (instream) coverage within the subcatchments, facilitating the likelihood of species detection. eDNA survey sites were chosen based on their location within or in the vicinity of the Proposed Project, as well as known records of freshwater pearl mussel.

Each composite (~500 ml) water sample was collected from each watercourse, with 20 x 25 ml samples taken along the watercourse, for a representative geographic spread at the site. The composite sample was filtered and fixed on site using a sterile proprietary eDNA sampling kit. The sample was stored at room temperature and sent to the laboratory for analysis following return from site. Given the high sensitivity of eDNA analysis, a single positive qPCR replicate is considered as proof of the species' presence. Whilst an eDNA approach is not currently quantitative, the detection of the target species' DNA indicates the presence of the species at and/or upstream of the sampling point.

1.4.2.3.7 Freshwater Pearl Mussel Surveys

Stage 1 and 2 freshwater pearl mussel surveys, in accordance with the *Margaritifera margaritifera* Stage 1 and Stage 2 Survey Guidelines produced by the NPWS (Irish Wildlife Manual No. 12, Anon 2004), by ecologists from MKO under license number C264/2025 from the National Parks and Wildlife Services (NPWS).

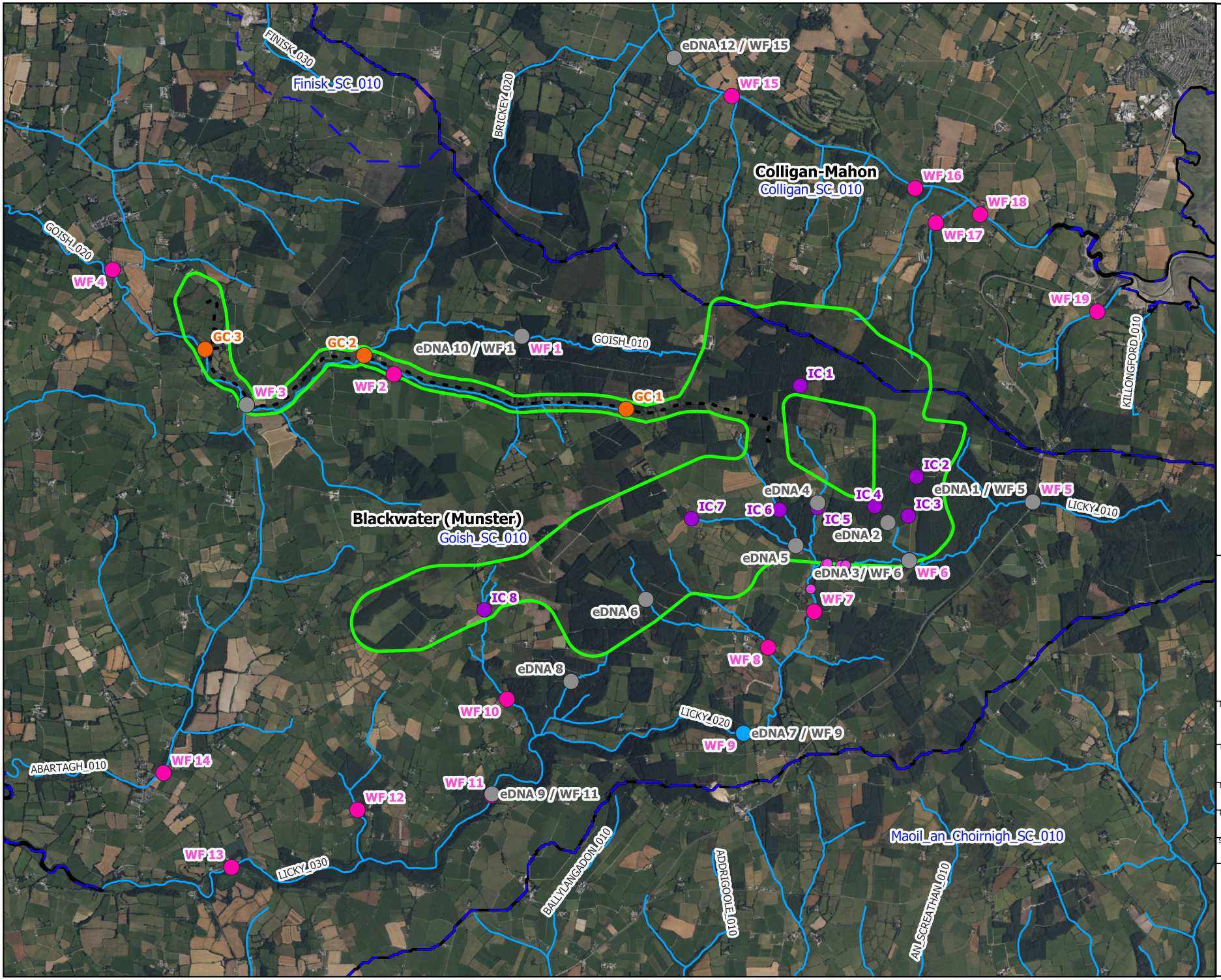
The surveys were carried out on the 16th and 17th October 2025. Four stretches of the River Licky were selected, totalling approx. 4 km in length. Survey stretches were selected based on historic NPWS records for freshwater pearl mussel, and on the location of a positive freshwater pearl mussel eDNA result along the River Licky. Stretches of Stage 1 & 2 freshwater pearl mussel survey and the location of freshwater pearl mussel eDNA surveys, including the positive eDNA result, are shown in Figure 1-1.

Survey Areas 2, 3 and 4 consisted of 500 m survey stretches of the Licky River, with one 500 m survey stretch within Survey Area 3 and 4 each, and two 500 m survey stretches within Survey Area 2. Survey Area 1, with an approximate length of 2.2 km, was surveyed in its entirety due to the importance of this area for freshwater pearl mussel based on historical freshwater pearl mussel records.

In order to determine suitable survey days a variety of meteorological websites were analysed (i.e., www.met.ie). Ideally surveys should be undertaken on sunny days, which aid and increase underwater visibility. Survey works should not be conducted during overcast days i.e. (more than 60% cloud cover) or at dawn or dusk (*Margaritifera margaritifera* Stage 1 and Stage 2 Survey Guidelines produced by the NPWS, Irish Wildlife Manual No. 12, Anon 2004). In addition, surveys should not be carried out after periods of heavy rain when there may be a high sediment loading in the river which may impair visibility. Surveys were undertaken in line with all above parameters, with no rainfall during surveys, no significant rainfall events prior to surveys, low cloud cover on average across surveys, and overall low water levels.

In accordance with the Pearl Mussel guidelines, there are no seasonal constraints with regard the timing of surveys. Survey periods are only limited to periods of suitable weather conditions with good underwater visibility. The survey was undertaken by the surveyors systematically searching the riverbed with the use of a bathyscope, working from downstream to upstream and covering all areas of the river channel. Within survey stretch 1 there were a number of areas of fallen tress across the channel. These usually caused no issues in survey effort, however in one area within the survey stretch a cluster of fallen trees prevented complete survey of a small area of watercourse (approx. 5-10 m).

Based on the above, no significant limitations to the survey were identified and it was considered that a comprehensive Stage 1 and 2 freshwater pearl mussel survey was conducted in line with the *Margaritifera margaritifera* Stage 1 and Stage 2 Survey Guidelines.



Map Legend

- EIAR Site Boundary
- Proposed 110kv Underground Cabling Route
- WFD Hydrological Catchments
- WFD Hydrological Subcatchments
- WFD River Waterbodies
- Proposed Wind Farm Survey Locations
- Proposed Grid Connection Survey Locations
- Infrastructure watercourse crossings (IC)

Initial Pearl Mussel and eDNA survey points

- Negative eDNA Results
- Positive eDNA Results
- Freshwater Pearl Mussel Surveys

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Drawing Title: Aquatic Survey Locations

Project Title: Slievegrine Renewable Energy Development, Co. Waterford

Drawn By	Checked By
JB	JK
Project No.	Drawing No.
240740	Figure 1-1
Scale	Date
1:60,000	11.09.2026

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1.4.2.4 Bird Surveys

In order to inform the scope of the bird surveys required to inform the NIS, a review was undertaken of the location of nearby Special Protection Areas and associated Special Conservation Interest (SCI) species so that the survey design would include a focus on target SCI species in addition to all species recorded for the purpose of the EIAR chapter, Chapter 7: '*Ornithology*'.

Field surveys were undertaken during the survey period October 2023 – March 2026, consisting of two breeding seasons (April – September) and three winter seasons (October – March). Vantage Point data comprises two complete breeding seasons and two complete winter seasons (April 2024–March 2026). This survey work forms the dataset for the assessment of impacts on ornithology. The data provided in the field surveys is considered robust to inform a strong assessment of the likely effects of the Proposed Project on the ornithological receptors identified. In the absence of specific national bird survey guidelines, the ornithological surveys were designed and undertaken in full accordance with the guidance document 'Recommended bird survey methods to inform impact assessment of onshore wind farms' from NatureScot (formerly Scottish Natural Heritage [SNH]) outlined in SNH (2017), which was revised in NatureScot (2025). The surveys undertaken between October 2023 and March 2026 remain consistent with the relevant recommendations of the updated guidance. Accordingly, the revision of the guidance does not affect the validity or adequacy of the survey dataset used in this assessment.

Surveys remain in accordance with the updated guidance. Bird survey locations and references are shown in Figure 1-2. A summary of surveys undertaken in relation to birds is provided below:

1.4.2.4.1 *Vantage point surveys*

Vantage point surveys were undertaken in accordance with SNH (2017) and NatureScot (2025) to monitor flight activity. The area surveyed was the Study Area. Surveys were conducted from 16 fixed vantage points. The vantage point locations were selected by undertaking a viewshed analysis (described below) and confirmed by a reconnaissance visit and initial field surveys to ensure that the proposed turbine layout was entirely covered.

Viewsheds were calculated using the Visibility Analysis plugin (Version 1.8) over a raster digital terrain model (DTM) in QGIS (Version 3.28). Note that while the relevance of being able to view as much of the site to ground level is acknowledged, the NatureScot guidance emphasises the importance of visibility of the 'collision risk volume' when the data is to be used to estimate the risk of collision with turbines by birds. Therefore, the viewshed analysis aims to identify the most suitable locations to site vantage points such that the airspace of the turbine rotor swept area is in view using the fewest possible number of vantage points. As no specific turbine model was confirmed at the outset of surveys, the viewsheds were based on a notional layer suspended 20m above the ground. The vantage point locations were tested for visibility coverage by creating a point 1.75m in height (to represent the height of the surveyor) on a map using 10m contours terrain data. The relative height of any surrounding landscape features (e.g., trees) and their effects on visibility was also accounted for in the analysis. The software produced a 360° viewshed 20m from ground level up to a 2km radius around the vantage point. This viewshed was then cropped to a 180° arc representing the area visible to the surveyor. Once the turbine dimensions were confirmed to have a lowest swept height of 20m for VP15 and VP16, 23m for VP8-VP11 and finally 25m for VP1-VP7 and VP12-VP14, the viewsheds were recalculated using a notational layer suspended at 20m, 23m and 25m for the relevant vantage points. The viewsheds provided adequate coverage of the Proposed Turbines for a collision risk assessment to be undertaken.

Survey methodology followed SNH (2017; revised in NatureScot, 2025). The surveyor collected data on bird observations and flight activity from the scanning arc of 180° to a 2km radius at the fixed vantage point locations for a minimum of 6 hours per month. Surveys were conducted from April 2024 to March 2026 inclusive and were scheduled to provide a minimum of 36 hours per winter or breeding season and spread over the full daylight period, including dawn and dusk watches, to coincide with the highest periods of bird activity (Table 1-3). The minimum of 36 hours per vantage point per season was

not achieved for some vantage points (see *Table 1-3*). However, neighbouring vantage points achieved coverage of some of these areas over these time periods.

Table 1-3 Vantage point survey duration

Survey Season and Number of Vantage Points	Effort per Vantage Point
Breeding Season 2024 (16 vantage points; VP1 to VP16)	30 hours at VP12 and VP13; 34 hours at VP16; 36 hours at VP8, VP9, VP10, VP14 and VP15; 42 hours at VP1, VP2, VP3, VP5, VP6 and VP11; 49 hours at VP4 and VP7
Winter Season 2024/2025 (16 vantage points; VP1 to VP16)	34 hours at VP2; 36 hours at VP16; 38 hours at VP10 and VP15; 39 hours at VP5, VP9, VP11 and VP14; 40 hours at VP3, VP6, VP7, VP8 and VP13; 41 hours at VP1, VP4 and VP12
Breeding Season 2025 (16 vantage points; VP1 to VP16)	38 hours at VP4; 39 hours at VP1, VP5, VP6 and VP7; 40 hours at VP2, VP3, VP10, VP12 and VP13; 41 hours at VP8, VP9, VP14 and VP15; 42 hours at VP11 and VP16
Winter Season 2025/2026 (16 vantage points; VP1 to VP16)	31 hours at VP5 and VP13; 37 hours at VP1, VP2, VP3, VP7, VP8, VP9, VP10, VP11 and VP12; 38 hours at VP4, VP6 and VP16; 39 hours at VP14 and VP15

Flight activity of target species was mapped and recorded as per defined flight bands which were chosen in relation to the dimensions of potential turbine models at the outset of surveys. Bands were split into 0-20m, 20-50m, 50-100m, 100-200m and >200m. All flight activity within a height band 20-50m, 50-100m and 100-200m is considered to be within the Potential Collision Height (PCH) with regard to the Proposed Turbines swept area. In addition, the presence of any non-target species was recorded to inform the evaluation of supporting habitat.

1.4.2.4.2 Winter transect surveys

Winter transect surveys were undertaken to record the presence of bird species within or in proximity to the Study Area. The area surveyed was the Study Area to a 500m radius, including areas between vantage point locations. The methodology was adapted from the breeding walkover methodology outlined in O'Brien and Smith (1992) and Gilbert *et al.* (1998), combined with Common Bird Census methods (British Trust for Ornithology, 2021).

Winter transect surveys were conducted in daylight hours over three to four visits between October and March. During the winter season 2023-2024, transect were conducted at four sub-sites (Drumhill, Clashbrack, Carronadavderg and Cloghraun). Drumhill was visited five times, Carronadavderg and Clashbrack were both visited three times and Cloghraun was only visited twice during this period. During the winter seasons 2024-2025, new transects were created to increase the coverage of the site. These transect were each visited three times during the winter Season 2024-2025 and four times during the winter Season 2025-2026.

Transect routes were walked across different habitat complexes within the Study Area where access allowed. All target species were recorded. In addition, the presence of any non-target species was recorded to inform the evaluation of supporting habitat.

1.4.2.4.3 Breeding transect surveys

Breeding transect surveys were undertaken to determine possible, probable or confirmed breeding bird activity within or in proximity to the Study Area. The area surveyed was the Study Area to a 500m

radius. The methodology was based on O'Brien and Smith (1992) and Gilbert *et al.* (1998), combined with Common Bird Census methods (British Trust for Ornithology, 2021) for dense habitat. Breeding transect surveys were conducted in daylight (majority of surveys were conducted between 7:00 and 15:00) over three to four visits during the breeding season months April to August.

In April 2024, transect were conducted at four sub-sites (Drumhill, Clashbrack, Carronadavderg and Cloghraun). From May 2024, new transect were created to increase the coverage of the site. During the Breeding season of 2024, two of these transect (T3 and T4) were only visited once from May 2024 to August 2024. The remaining two transect (T1 and T2) were visited twice. During the Breeding Season 2025, each new transect were visited four times during the core breeding season, with the exception of T2 that was only visited three times.

Transect routes were walked across different habitat complexes within the Study Area where access allowed. Using binoculars, the surveyor regularly scanned the surroundings of each transect for target species. All target species were recorded, and breeding status was assigned following British Trust for Ornithology (BTO) breeding status codes[3] where sufficient evidence was obtained. In addition, the presence of any non-target species was recorded to inform the evaluation of supporting habitat.

1.4.2.4.4 *Wintering golden plover survey*

Wintering golden plover surveys were conducted to provide information on golden plover abundance and distribution in relation to the Study Area. Surveys followed Gillings and Fuller (1999) guidance along with Gilbert *et al.* (1998) and Irish Wetland Bird Survey (BirdWatch Ireland, 2021) detection and count methods. Potential golden plover habitats such as lakes, rivers, bogs and large agricultural fields. Any golden plover observed at or between these sites were recorded and mapped. Surveys were conducted during the 2024/2025 and 2025/2026 winter seasons (October to March inclusive).

1.4.2.4.5 *Supplementary surveys*

Data collected between October 2023, and March 2026 form the core dataset for this assessment. During the winter season 2023/2024, vantage point surveys were also undertaken at 22 survey locations. These surveys were completed prior to a redesign of the proposed layout. Initially, IOSG identified 22 vantage points across the site. These were surveyed from October 2023 to March 2024 inclusive, covering the winter season 2023/2024. From April 2024 onwards, a revised vantage point layout comprising 16 vantage points was implemented.

Data collected on these 22 Vantage Points between October 2023 and March 2024 inclusive, are included as supplementary data in the assessment. Survey effort is presented in Appendix 9, including full details of survey dates, times and weather conditions.

[3] https://www.bto.org/our-science/projects/birdatlas/methods/breeding-evidence

615000

620000

590000

585000

N

VP1 VP2 VP3 VPa VPb VPc VP4 VPd VPe VPf VPg VPh VPi VPj VPk VPl VPm VPn VPo VP5 VP6 VP7 VP8 VP10 VP11 VP12 VP13 VP14 VP15 VP16

T01 T02 T03 T04 T05 T06 T07 T08 T09 T10 T11 T12 T13 T14 T15 T16 T17 T18 T19 T20 T21 T22 T23

TB Drumhill 2024/04
TA Drumhill 2024/04
TD Drumhill 2024/04
TC Drumhill 2024/04
TA Clashbrack 2024/04
TC Clashbrack 2024/04
TB Clashbrack 2024/04
TD Clashbrack 2024/04
T3 Carrondavderg 2024/04
T4 Carrondavderg 2024/04
T5 Carrondavderg 2024/04
T2 Carrondavderg 2024/04
T6 Carrondavderg 2024/04
T1 Cloghaun 2024/04

0 1.5 3 km

Map Legend

- Red Line Boundary
- Turbine Layout
- Vantage Point Locations
- Transect Routes

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

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SITE LOCATION - NOT TO SCALE

Drawing Title

Bird Survey Locations

Project Title

Slievegrine Renewable Energy Development

Project No.	Drawing No.	Scale
240740	1-2	1:30,000
Drawn By	Checked By	Date
JB	JK	15/09/2026

MKO
Email: info@mkoireland.ie/ Website: www.mkoireland.ie

2. DESCRIPTION OF THE PROPOSED PROJECT

2.1 Site Location

The Proposed Project made up of two distinct elements, the Proposed Wind Farm and the Proposed Grid Connection. The Site is located within a rural setting in south Waterford, approximately 5km southwest of Dungarvan, Co. Waterford. The village of Clashmore is located approximately 3.1km south of the Site.

The Proposed Grid Connection includes for the Proposed 110kV Underground Cabling Route from the Proposed 110kV Substation, in the townland of Clashbrack, Co. Waterford, to the Proposed 220kV Loop-in Substation in the townland of Ballycullane, Co. Waterford. The Proposed 110kV Underground Cabling Route measures approximately 9km in length and is located primarily within the curtilage of the public road corridor with two sections (approximately 0.2km and 0.6km) being located within track across private land.

2.2 Characteristics of the Proposed Project

The Proposed Project will consist of the provision of the following:

i. *23 no. wind turbines of varying dimensions, a meteorological mast and a telecommunications relay mast as follows:*
    a. *6 no. wind turbines with an overall turbine tip height of 185 metres, a rotor blade diameter of 162 metres, and turbine hub height of 104 metres;*
    b. *15 no. wind turbines with an overall turbine tip height of 175 metres, a rotor blade diameter of 150 metres, and turbine hub height of 100 metres;*
    c. *2 no. wind turbines with an overall turbine tip height of 170 metres, a rotor blade diameter of 150 metres, and turbine hub height of 95 metres;*
    d. *A meteorological mast with a height of 80 metres and a telecommunications relay mast with a height of 30m;*
ii. *Associated wind turbines, meteorological mast and telecommunications relay mast foundations and hardstanding areas;*
iii. *A 220kV loop-in substation compound (Including control buildings (with a combined floor area of 644Sq.m) with welfare facilities, all associated electrical plant and apparatus, security fencing, underground cabling, lightning protection poles and underground wastewater holding tank), with 220kV underground cabling connecting to 2 no. lattice-type end masts with a height of 21.5 metres to facilitate a 'Loop-in' connection to the existing 220kV Knockraha-Cullenagh overhead electricity transmission line, establishment of screening planting, all within the townland of Ballycullane;*
iv. *A 110kV substation compound (Including control buildings (with a combined floor area of 644Sq.m) with welfare facilities, all associated electrical plant and apparatus, security fencing, underground cabling, lightning protection poles and underground wastewater holding tank) in the townland of Clashbrack;*
v. *110kV underground cabling connection from the proposed 110kV substation in the townland of Clashbrack to the proposed 220kV loop-in substation in the townland of Ballycullane, primarily located within the public road corridor (including joint bays, communication chambers, earth sheath links, and ancillary works along the cabling route);*
vi. *The re-routing underground of a section of the existing Dungarvan-Foxhole 38kV overhead line with 2 no. lattice-type end masts (15m height) and 38kV underground cabling (including joint bay) in the townlands of Cloghraun and Carronbeg;*
vii. *Underground electrical (33kV) and communications cabling connecting the wind turbines and meteorological mast to the proposed 110kV substation;*

viii. *6 no. construction compounds (including temporary site offices and welfare facilities (with a combined floor area of 607.5 Sq.m));*
ix. *4 no. security compounds (including temporary security cabins with a combined floor area of 72 Sq.m);*
x. *Junction accommodation works to facilitate access to the site, including the provision of new and upgrade of existing entrances and junctions off the L2024, L2021, L2023, L99997 and L6082 local roads, including new permanent gated site entrances;*
xi. *Upgrade of existing site tracks/roads and provision of new site access roads, junctions and hardstand areas (including upgrade of a short section of the L99997 local road);*
xii. *5 no. borrow pits;*
xiii. *Spoil Management;*
xiv. *Biodiversity Management and Enhancement Plan measures (including establishment of a riparian planting, broadleaf woodland planting and hedgerow planting/enhancement);*
xv. *Tree felling and vegetation removal;*
xvi. *Site Drainage;*
xvii. *Operational stage site signage; and*
xviii. *All ancillary site development works and apparatus.*

This application seeks a ten-year planning permission and a 35-year operational period from the date of commissioning of the Proposed Project.

The overall layout of the Proposed Project is shown on

Figure 2-2, this includes the Proposed Wind Farm and the Proposed Grid Connection. Detailed planning drawings of the Proposed Project are shown in Appendix 2.

2.2.1 Proposed Biodiversity Management and Enhancement Plan

A Biodiversity Management and Enhancement Plan (BMEP) will be submitted as part of the Proposed Project, this is provided in Appendix 3 and includes details on the following measures:

Hedgerow Establishment

Planting of 5.5 km of native hedgerow, including approximately 1.2 km of riparian hedgerow planting. The planting will connect bat commuting routes, strengthen wildlife corridors, restrict livestock access to waterways and help intercept surface runoff. The mix will comprise about 75% hawthorn and at least four other locally native species.

Riparian Woodland Establishment

Establish 3.6 ha of native riparian woodland south of proposed Turbine T10, bordering a Licky River tributary along approximately 100m. The woodland will use native oak, alder and grey willow planted in lower densities to encourage natural regeneration of species rich ground vegetation.

Water-quality protection

Installation of stockproof fencing along watercourses where livestock poaching was recorded during surveys. Fencing will generally be positioned 1.5 metres from the top of the riverbank.

Pine marten and red squirrel habitat

Installation of two pine marten den boxes and two red squirrel nest boxes immediately after construction. Boxes will be placed on suitable mature trees away from roads, paths and planned

forestry operations. Their use, attachment and physical condition will be checked annually for five years, with replacements supervised by an ecologist where necessary.

Pollinator habitat

Allow new soil berms and embankments to recolonise naturally without pesticides, herbicides or fertilisers. Maintain selected stable, south-facing slopes as bare, compacted soil for mining solitary bees, and retain long or tussocky grass beside hedgerows from March to October for bumblebee nesting.

2.2.2 Proposed Wind Farm

Wind turbines use the energy from the wind to generate electricity. A wind turbine consists of four main components:

- Foundation unit
- Tower
- Nacelle (turbine housing)
- Rotor

The proposed wind turbines to be installed on the Proposed Wind Farm will have the following dimensions:

Table 2-1: Proposed Turbine Dimensions

Turbine ID	Tip Height (m)	Rotor Diameter (m)	Hub Height (m)
T1 - T6, T13 - T21	175	150	100
T7 - T12	185	162	104
T22 & T23	170	150	95

Modern wind turbines from the main turbine manufacturers have evolved to share a common appearance and other major characteristics. The wind turbines that will be installed on the Site will be conventional three-blade turbines, which will be geared to ensure the rotors of all turbines rotate in the same direction at all times.

The turbines will be multi-ply coated to protect against corrosion. It is proposed that the turbines would be of a light grey colour to blend into the sky background to minimise visual impact as recommended in the Guidelines and '*The Influence of Colour on the Aesthetics of Wind Turbine Generators*' (ETSU, 1999).

2.2.2.1 Turbine Foundations

Each wind turbine is secured to a reinforced concrete foundation that is installed below the finished ground level. The size of the foundation will be dictated by the turbine manufacturer, and the final turbine selection will be the subject of a competitive tender process. Different turbine manufacturers use different shaped turbines foundations, ranging from circular to hexagonal and square, depending on the requirements of the final turbine supplier. The turbine foundation transmits any load on the wind turbine into the ground. The horizontal and vertical extent of the turbine foundation will be 25m in diameter and 3 to 3.5m in depth respectively, dependant on ground conditions.

Based on site investigation work carried out at the Site, including trial pitting, it is envisaged that the following turbines will require a piled foundation:

- T8 – T12

- T14
- T21

After the foundation level of each turbine has been formed on competent stratum (i.e bedrock or subsoil of sufficient load bearing capacity), or piled foundation, the "Anchor Cage" is levelled and reinforcing steel is then built up around and through the anchor cage. The outside of the foundation is shuttered with demountable formwork to allow the pouring of concrete and is backfilled accordingly with appropriate granular fill to finished surface level.

2.2.2.2 Hard Standing Areas

Hard standing areas consisting of levelled and compacted hardcore are required around each turbine base to facilitate access, turbine assembly and turbine erection. The hard-standing areas are used to accommodate cranes used in the assembly and erection of the turbine, offloading and storage of turbine components, and provide a safe, level working area around each turbine position. The hard-standing areas are extended to cover the turbine foundations once the turbine foundation is in place. All crane hardstand areas will be designed taking account of the loadings provided by the turbine manufacturer and will consist of a compacted stone structure. The crane hardstands will be constructed in a similar manner to the excavated site roads. The main body of the crane hardstands (i.e. not including the blade fingers and turbine foundation) will be constructed in a similar manner to the excavated site roads. The main body of the crane hardstand area will measure approximately 35m x 55m.

The extent of the required areas at each turbine location may be optimised on-site depending on topography, position of the Proposed Wind Farm site access road, the Proposed Turbine position and the turbine supplier's exact requirements.

A temporary works area has been identified around each of the Proposed Turbines hardstand areas; these areas will be utilised during the construction phase to facilitate all works with the construction of the Proposed Turbines and associated infrastructure.

2.2.2.3 Site Access Roads

To provide access within the Proposed Wind Farm site and to connect the wind turbines and associated infrastructure, existing roads and tracks will need to be upgraded, and new access roads will need to be constructed. The road construction design has taken into account the following key factors:

1. Buildability considerations;
2. Making use of existing infrastructure where possible;
3. Minimising excavation arisings;
4. Serviceability requirements for construction and wind turbine delivery and maintenance vehicles;

Whilst the above key factors are used to determine the road design the actual construction technique employed for a particular length of road will be determined on the prevailing ground conditions encountered along that length of road.

The Proposed Wind Farm site makes use of the existing road network insofar as possible. It is proposed to upgrade approximately 8.7 kilometres of existing roads and tracks, and to construct approximately 12.2 kilometres of new access road on the Proposed Wind Farm site. It is proposed to construct passing bays along the proposed access road network in order to allow construction traffic to safely pass each other while travelling in opposite directions. Areas such as wide junctions and proposed hardstands will also be used as passing bays throughout the construction phase of the Proposed Wind Farm site.

Construction of New Roads

As noted above, approximately 12.2km of new roads will be constructed in order to facilitate the Proposed Wind Farm. Due to the ground conditions, new access tracks proposed on site are proposed to be founded and located on competent stratum. The make-up of the founded access tracks is a stone thickness of c. 500mm.

Upgrade of Existing Access Roads or Tracks

As noted above, approximately 8.7km of existing roads and access tracks will be upgraded as part of the Proposed Wind Farm construction phase. The existing tracks onsite were constructed using the excavate and replace construction technique, therefore proposed road widening will be founded on competent stratum.

2.2.2.4 Underground Electrical (33kV) and Communications Cabling

Each turbine and the meteorological mast will be connected to the Proposed 110kV Substation via underground 33 kV electricity cabling. Fibre-optic cables will also connect each wind turbine and the met mast to the Proposed 110kV Substation. The electricity and fibre-optic cabling connecting to the Proposed 110kV Substation compound will be run in cable ducts approximately 1.2 metres beneath ground level, along the sides of roadways and/or under the roadways. The route of the cable ducts will follow the access track to each turbine location. The exact configuration of the underground cabling will be set by the requirements of the electrical designers at detailed design stage. Any existing services will be avoided.

Clay plugs (water flow barrier) will be installed at regular intervals of not greater than 50 metres along the length of the trenches where required to prevent the trenches becoming conduits for runoff water. Backfill material will be compacted in layers with approved engineer's specified material, which may be imported onto the Proposed Wind Farm site should sufficient volumes of suitable material not be encountered during the excavation phase of the proposed infrastructure.

2.2.2.5 Meteorological Mast

One meteorological (met) mast is proposed as part of the Proposed Wind Farm. The met mast will be equipped with wind monitoring equipment at various heights. The proposed met mast will be located at E619043, N586963 (ITM). The met mast will be a free-standing slender lattice structure 80 metres in height. It will be constructed on a hard-standing area sufficiently large to accommodate the equipment that will be used to erect the mast.

2.2.2.6 Telecommunications Relay Mast

One telecommunications relay mast is proposed as part of the Proposed Wind Farm. The telecommunications relay mast will be equipped with a telecommunications dish which will function to relay 2 no. telecommunications signals. The proposed telecommunications relay mast will be located at E620855, N589081 (ITM). The telecommunications relay mast be a free-standing slender lattice structure 30 metres in height. It will be constructed on a hard-standing area sufficiently large to accommodate the equipment that will be used to erect the mast

2.2.2.7 Construction Compounds

Five construction compounds will be located within the Proposed Wind Farm site. The construction compounds will consist of temporary site offices, staff facilities and car-parking areas for staff and visitors. Temporary port-a-loo toilets and toilets located within a staff portacabin will be used during the construction phase. Wastewater from staff toilets will be directed to a sealed storage tank, with all

wastewater being tankered off site by permitted waste collector to wastewater treatment plants. There will also be a water supply on site for hygiene purposes, by way of a temporary storage tank. The construction compound will also include a bunded refuelling and containment area for the storage of oil, lubricants and site generators etc, and full retention oil interceptor.

2.2.2.8 Security Compounds

Four security compounds are proposed throughout the Proposed Wind Farm site at multiple entrance points, all of which are 72.025m^2 (6m x 12m). These compounds will contain an 18m^2 security cabin and only be required during the operational phase of the Proposed Project.

2.2.2.9 Watercourse/Culvert Crossings

The Proposed Wind Farm site is extensively drained by a network of natural watercourses and manmade land drains. The majority of watercourses and manmade drains at the Proposed Wind Farm site drain into the River Licky which flows southwesterly through the southern part of the Site. In addition, multiple streams flow north of the Proposed Wind Farm site in an northerly direction, joining the River Brickey downstream, which flows easterly towards Dungarvan Bay. There is no infrastructure proposed within 165m of the any of these watercourses.

To facilitate the construction of the Proposed Wind Farm roads, 4 no. EPA mapped watercourse crossings are required. The following methodologies will be used:

- Bottomless box culvert
- Clear Span watercourse crossing
- Flatbed over existing watercourse crossing

In addition to the natural watercourses, there are manmade agricultural and forestry drains within the Proposed Wind Farm site, which will rerouted around the Proposed Wind Farm infrastructure and/or integrated into the proposed drainage design as required.

2.2.2.9.1 *Bottomless Box Culverts*

It is proposed to construct a bottomless box culvert crossing at 2 no. locations where new watercourse crossings are required within the Proposed Wind Farm site. The construction methodology for these crossings has been designed to eliminate the requirement for in-stream works at these locations. The watercourse crossings will be constructed to the specifications of the Office of Public Work (OPW) bridge design guidelines 'Construction, Replacement or Alteration of Bridges and Culverts - A Guide to Applying for Consent under Section 50 of the Arterial Drainage Act, 1945', and in consultation with Inland Fisheries Ireland (IFI).

Abutments will be constructed from precast units combined with in-situ foundations, placed within an acceptable backfill material. Confirmatory inspections of the proposed new watercourse crossing locations will be carried out by the Project Civil/Structural Engineer and the Project Hydrologist prior to the construction of the crossing.

2.2.2.9.2 *Clear Span Crossing*

It is proposed to construct a new clear span crossing at no. 1 location where new watercourse crossings are required within the Proposed Wind Farm site. The construction methodology for these crossings have been designed to eliminate the requirement for in-stream works at these locations. The watercourse crossings will be constructed to the specifications of the OPW bridge design guidelines 'Construction, Replacement or Alteration of Bridges and Culverts - A Guide to Applying for Consent under Section 50 of the Arterial Drainage Act, 1945', and in consultation with Inland Fisheries Ireland.

For the 1 no. clear span crossing proposed, abutments will be constructed from precast units combined with in-situ foundations, placed within an acceptable backfill material. Confirmatory inspections of the proposed new watercourse crossing locations will be carried out by the Project Civil/Structural Engineer and the Project Hydrologist prior to the construction of the crossing.

2.2.2.9.3 *Culvert Crossing*

All new proposed culverts and proposed culvert upgrades at field drain crossings required for the Proposed Wind Farm will be suitably sized for the expected peak flows in the drains.

Some culverts may be installed to manage drainage waters from works areas of the Proposed Wind Farm, particularly where the waters have to be taken from one side of an existing roadway to the other for discharge. The size of culverts will be influenced by the depth of the track or road sub-base. In all cases, culverts will be oversized to allow mammals to pass through the culvert.

2.2.2.10 38kV Underground Electrical Cabling

It is proposed to underground a 1230m section of the existing Dungarvan-Foxhole 38kV overhead line (OHL) to facilitate the Proposed Wind Farm. The route for the 38kV underground electrical cabling will be installed within a new access track across agricultural lands.

The existing 38kV OHL will be broken by two new 15m tall end masts (lattice-type towers) to facilitate the underground cabling and Proposed Wind Farm construction.

2.2.2.11 38kV End Masts

As discussed above, it is proposed to reroute the Dungarvan-Foxhole 38kV OHL. Two proposed 38kV end masts (lattice type towers) will be located immediately beneath the existing 38kV OHL. These masts will be 15m in height. The existing 38kV OHL conductor will be terminated at these end masts to facilitate the proposed underground section.

2.2.2.12 38kV Joint Bays

There is 1 no. joint bay proposed along the 38kV underground electrical cabling route.

2.2.2.13 Proposed 110kV Substation

It is proposed to construct a 110kV electricity substation within the Proposed Wind Farm site. The Proposed 110kV Substation is located within a forestry block and will be accessed via an existing forestry access junction off the L-2024 connected to the Proposed Wind Farm access roads.

The footprint of the Proposed 110kV Substation compound measures approximately 9,148 square metres in area and will include 2 no. control building, staff parking facilities and all electrical substation components necessary to consolidate the electrical energy generated by each wind turbine, and export that electricity from the Proposed 110kV Substation to the national grid. The construction and exact layout of electrical equipment in the Proposed 110kV Substation will be to ESB Networks specifications.

The Proposed 110kV Substation compound will include steel palisade fencing (approximately 2.6 metre high or as otherwise required by ESB), and internal fences will also segregate different areas within the main substation.

The Proposed 110kV Substation will remain in place after the operational phase of the Proposed Wind Farm as it will be under the ownership and control of the ESB Networks and will form a permanent part of the national electricity grid.

2.2.2.13.1 *Substation Control Buildings*

Two control buildings will be located within the Proposed 110kV Substation compound. The Independent Power Producer (IPP) Control Building will measure approximately 18.1 metres by 10.7 metres and 6 metres in height. It will be located at the southern edge of the Proposed 110kV Substation compound. The EirGrid Control Building will be located towards the centre of the Proposed 110kV Substation compound and will measure approximately 25 metres by 18 metre and 7 metres in height.

The control buildings will include staff welfare facilities. Toilet facilities will be installed with a low-flush cistern and low-flow wash basin. Due to the specific nature of the Proposed 110kV Substation, there will be a very small water requirement for occasional toilet flushing and hand washing, and therefore a potable water source is not required. It is proposed to either harvest rainwater from the roofs of the buildings or, alternatively, install a groundwater well adjacent to the Proposed 110kV Substation in accordance with the Institute of Geologists Ireland, Guide for Drilling Wells for Private Water Supplies (IGI, 2007). The well will be flush to the ground and covered with a standard manhole. A pump house is not required as an in-well pump will direct water to a water tank within the roof space of the control building. Bottled water will be supplied for drinking, if required.

It is not proposed to treat wastewater on site. Wastewater from the staff welfare facilities in the control buildings will be managed by means of a sealed storage tank, with all wastewater being tankered off site by permitted waste collector to a licenced wastewater treatment plant.

Such a proposal for managing the wastewater arising on site has become almost standard practice on wind farm sites, which are often proposed in areas where finding the necessary percolation requirements for on-site treatment would be challenging and has been accepted by numerous Planning Authorities and An Coimisiún Pleanála as an acceptable proposal.

The proposed wastewater storage tank will be fitted with an automated alarm system that will provide sufficient notice that the tank requires emptying. Full details of the proposed tank alarm system can be submitted to the Planning Authority in advance of any works commencing on-site. The wastewater storage tank alarm will be part of a continuous stream of data from the Proposed Wind Farm turbines, wind measurement devices and Proposed 110kV Substation that will be monitored remotely 24 hours a day, 7 days per week. 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 Proposed 110kV Substation underground storage tank.

2.2.3 Proposed Grid Connection

2.2.3.1 Proposed 110kV Underground Cabling Route

It is proposed to connect the Proposed 110kV Substation to the Proposed 220kV Loop-in Substation in the townland of Ballycullane, Co Waterford via 110kV underground electrical cabling. The 110kV Underground Cabling Route as illustrated in Figure 2-2, is approximately 9km in length and located primarily within the public road corridor, with a short section (approximately 288m) located within a private forestry road west of the Proposed 110kV Substation and another short section (approximately 788m) being located within proposed new access roads through agricultural pastures in the townlands of Graigue and Ballycullane. 13 joint bays are required along the Proposed 110kV Underground Cabling Route.

The Proposed 110kV Underground Cabling Route will originate at the Proposed 110kV Substation and run north for approximately 305m through an existing site road towards the L2024 local road. The Proposed 110kV Underground Cabling Route continues underneath the L2024 local road network for approximately 1.55km before following the L2021 west for approximately 5.2km. The Proposed 110kV Underground Cabling Route then follows the R671 regional road north for 900m before entering the

L99997 local road for approximately 180m, traversing through agricultural pastures for approximately 788m before connecting into the Proposed 220kV Loop-in Substation.

2.2.3.2 110kV Joint Bays

There are 13 no. joint bays proposed along the Proposed 110kV Underground Cabling Route, approximately 600 to 800 metres apart or as otherwise required by Eirgrid/ESBN and electrical requirements.

2.2.3.3 Proposed 220kV Loop-in Substation

It is proposed to construct a 220kV electricity substation within the townland of Ballycullane, as shown in Figure 2-2. The Proposed 220kV Loop-in Substation is located within agricultural pastures and will be accessed via a new proposed site entrance off of the L99997 local road in the townland of Graigue.

The footprint of the Proposed 220kV Loop-in Substation compound measures approximately 23,211 square metres in area and will include 2 no. control building, staff parking facilities and all electrical substation components necessary to export the electricity imported from the Proposed 110kV Substation to the national grid. The construction and exact layout of electrical equipment in the Proposed 220kV Loop-in Substation will be to ESBN/EirGrid specifications.

The Proposed 220kV Loop-in Substation compound will include steel palisade fencing (approximately 2.6 metre high or as otherwise required by ESB), and internal fences will also segregate different areas within the main substation.

The Proposed 220kV Loop-in Substation and 220kV underground electrical cabling will remain in place after the operational phase of the Proposed Wind Farm as they will be under the ownership and control of the ESB Networks and will form a permanent part of the national electricity grid.

2.2.3.3.1 *Substation Control Buildings*

Two control buildings will be located within the Proposed 220kV Loop-in Substation compound. Control Building 1 (Generator Side) will measure approximately 18.1m metres by 10.7 metres and 6 metres in height. It will be located at the eastern edge of the Proposed 220kV Loop-in Substation compound. Control Building 2 (Transmission Side) will be located towards the western side of the Proposed 220kV Loop-in Substation compound and will measure approximately 25 metres by 18 metre and 7 metres in height.

The control buildings will include staff welfare facilities. Toilet facilities will be installed with a low-flush cistern and low-flow wash basin. Due to the specific nature of the Proposed 220kV Loop-in Substation, there will be a very small water requirement for occasional toilet flushing and hand washing, and therefore a potable water source is not required. It is proposed to either harvest rainwater from the roofs of the buildings or, alternatively, install a groundwater well adjacent to the Proposed 220kV Loop-in Substation in accordance with the Institute of Geologists Ireland, Guide for Drilling Wells for Private Water Supplies (IGI, 2007). The well will be flush to the ground and covered with a standard manhole. A pump house is not required as an in-well pump will direct water to a water tank within the roof space of the control building. Bottled water will be supplied for drinking, if required.

It is not proposed to treat wastewater on site. Wastewater from the staff welfare facilities in the control buildings will be managed by means of a sealed storage tank, with all wastewater being tankered off site by permitted waste collector to a licenced wastewater treatment plant.

Such a proposal for managing the wastewater arising on site has become almost standard practice on

wind farm sites, which are often proposed in areas where finding the necessary percolation requirements for on-site treatment would be challenging and has been accepted by numerous Planning Authorities and An Coimisiún Pleanála as an acceptable proposal.

The proposed wastewater storage tank will be fitted with an automated alarm system that will provide sufficient notice that the tank requires emptying. Full details of the proposed tank alarm system can be submitted to the Planning Authority in advance of any works commencing on-site. The wastewater storage tank alarm will be part of a continuous stream of data from the Proposed 220kV Loop-in Substation that will be monitored remotely 24 hours a day, 7 days per week. 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 Proposed 220kV Loop-in Substation underground storage tank.

2.2.3.3.2 *220kV Underground Electrical Cabling*

It is proposed to construct a 220kV underground cabling connection between the Proposed 220kV Loop-in Substation and the existing 220kV Knockraha to Cullenagh overhead line (OHL). The route for the 220kV underground electrical cabling will be approximately 564m long and within proposed new roads adjacent to the Proposed 220kV Loop-in Substation.

The existing 220kV OHL will be broken by two new end masts (lattice-type towers) 21.5 metres in height, to facilitate the connection to the Proposed 220kV Loop-in Substation via the 220kV underground electrical cabling. The 220kV underground electrical cabling route will consist of two cable trenches, and once constructed, electricity on the Knockraha-Cullenagh 220kV OHL will be transmitted through the Proposed 220kV Loop-In Substation, hence the 'loop-in/loop-out' configuration of the substation.

2.2.3.3.3 *220kV End Masts*

It is proposed to connect the Proposed 220kV Loop-In Substation to the existing 220kV Knockraha-Cullenagh OHL. Two proposed 220kV end masts (lattice type towers) will be located immediately beneath the existing 220kV OHL. The existing 220kV OHL conductor will be terminated at these end masts to facilitate a new OHL loop connection following the proposed 220kV underground electrical cabling route leading to and out of the Proposed 220kV Loop-In Substation.

2.2.3.4 Site Roads

To provide access to the Proposed 220kV Loop-in Substation, it is proposed to upgrade approximately 210 metres of existing roads and tracks, and to construct approximately 1315 metres of new access road on the Proposed Grid Connection site. It is considered that the existing and proposed road network will be wide enough that there will be no need to construct passing bays for the construction phase of the Proposed Grid Connection.

Construction of New Roads

As noted above, approximately 1315m of new roads will be constructed in order to facilitate the Proposed Grid Connection. Due to the ground conditions, new access tracks proposed on site are proposed to be founded and located on competent stratum. The make-up of the founded access tracks is a stone thickness of c. 500mm.

Upgrade of Existing Access Roads or Tracks

As noted above, approximately 210m of existing roads and access tracks will be upgraded as part of the Proposed Grid Connection construction phase. The existing tracks onsite were constructed using the

excavate and replace construction technique, therefore proposed road widening will be founded on competent stratum.

2.2.3.5 Construction Compound

There is 1 no. construction compound proposed as part of the Proposed Grid Connection. A construction compound measuring approximately 2,312m^2 will be located to the south of the Proposed 220kV Loop-in Substation at the approximate coordinates X 613172, Y 589937 (ITM).

The construction compound will consist of a bunded refuelling and containment area for the storage of lubricants, oils and site generators etc, and full retention oil interceptor, waste storage area, temporary site offices, staff facilities, and car-parking areas for staff and visitors. Temporary port-a-loo toilets and toilets located within a staff portacabin will be used during the construction phase. Wastewater from staff toilets will be directed to a sealed storage tank, with all wastewater being tankered off site by permitted waste collector to wastewater treatment plants. There will also be a water supply on site for hygiene purposes, by way of a temporary storage tank. The construction compounds will also include a bunded refuelling and containment area for the storage of oil, lubricants and site generators etc, and full retention oil interceptor.

All construction compound facilities will be removed as part of the post-construction reinstatement works of the Proposed Project. The construction compounds will be let naturally revegetate during the Operational Phase of the Proposed Project.

2.2.3.6 Watercourse and Service Crossings

There are 2 EPA- mapped watercourse crossings along the Proposed 110kV Underground Cabling Route. The construction methodology for the 2 no. EPA/OSI mapped has been designed to eliminate the requirement for in-stream works at these locations. There are no watercourse or service crossings required along the 220kV underground electrical cabling route. The various crossing methodologies to be employed along the Proposed 110kV Underground Cabling Route include the following:

- Type A: Crossing using standard trefoil formation
- Type B: Flatbed formation under
- Type C: Flatbed Formation over
- Type D: Horizontal Directional Drilling

2.2.3.6.1 *Crossing Using Standard Trefoil Formation Over – Option A*

Watercourses will not be directly impacted upon since no instream works or bridge/culvert alterations are proposed. Where adequate cover exists above a bridge/culvert or where a new bottomless box culvert or clear-span structure has been installed at a sufficient depth, the standard ESB approved trefoil arrangement will be used where the cable ducts pass over a culvert without any contact with the existing culvert or water course. The cable trench will pass over the culvert in a standard trench.

2.2.3.6.2 *Flatbed Formation Under– Option B*

Where cable ducts are to be installed under an existing watercourse or service crossing where sufficient cover cannot be achieved by installing the ducts in a trefoil arrangement, the ducts will be laid in a much shallower trench, the depth of which will be determined by the location of the top of the obstacle or the depth of excavatable material under it. The ducts will be laid in this trench in a flatbed formation under the existing watercourse/ service and will be encased in 6mm thick steel galvanized plate with a 35N concrete surround as per ESB Networks specification.

2.2.3.6.3 *Flatbed Formation over– Option C*

Where cable ducts are to be installed over a watercourse or service crossing where sufficient cover cannot be achieved by installing the ducts in a trefoil arrangement, the ducts will be laid in a much shallower trench the depth of which will be determined by the location of the top of the obstacle or the depth of excavatable material over it. The ducts will be laid in this trench in a flatbed formation over the existing culvert and will be encased in 6mm thick steel galvanized plate with a 35N concrete surround as per ESB Networks specification.

Where a bridge/culvert or service has insufficient cover depth to fully accommodate the required trench, the ducts can be laid in a flatbed formation partially within the existing road surface. Where this option is to be employed, the ducts will also be encased in steel with a concrete surround as per ESB Networks specifications. In order to achieve cover over these ducts and restore the carriageway of the road, it may be necessary to raise the pavement level locally to fully cover the ducts. The increased road level will be achieved by overlaying the existing pavement with a new wearing course as required. Any addition of a new pavement will be tied back into the existing road pavement at grade. After the crossing over the culvert has been achieved, the ducts will resume to the trefoil arrangement within a standard trench.

2.2.3.6.4 *Horizontal Directional Drilling – Option D*

The horizontal directional drilling method of duct installation is carried out using Vermeer D36 X 50 Directional Drill (approximately 22 tonnes), or similar plant. The launch and reception pits will be approximately 2.5mm wide, 2.5m long and 2.0m deep. The pits will be excavated with a suitably sized excavator. The drilling rig will be securely anchored to the ground by means of anchor pins which will be attached to the front of the machine. The drill head will then be secured to the first drill rod and the operator will commence to drill into the launch pit to a suitable angle which will enable him to obtain the depths and pitch required to the line and level of the required profile. Drilling of the pilot bore will continue with the addition of 3.0m long drill rods, mechanically loaded and connected into position.

During the drilling process, a mixture of a natural, inert and fully biodegradable drilling fluid such as Clear Bore™ and water is pumped through the centre of the drill rods to the reamer head and is forced in to void and enables the annulus which has been created to support the surrounding subsoil and thus prevent collapse of the reamed length. Depending on the prevalent ground conditions, it may be necessary to repeat the drilling process by incrementally increasing the size of the reamers. When the reamer enters the launch pit, it is removed from the drill rods which are then passed back up the bore to the reception pit and the next size reamer is attached to the drill rods and the process is repeated until the required bore with the allowable tolerance is achieved.

The use of a natural, inert and biodegradable drilling fluid such as Clear Bore™ is intended to negate any adverse impacts arising from the use of other, traditional polymer-based drilling fluids and will be used sparingly as part of the drilling operations. It will be appropriately stored prior to use and deployed in the required amounts to avoid surplus. Should any excess drilling fluid accumulate in the reception or drilling pits, it will be contained and removed from the site in the same manner as other subsoil materials associated with the drilling process to a licensed recovery facility.

Backfilling of launch & reception pits will be conducted in accordance with the normal specification for backfilling excavated trenches.

2.2.4 Proposed Project

2.2.4.1 Tree felling and Vegetation Removal/Replanting

Tree felling will be required within and around the Proposed Project footprint to allow for the construction of the proposed turbines, access roads underground cabling, and the other ancillary infrastructure.

Approximately 69.27 hectares of forestry will be felled to accommodate the Proposed Wind Farm and its associated infrastructure.

The forestry felling activities required as part of the Proposed Wind Farm will be the subject of a Limited Felling Licence (LFL) application to the Forest Service in accordance with the Forestry Act 2014 and the Forestry Regulations 2017 (SI 191/2017) and as per the Forest Service's policy on granting felling licenses for wind farm developments. The policy requires that a copy of the planning permission for the Proposed Wind Farm be submitted with the felling licence application; therefore, the felling licence cannot be applied for until such time as planning permission is obtained for the Proposed Wind Farm.

In addition, approximately 2.5km of hedgerows and tree lines require removal to facilitate the construction of Proposed Project infrastructure and to achieve the required Bat foraging buffers from the proposed turbines.

2.2.4.2 Borrow Pits

It is estimated that approx. 395,800m^3 of stone material will be required to construct the Proposed Project (including a 10% contingency factor). It is intended to obtain the majority of materials for the construction of the Proposed Project from the 5 no. proposed onsite borrow pits (engineer's specified material may be imported onto the Site should sufficient volumes of suitable material not be encountered during the excavation phase of the proposed infrastructure, to come from local licenced quarries).

Post-voiding of the proposed borrow pits, the borrow pits will be backfilled with excavated spoil, then reseeded or left to vegetate naturally. A stock-proof fence will be erected after construction materials have been extracted to prevent unauthorised access.

The extraction of material from the borrow pits is a construction phase activity only of the Proposed Project which will be a temporary operation run over a short period of time. Hardcore materials will be extracted from the borrow pits (and some turbine locations, if necessary), principally by means of rock breaking. Depending on the hardcore volume, blasting may also be used as a more effective rock extraction method, capable of producing significant volumes of rock in a matter of milliseconds.

2.2.4.3 Spoil Management Strategy

It is proposed to manage overburden generated through construction activities for the Proposed Project locally within the Site through the backfilling of the proposed borrow pit voids. Linear berms will be placed along access roads where appropriate.

The total estimated volume of spoil to be managed following excavations during the construction phase of the Proposed Project is approximately 425,882m^3. Most material arising from the construction of the Proposed Grid Connection underground cabling route will be temporarily stockpiled on Site and stored within the borrow pits within the Proposed Wind Farm, with the rest to be used in landscaping around the Site.

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600000 595000 590000 585000 580000 575000

N

Sruh Wood
Glenshelane Woods
Glenshelane Woods
Glenshask Woods
N72
Cappoquin
Lismore
N72
N72
Cappagh Lakes Fishing
Ballylemon Wood
Inchadrisla Wood
N72
N72
County Waterford
E-30
E-30
Bishopstown Wood
Deerpark Wood
Killahaly Wood
Villierstown
Ballinroad
Dungarvan
E-30
Aglish
E-30
Ring
E-30
Clashmore
Old Parish
Ardsallagh Wood
Ringcrew Wood
E-30
E-30
Youghal
Ardmore
E-30

0 5 10 km

Map Legend

Red Line Boundary

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

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N

SITE LOCATION - NOT TO SCALE

Drawing Title

Site Location

Project Title

Slievegrine Renewable Energy Development

Project No.	Drawing No.	Scale
240740	2-1	1:100,000
Drawn By	Checked By	Date
AMcL	MNR	27/08/2026

Email: info@mkoireland.ie/ Website: www.mkoireland.ie

615000

620000

590000

585000

N

T1 T2 T3 T4 T5 T6 T7 T8 T9 T10 T11 T12 T13 T14 T15 T16 T17 T18 T19 T20 T21 T22 T23

0 0.9 1.8 km

EIAR Site Boundary

Proposed Project

- Proposed Turbine Locations
- Proposed Telecommunications Relay Mast
- Proposed Hardstands
- Proposed Met Mast
- Proposed New Roads
- Upgrades to Existing Roads
- Proposed Borrow pits
- Construction Compounds
- Proposed 38kV Cable Track
- Proposed 38kV OHL Interface End Masts
- Proposed 38kV Underground Cable
- Proposed 110kV Substation
- Proposed 110kV Underground Cabling Route
- Proposed 220kV End Masts
- Proposed 220kV Loop-in Substation
- Proposed 220kV Underground Grid Connection Route
- Proposed Hedgerow Planting (5.5km)
- Proposed Native Woodland Planting (3.6ha)
- Proposed Screening Planting

Overhead Line

- Existing Knockraha-Cullenagh 220kV Overhead Line

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

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EIAR Site Boundary - NOT TO SCALE

Drawing Title: Proposed Project

Project Title: Slievegrine Renewable Energy Development

Project No.	Drawing No.	Scale
240740	2-2	1:30,000
Drawn By	Checked By	Date
SOR	NS	06/10/2026

MKO
Email: info@mkoireland.ie/ Website: www.mkoireland.ie

3. CHARACTERISTICS OF THE RECEIVING ENVIRONMENT

3.1 Regional and Local Hydrology and Hydrogeology

The following summary of the local hydrology and hydrogeology in the vicinity of the Proposed Project is provided below, as extracted from Chapter 9 of the EIAR: Water.

3.1.1 Proposed Project

3.1.1.1 Regional hydrology

On a regional scale, the majority of the Site is located within the headwaters of the WFD Catchment 18 Blackwater (Munster) and a small section to the north of the Site is in WFD Catchment 17 Colligan-Mahon. The majority of the Site lies within sub-catchment Goish_SC_010 and a small section to the north is in the Colligan_SC_010 Sub Catchment, as defined under the Water Framework Directive (WFD).

3.1.1.2 Local hydrology

The headwaters of the Goish, and its tributary Monagally East originate within the Site boundary. Both of these rivers flow west before merging at Monageela/Lisgriffin. The Goish continues to flow northwest before it enters the Backwater just south of Villierstown. The Proposed 110kV Underground Cabling Routefollows the Goish for approximately 7.5 km.

The Licky originates at higher elevation approximately 3 km to the East of the Site. The Licky flows along the southern section of the Site and is fed by a series of rivers originating as springs/rises. The headwaters of these rivers originate within the Site and are listed from upstream to downstream; An Chúil Rua; Clashbrack (and its tributaries Knocknahoola and Carronahyla); Móin an mBian (and its tributary Drumslig); Moyny; and Carronadavderg. The Licky continues to flow west into the Blackwater before entering the Sea at Youghal.

In the Colligan-Mahon Catchemnt the Twomile Bridge River originates within the Site. This river flows north into the River Brickey which continues to flow eastward before entering the sea at Dungarvan.

Locally, the majority of the Site occupies the southern slopes of the Drum Hills, thus draining south to the Licky River. Approximately 83% of the total Site area drains to the Licky River. The remainder drains to the Brickey (approx. 5% of area) and Goish Rivers (approx. 12 % of area).

The entire Site is extensively, artificially drained by both agricultural field drains which have been dug for land improvement purposes), forestry drains which have been dug to accommodate forestry operations, and road drains which have been dug to prevent flooding of local and forestry roads.

3.1.2 Proposed 110kV Underground Cabling Route

The Proposed 110kV Underground Cabling Routeis also situated within WFD subcatchment ‘Goish_SC_010’ and follows the Goish River drainage several kms to the west before discharging into the Blackwater River.

3.2 Results of Baseline Ecological Surveys

3.2.1 Ecological Walkover Surveys

3.2.1.1 Habitats Within the Proposed Wind Farm site

A total of eleven habitats were recorded within the Site including:

- Conifer plantation (WD4)
- Recently felled woodland (WS5)
- Improved agricultural grassland (GA1)
- Wet grassland (GS4)
- Scrub (WS1)
- Hedgerows (WL1)
- Stone walls and other stonework (BL1)
- Treelines (WL2)
- Drainage ditches (FW4)
- Eroding/upland Rivers (FW1)
- Buildings and artificial surfaces (BL3)

A habitat map of the site is provided in the Figure 4 - 3a – 4 - 3c.

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N

GOISH_010

T7

LICKY_010

T13

T14

T15

T16

T17

T18

T19

T20

T21

T22

T23

LICKY_020

LICKY_030

Blackwater River (Cork/Waterford) SAC

0 0.5 1 km

Map Legend

- Red Line Boundary
- Proposed Turbine Locations
- Special Area of Conservation
- Buildings and artificial surfaces (BL3)
- Spoil and bare ground (ED2)
- Improved agricultural grassland (GA1)
- Scrub (WS1)
- Immature woodland (WS2)
- Amenity grassland (improved) (GA2)
- Wet grassland (GS4)
- Conifer plantation (WD4)
- Recently-felled woodland (WS5)
- Hedgerows (WL1)
- Treelines (WL2)
- Rivers and streams (FW1/ FW2)

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

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N

SITE LOCATION - NOT TO SCALE

Drawing Title

Habitat Map

Project Title

Slievegrine Renewable Energy Development

Project No.	Drawing No.	Scale
240740	3-1a	1:14,000
Drawn By	Checked By	Date
AMcL	MNR	08/10/2026

MKO
Email: info@mkoireland.ie/ Website: www.mkoireland.ie

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T1
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T20

GOISH_010
BRICKEY_020
LICKY_010
LICKY_020

Blackwater River (Cork/Waterford) SAC

0 0.5 1 km

620000

Map Legend

- Red Line Boundary
- Proposed Turbine Locations
- Special Area of Conservation
- Buildings and artificial surfaces (BL3)
- Improved agricultural grassland (GA1)
- Scrub (WS1)
- Immature woodland (WS2)
- Amenity grassland (improved) (GA2)
- Wet grassland (GS4)
- Conifer plantation (WD4)
- Recently-felled woodland (WS5)
- Hedgerows (WL1)
- Treelines (WL2)
- Rivers and streams (FW1/ FW2)

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

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N

SITE LOCATION - NOT TO SCALE

Drawing Title

Habitat Map

Project Title

Slievegrine Renewable Energy Development

Project No.	Drawing No.	Scale
240740	3-1b	1:14,000
Drawn By	Checked By	Date
AMcL	MNR	08/10/2026

MKO

Email: info@mkoireland.ie/ Website: www.mkoireland.ie

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GOISH_020

GOISH_010

ABARTAGH_010

0 0.5 1 km

Map Legend

- Red Line Boundary
- Improved agricultural grassland (GA1)
- Scrub (WS1)
- Hedgerows (WL1)
- Treelines (WL2)
- Rivers and streams (FW1/ FW2)

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

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N

SITE LOCATION - NOT TO SCALE

Drawing Title

Habitat Map

Project Title

Slievegrine Renewable Energy Development

Project No.	Drawing No.	Scale
240740	3-1c	1:14,000
Drawn By	Checked By	Date
AMcL	MNR	08/10/2026

MKO

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3.2.1.1.1 Conifer Plantation (WD4)

Conifer plantation (WD4) is one of the most abundant habitats present throughout the Site. The highest concentrations of this habitat can be found at the northern and southern parts of the Proposed Wind Farm site. The dominant tree species within these plantation habitats is Sitka spruce (*Picea sitchensis*). This most prevalent ground flora includes hard fern (*Blechnum spicant*), broad buckler fern (*Dryopteris dilatata*) and bramble (*Rubus fruticosus* agg.). Additionally, several bryophyte species such as glittering wood-moss (*Hylocomium splendens*), common tamarisk-moss (*Thuidium tamariscinum*), swan's-neck thyme-moss (*Mnium hornum*) and pointed spear-moss (*Calliergonella cuspidata*) are located within this habitat.

The proposed infrastructure located within this habitat includes T1, T2, T3, T4, T5, T6, T11, T13, T14, T21, four borrow pits, four construction compounds, three of the security compounds, the met mast and the Proposed 110kV Substation. Additionally, many of the proposed roads throughout the Proposed Wind Farm are located within this habitat. The forestry plantations within the Site typically contain sparse ground cover, which is generally dominated by needle litter and *Thuidium tamarascinum.*



Plate 3-1 Conifer plantation (WD4) located within the Proposed Project footprint

3.2.1.1.2 Recently Felled Woodland (WS5)

There are habitat areas consisting of recently felled woodland (WS5) located within the boundaries of the Site. This habitat consists of areas where conifer plantations (WD4) have been felled. This habitat is found in small patches throughout the Proposed Project. The dominant species found within this habitat is recently felled Sitka spruce (*Picea sitchensis*) (Plate 3-2). The proposed infrastructure located within this habitat includes T18 and some of the proposed access roads.



Plate 3-2 Recently felled woodland (WS5) south of the proposed T18

3.2.1.1.3 Buildings and artificial surfaces (BL3)

Residential dwellings, derelict buildings/farm structures as well as agricultural buildings are also present within the Site and are categorised as Buildings and artificial surfaces (BL3). Existing roadways within the Site are also categorised as BL3.



Plate 3-3 Derelict building classified as Buildings and artificial surfaces (BL3) located to the south of T11

3.2.1.1.4 Improved Agricultural Grassland (GA1)

Improved agricultural grassland (GA1) is one of the dominant habitats within the boundaries of the Site. This habitat is found throughout the Proposed Wind Farm site, however, the southwest and centre of the Proposed Wind Farm site contains the highest concentration of this habitat. The dominant species within this habitat include Perennial Ryegrass (*Lolium perenne*), Yorkshire Fog (*Holcus lanatus*), Creeping Buttercup (*Ranunculus repens*), White Clover (*Trifolium repens*) and Broad-leaved Dock (*Rumex obtusifolius*).

The proposed infrastructure located within this habitat includes T7, T8, T12, T15, T16, T17, T19, T20, T22 and T23. Additionally, one borrow pit located northeast of T22 is also located within a GA1 habitat.



Plate 3-4 Improved agricultural grassland (GA1) located in the footprint of T23

3.2.1.1.5 Scrub (WS1)

Scrub (WS1) is found in small pockets within the Site. This habitat is often found as a mosaic with conifer plantation (WD4). The dominant species within this habitat include willow (Salix spp.), gorse (*Ulex europaeus*) and bramble (*Rubus fruticosus* agg.). Limited scrub loss is required for the Proposed Project infrastructure, with marginal scrub only located in some sections of proposed new roads.



Plate 3-5 Gorse scrub (WS1) located in a mosaic with Conifer plantation (WD4) within the footprint of T6

3.2.1.1.6 *Wet Grassland (GS4)*

There are fields containing species-poor wet grassland (GS4) located throughout the Site, however to a much lesser extent compared to improved agricultural grassland. Commonly found species within these habitats includes soft rush (*Juncus effusus*), perennial ryegrass (*Lolium perenne*), yorkshire fog (*Holcus lanatus*), creeping buttercup (*Ranunculus repens*) (Plate 3-6). The proposed infrastructure located within this habitat type includes Proposed Turbines T9 and T10 and short sections of proposed new access roads. The proposed infrastructure located within this habitat type is T9 and T10.



Plate 3-6 Wet grassland (GS4) located within the footprint of T9

Wet Grassland within the footprint of Proposed Native Woodland Planting

The area proposed for Native Woodland Planting in the BMEP is located South of Proposed Turbine T10. The area supports wet grassland (GS4) that was classified as GL2D[4] *Juncus effusus- Rumex acetosa* grassland following the Irish Vegetation Classification (IVC). The habitat is dominated by soft rush (*Juncus effusus*). Other species include meadow buttercup (*Ranunculus acris*), greater bird's foot trefoil (*Lotus pedunculatus*), sweet vernal grass (*Anthoxanthum odoratum*) and common sorrel (*Rumex acetosa*). This habitat type is a very common sward type of low-production farmland and a species poor community of relatively low conservation value.

The proposed planting area borders the Clashbrack river, a tributary to the Licky river, along approximately 100m at the southern boundary of the proposed planting area. The Clashbrack river enters the Licky river, which is designated under the Blackwater River (Cork/Waterford) SAC at this location, approximately 100m downstream of the proposed planting area.

3.2.1.1.7 *Hedgerow (WL1) and Stone Walls (BL1)*

Hedgerows (WL1) are located throughout the Site and are frequently found in conjunction with stone walls and other stonework (BL1). The highest concentration of these habitats is within the centre of the Proposed Wind Farm site where they are found as field boundaries for the improved agricultural

[4] https://biodiversityireland.ie/ivc-classification-explorer/gl2/gl2d/

grassland (GA1) fields. The most frequently found species within these habitats include gorse (*Ulex europaeus*), bramble (*Rubus fruticosus* agg.), hawthorn (*Crataegus monogyna*), rowan (*Sorbus aucuparia*), grey willow (*Salix cinerea*) with bracken (*Pteridium aquilinum*) and nettle (*Urtica dioica*) commonly found at field level.



Plate 3-7 Hedgerow (WL1) located within the footprint of T15

3.2.1.1.8 Treelines (WL2)

Within the Site, these habitats are primarily found as boundaries for agricultural grassland habitats (GA1 and GS4). Species found within treeline habitats includes ash (*Fraxinus excelsior*), hawthorn (*Crataegus monogyna*), bramble (*Rubus fruticosus* sp.), ivy (*Hedera hibernica*), sycamore (*Acer pseudoplatanus*), dog rose (*Rosa canina*) and grey willow (*Salix cinerea*).



Plate 3-8 Treeline (WL2) located within the Proposed Project, north of T10

3.2.1.1.9 Drainage Ditches (FW4)

Drainage ditches (FW4) are located throughout the Proposed Wind Farm site. Within the Proposed Wind Farm site, this habitat is usually associated with Hedgerow (WL1) habitats or Conifer plantations (WD4). Where these occur as field boundaries, drains often include Water Mint (*Mentha aquatica*), Willowherb (*Epilobium* spp.), Rough Meadow-grass (*Poa trivialis*), Hogweed (*Heracleum sphondylium*), Yorkshire Fog (*Holcus lanatus*) and Creeping Buttercup (*Ranunculus repens*). Where they occur as forestry drains, they are very species poor and sparse in vegetation (Plate 3-9).



Plate 3-9 Drainage ditch (FW4) located within a Conifer Plantation (WD4) adjacent to T22 at the south of the Proposed Wind Farm

3.2.1.1.10 Eroding Upland Rivers/Streams (FW1)

Tributaries of the Licky River are located across the centre and south of the Proposed Wind Farm site (Plate 3-10). These watercourses converge outside the southern boundary of the Proposed Wind Farm site and flow southward. The Goish River is located to the west of the Proposed Wind Farm site. Tributaries within the Proposed Wind Farm site flow along the field boundaries of Improved agricultural grassland (GA1) and through Conifer plantations (WD4). The various tributaries of these EPA mapped rivers within the Proposed Wind Farm site have a variety of substrate types including loose pebbles, gravel, sand, cobbles and boulders. The width of these water courses varies between 1m and 3m wide where they occur within the Proposed Wind Farm site. There is little vegetation within the watercourses, however, in many areas there is encroaching bankside vegetation such as Gorse (*Ulex europaeus*), Willow (*Salix* spp.), Bramble (*Rubus fruticosus* agg.), Soft Rush (*Juncus effusus*), Birch (*Betula* spp.) and Holly (*Ilex aquifolium*). The Licky River flows along the southern boundary of the Proposed Wind Farm site (Plate 3-11).

Full details of results of aquatic surveys undertaken are provided in the Aquatic Baseline Report (Appendix 1), including aquatic habitat and faunal surveys of proposed new infrastructure crossing locations within the Proposed Wind Farm site. The results of these surveys are summarised in Section 3.2.3.



Plate 3-10 Tributary streams flowing through the Proposed Wind Farm site.



Plate 3-11 The River Licky - an eroding/upland river (FW1) flowing along the southern boundary of the Proposed Wind Farm site.

3.2.1.2 Habitats within the Proposed Grid Connection site

The Proposed Grid Connection includes the Proposed 220kV Loop-in Substation in the townland of Ballycullane and the Proposed 110kV Underground Cabling Route.

The Proposed 220kV Loop-in Substation is proposed to be located within improved agricultural grassland (GA1 habitat).

The Proposed 110kV Underground Cabling Route will be located primarily within the public road corridor classified as artificial surfaces (BL3), with a short section (approximately 262m) located within a private forestry road west of the Proposed 110kV Substation, which is located within an area of conifer plantation (WD4) in the centre of the Proposed Wind Farm site. Another short section (approximately 788m) is located within proposed new access roads through agricultural pastures (GA1) bordered by hedgerows (WL1).

The Goish River, classified as Depositing/lowland River (FW2), runs parallel to the south of the Proposed 110kV Underground Cabling Route.

A total of 2 no. EPA mapped watercourse crossings will be traversed along the Proposed 110kV Underground Cabling Route. Instream works are not required at any watercourse crossing along the Proposed 110kV Underground Cabling Route.

Full details of results of aquatic surveys undertaken at watercourse crossings along the Proposed Grid Connection are provided in the Aquatic Baseline Report (Appendix 1). The results of these surveys are summarised in Section 3.2.3.

The Goish River, an Eroding/upland River (FW1), flows along the Proposed 110kV Underground Cabling Route and occurs as a shallow, first-order stream within the vicinity of the route.

3.2.1.3 Annex I Habitats

In summary, as described in the preceding sections, no Annex I habitats were recorded within the Site. Furthermore, no botanical species listed under the Flora (protection) Order or listed in the Irish Red Data Books were recorded on the site. All floral species recorded are common in the Irish landscape. No rare and protected plant species recorded in the desk study, including those obtained from NPWS data request were recorded within the study area.

3.2.1.4 Invasive species

During field surveys undertaken, Rhododendron (*Rhododendron ponticum*) was recorded within the Proposed Wind Farm site, with records found within the footprint of existing roads to be upgraded south of proposed turbine T3. Four stands were recorded which include young non-flowering plants adjacent to the existing road, and a larger stand within forestry outside of the Proposed Project footprint.

Details of the records of Rhododendron plants identified within the Proposed Wind Farm site are shown in the table below.

Table 3-1 Locations of Rhododendron within the Proposed Wind Farm site recorded during the surveys undertaken

Photo	Description	Coordinates (ITM)
	Young non-flowering plant adjacent to existing access road, within footprint of proposed road widening.	620113 588885
	Young non-flowering plant adjacent to existing access road	620122 588880
	Larger stand within footprint of proposed road widening works	620191 588886
	Stand within forestry, outside of Proposed Project footprint. Approx. 15m from existing access road.	620232 588907

3.2.2 Otter Surveys

No holts, breeding sites or resting (couching) sites were identified during any of the dedicated otter surveys, or multi-disciplinary surveys undertaken. However, evidence of activity was recorded downstream of the Proposed Wind Farm site, in the form of otter spraints, prints and slides, along the banks of the River Licky. The dedicated aquatic survey locations are shown in Figure 1-1. Both fresh and old otter spraint as well as otter prints were identified in the vicinity of survey location WF 7 along the River Licky. Potential otter slides were also identified in the vicinity of survey location WF 9 and survey location WF 18 along the Licky and Brickey rivers, respectively, with high-quality commuting and foraging habitat throughout each of these rivers.

No evidence of otter activity was identified along watercourses within the vicinity of the Proposed Grid Connection.



Plate 3-12 Left: Otter spraint along the Licky_020 River downstream of the Site. Right: Otter slide along the Licky_020 River downstream of the Site

3.2.3 Fisheries Surveys

3.2.3.1 Proposed Wind Farm site

Aquatic baseline surveys were carried out at 19 Proposed Wind Farm sites (WF 1–19) in September 2025. There are 4 no. EPA mapped watercourse crossings proposed within the Proposed Wind Farm site. The proposed internal infrastructure watercourse crossings were surveyed in May 2026. Most watercourses were eroding/upland rivers (FW1), from first and second-order headwater streams to the mainstem River Licky. The River Brickey sites (WF 15, 16 and 18) were classified as depositing/lowland rivers (FW2). The best fisheries habitat was on the mainstem Licky (WF 7, 9, 11 and 13), where salmonid holding and European eel habitat were categorised as Good to Excellent. Brown trout were caught at every electrofished, site except WF 17. Juvenile Atlantic salmon were caught at seven sites, with the highest density at WF 13. European eel were caught at nine sites, with the highest density at WF 9. Lamprey were recorded only at WF 14, and flounder only at WF 16. Water quality ranged from Q3 (Poor) to Q4 (Good), and most sites were below 'Good' status, indicating water quality pressures across the catchment. Otter spraint, prints and possible slides were recorded on the Licky and Brickey, but no holts or couches were found. White-clawed crayfish were not detected by eDNA at any of the 12 sampling sites.

There are 4 no. EPA mapped watercourse crossings proposed within the Proposed Wind Farm site. Surveys were carried out at eight sites within the Proposed Wind Farm site. The eight internal crossings were mostly narrow, culverted and historically modified streams under pressure from forestry and agriculture. Water quality at the crossings ranged from Q3 (Poor) to Q4 (Good). Watercourses at survey sites IC 1, IC 2 and IC 3 showed evidence of historic straightening and/or dredging, with overall limited

instream habitat for all fish species. Survey sites IC 4, IC 5 and IC 6 represented stretches of more naturalised upland streams, with locally good salmonid nursery habitat and European eel habitat. Survey site IC 7 was subject to ongoing livestock poaching, while the watercourse at IC 8 had a manmade rock ramp which diverted the watercourse into a secondary channel via a half-pipe.

3.2.3.2 Proposed Grid Connection site

Three sites along the Proposed 110kV Underground Cabling Route (GC 1–3) were surveyed. All are Eroding/upland River (FW1) in the Goish catchment.

The survey site GC 1 (Monagally East) was located on a shallow, culverted first-order stream with Good salmonid nursery and eel habitat, but Poor holding habitat because of its shallow depth. GC 2 (Goish) consisted of particularly high-quality habitat for brown trout and salmon fry and parr. Salmonid holding and eel habitat were Good, but there is historic bank poaching. GC 3 (Goish) consisted of Good habitat for adult salmonids and eel.

Water quality was Q4 (Good) at GC 2 and GC 3 and Q3 (Poor) at GC 1. No signs of otter were recorded along the Proposed 110kV Underground Cabling Route.

3.2.4 Freshwater Pearl Mussel (*Margaritifera margaritifera*)

Data obtained from the NPWS data request recorded Freshwater Pearl Mussel (*Margaritifera margaritifera*) within the River Licky to the south of the Proposed Wind Farm site. Following dedicated Freshwater Pearl Mussel (*Margaritifera margaritifera*) surveys within the River Licky, populations of this species were identified downstream of the Proposed Wind Farm site.

No records of this species were identified within any watercourses within the Proposed Wind Farm site. Aquatic surveys and habitat appraisals were carried out at all proposed internal watercourse crossings. There are 4 no. EPA mapped watercourse crossings proposed within the Proposed Wind Farm site. Eight aquatic survey locations were sampled within the Proposed Wind Farm site and included these locations. Survey sites IC 1, IC 2 and IC 3 showed evidence of historic straightening and/or dredging, with overall limited instream habitat for all fish species. Survey sites IC 4, IC 5 and IC 6 represented stretches of more naturalised upland streams, with locally good salmonid nursery habitat and European eel habitat. Survey site IC 7 was subject to ongoing livestock poaching, while the watercourse at IC 8 had a manmade rock ramp which diverted the watercourse into a secondary channel via a half-pipe.

eDNA surveys for Freshwater Pearl Mussel conducted throughout the wider vicinity of the Proposed Wind Farm site showed a positive result at WF 9 along the River Licky south of the Proposed Wind Farm, with Stage 1 and 2 Freshwater Pearl Mussel surveys subsequently conducted under licence from the NPWS. Surveys were conducted along four stretches of the River Licky, with 127 live mussels and 2 no. dead mussels identified in Area 1. No other live mussels were identified in survey areas 2, 3 or 4, with enrichment and siltation pressures, as well as substrate compaction, evident in the latter areas of survey.

3.2.5 Bird Surveys

Bird species targeted for survey include the Special Conservation Interest (SCI) species of nearby SPAs listed below, which have documented foraging ranges with the potential to overlap with the Site:

3.2.5.1 Populations with Potential to use the Proposed Wind Farm site

3.2.5.1.1 *Bar-tailed godwit*

Dungarvan Harbour SPA As no core foraging range was available in the literature, an estimate is based on the core foraging range of ecologically similar wading species greenshank and curlew, and an average value of 2km will be used here (SNH, 2016). The separation distance between the Proposed Wind Farm site boundary and Dungarvan Harbour SPA is 1.9km, however, there are no Proposed Turbines or infrastructure within 2km of the SPA boundary. As no maximum foraging distance for bar-tailed godwit was available in the literature, an estimate is based on the maximum foraging range of ecologically similar wading species greenshank and curlew, and an average value of 2.5km will be used here (SNH, 2016). There are Proposed Turbines and infrastructure within 2.5km of the SPA boundary. Although SNH (2016) advises that in most cases the core range should be used when determining connectivity with SPAs, on a highly precautionary basis, given the proximity of the SPA to the Proposed Wind Farm site and that the maximum foraging range overlaps with Proposed Turbines, it is considered that there is potential for this population to occur within the Proposed Wind Farm site.

3.2.5.1.2 *Black-tailed godwit*

Dungarvan Harbour SPA As no core foraging range was available in the literature, an estimate is based on the core foraging range of ecologically similar wading species greenshank and curlew, and an average value of 2km will be used here (SNH, 2016). The separation distance between the Proposed Wind Farm site boundary and Dungarvan Harbour SPA is 1.9km, however, there are no Proposed Turbines or infrastructure within 2km of the SPA boundary. As no maximum foraging distance for black-tailed godwit was available in the literature, an estimate is based on the maximum foraging range of ecologically similar wading species greenshank and curlew, and an average value of 2.5km will be used here (SNH, 2016). There are Proposed Turbines and infrastructure within 2.5km of the SPA boundary. Although SNH (2016) advises that in most cases the core range should be used when determining connectivity with SPAs, on a highly precautionary basis, given the proximity of the SPA to the Proposed Wind Farm site and that the maximum foraging range overlaps with Proposed Turbines, it is considered that there is potential for this population to occur within the Proposed Wind Farm site.

3.2.5.1.3 *Common gull*

Ballymacoda Bay SPA: This species' core foraging range is estimated to be 25km (Thaxter et al., 2012). Based on the habitats within the Proposed Wind Farm site and its separation distance from the SPA (12.9km), there is potential for this population to occur within the Proposed Wind Farm site.

Other SPAs: This species' mean maximum foraging range is estimated to be 50km (Woodward et al., 2019). Ballycotton Bay SPA, Blackwater callows SPA, Blackwater Estuary SPA, Cork Harbour SPA, Dungarvan Harbour SPA, Helvick Head to Ballyquin SPA, Mid-Waterford Coast SPA and Tramore Back Strand SPA are within this distance from the Proposed Wind Farm site. Of these, common gull is an SCI of Ballycotton Bay SPA and Cork Harbour SPA.

Ballycotton Bay SPA and Cork Harbour SPA are approximately 23km and 29.4km from the Proposed Wind Farm site respectively. Flight activity surveys did not suggest birds travelling between these SPAs and the Proposed Wind Farm site. Suitable habitats for this species recorded within the Proposed Wind Farm site are common and widespread in the intervening landscape between the Proposed Wind Farm

sites and the SPAs. Therefore, it is unlikely that the common gull population at these SPAs are utilising the Proposed Wind Farm site. The majority of common gull activity in the hinterland was in farmland to the north of the Proposed Wind Farm and at Dungarvan Harbour, therefore it is likely that birds observed at the Proposed Wind Farm site originated from these areas.

3.2.5.1.4 *Cormorant*

Helvick Head to Ballyquin SPA: This species' mean foraging radius in the conservation objectives for this SPA is 7.1km (Woodward et al., 2019; Power et al., 2021). Based its separation distance from the SPA (5.8km), there is potential for this population to occur within the Proposed Wind Farm site (e.g., travelling over).

Other SPAs: This species' mean maximum foraging range is estimated to be 25.6km (Woodward et al., 2019; Power et al., 2021). Ballycotton Bay SPA, Ballymacoda Bay SPA, Blackwater Callows SPA, Blackwater Estuary SPA, Dungarvan Harbour SPA and Mid-Waterford Coast SPA are within this distance from the Proposed Wind Farm site. Of these, cormorant is an SCI of Mid-Waterford Coast SPA.

Mid-Waterford Coast SPA is 13km from the Proposed Wind Farm site. Suitable habitats for this species recorded within the Proposed Wind Farm site are common and widespread in the intervening landscape between the Proposed Wind Farm site and the SPA. In addition, Dungarvan Harbour lies directly between the Proposed Wind Farm site and this SPA. Therefore, it is unlikely that the cormorant population at the SPA is utilising the Proposed Wind Farm site. The majority of cormorant activity in the hinterland was in the River Blackwater, followed by Dungarvan Harbour, therefore it is likely that birds observed at the Proposed Wind Farm site originated from these areas.

3.2.5.1.5 *Golden plover*

Dungarvan Harbour SPA & Blackwater Estuary SPA: Although the core foraging range in SNH (2016) is 3km, wintering birds may have larger movements, as outlined in Gillings and Fuller (1999), which found that, while many movements were within 5km, some were 10-12km. Based on the habitats within the Proposed Wind Farm site and its separation distance from these SPAs (1.9km and 4.5km respectively), there is potential for these populations to occur within the Proposed Wind Farm site.

Other SPAs: Helvick Head to Ballyquin SPA and Mid-Waterford Coast SPA are also within 12km of the Proposed Wind Farm site. Golden plover is not an SCI of these SPAs.

3.2.5.1.6 *Great crested grebe*

Dungarvan Harbour SPA: This species' foraging range is estimated to be 5km (Piersma et al., 1988). Based its separation distance from the SPA (1.9km), there is potential for this population to occur within the Proposed Wind Farm site (e.g., travelling over).

Other SPAs: Blackwater Estuary SPA is also within 5km of the Proposed Wind Farm site. Great crested grebe is not an SCI of this SPA.

3.2.5.1.7 *Herring gull*

Helvick Head to Ballyquin SPA & Mid-Waterford Coast SPA: This species' mean foraging radius reported in the conservation objectives for both of these SPAs is 14.9km (Woodward et al., 2019; Power et al., 2021). Based on the habitats within the Proposed Wind Farm site and its separation distance from these SPAs (5.8km and 13km respectively), there is potential for these populations to occur within the Proposed Wind Farm site.

Other SPAs: This species' mean maximum foraging range is estimated to be 58.8km (Woodward et al., 2019; Power et al., 2021). Ballycotton Bay SPA, Ballymacoda Bay SPA, Bannow Bay SPA, Blackwater

Callows SPA, Blackwater Estuary SPA, Cork Harbour SPA, Dungarvan Harbour SPA, River Nore SPA and Tramore Back Strand SPA are within this distance from the Proposed Wind Farm site. Herring gull is not an SCI of any of these SPAs.

3.2.5.1.8 *Lapwing*

Dungarvan Harbour SPA & Blackwater Estuary SPA: As no core foraging range was available in the literature, an estimate is based on the core foraging range of the of ecologically similar golden plover, 10-12km (Gillings and Fuller, 1999). Based on the habitats within the Proposed Wind Farm site and its separation distance from these SPAs (1.9km and 4.5km respectively), there is potential for these populations to occur within the Proposed Wind Farm site.

Other SPAs: Helvick Head to Ballyquin SPA and Mid-Waterford Coast SPA are also within 12km of the Proposed Wind Farm site. Lapwing is not an SCI of these SPAs.

3.2.5.1.9 *Lesser black-backed gull*

Ballymacoda Bay SPA: This species' mean foraging radius reported in the conservation objectives for this SPA is 43.3km (Woodward et al., 2019; Power et al., 2021). Based on the habitats within the Proposed Wind Farm site and its separation distance from this SPA (12.9km), there is potential for the population to occur within the Proposed Wind Farm site.

Other SPAs: This species' mean maximum foraging range is estimated to be 127km (Woodward et al., 2019; Power et al., 2021). This maximum foraging range is more relevant to birds foraging at sea, where foraging distribution can be more extensive than in the terrestrial environment. However, it is used here as the best available information. All Saints Bog SPA, Ballyallia Lough SPA, Ballycotton Bay SPA, Ballyteigue Burrow SPA, Bannow Bay SPA, Blackwater Callows SPA, Blackwater Estuary SPA, Cahore Marshes SPA, Clonakilty Bay SPA, Cork Harbour SPA, Courtmacsherry Bay SPA, Dovegrove Callows SPA, Dungarvan Harbour SPA, Galley Head to Duneen Point SPA, Helvick Head to Ballyquin SPA, Keeragh Islands SPA, Kilcolman Bog SPA, Killarney National Park SPA, Lady's Island Lake SPA, Lough Derg (Shannon) SPA, Mid-Waterford Coast SPA, Middle Shannon Callows SPA, Mullaghanish to Musheramore Mountains SPA, Old Head of Kinsale SPA, River Little Brosna Callows SPA, River Nore SPA, River Shannon and River Fergus Estuaries SPA, Saltee Islands SPA, Seven Heads SPA, Sheep's Head to Toe Head SPA, Slieve Aughty Mountains SPA, Slieve Bloom Mountains SPA, Slievefelim to Silvermines Mountains SPA, Sovereign Islands SPA, Stack's to Mullaghareirk Mountains, Tacumshin Lake SPA, The Gearagh SPA, The Raven SPA, Tramore Back Strand SPA, Wexford Harbour and Slobs SPA and Seas off Wexford are within this distance from the Proposed Wind Farm site. Of these, lesser black-backed gull is an SCI of Ballycotton Bay SPA, Cork Harbour SPA, Saltee Islands SPA, Wexford Harbour and Slobs SPA and Seas off Wexford SPA.

These SPAs are approximately 23km, 29.4km, 71.6km, 84km and 43.9km from the Proposed Wind Farm site respectively. Flight activity surveys did not suggest birds travelling between these SPAs and the Proposed Wind Farm site. Suitable habitats for this species recorded within the Proposed Wind Farm site are common and widespread in the intervening landscape between the Proposed Wind Farm sites and the SPAs. Therefore, it is unlikely that the lesser black-backed gull population at these SPAs are utilising the Proposed Wind Farm site. The majority of lesser black-backed gull activity in the hinterland was in farmland in the vicinity of the Proposed Wind Farm and at Dungarvan Harbour and the River Blackwater, therefore it is likely that birds observed at the Proposed Wind Farm site originated from these areas.

3.2.5.1.10 *Light-bellied Brent goose*

Dungarvan Harbour SPA: This species' foraging range is estimated to be 8.2km (Summers and Critchley, 1990). Based on the habitats within the Proposed Wind Farm site and its separation distance from this SPA (1.9km), there is potential for the population to occur within the Proposed Wind Farm site.

Other SPAs: Blackwater Estuary SPA and Helvick Head to Ballyquin SPA are also within 8.2km of the Proposed Wind Farm site. Light-bellied Brent goose is not an SCI of these SPAs.

3.2.5.2 Populations Unlikely to Occur at the Proposed Wind Farm Site

3.2.5.2.1 *Black-headed gull*

This species' mean foraging radius estimated to be 7km (Woodward et al., 2019; Power et al., 2021; only breeding values available in the literature). Dungarvan Harbour SPA, Blackwater Estuary SPA and Helvick Head to Ballyquin SPA are within this distance of the Proposed Wind Farm site. Black-headed gull is not an SCI of any of these SPAs.

This species' mean maximum foraging range is estimated to be 18.5km (Woodward et al., 2019; Power et al., 2021). The additional SPAs Mid-Waterford Coast SPA and Ballymacoda Bay SPA are within this distance of the Proposed Wind Farm site. Black-headed gull is an SCI of Ballymacoda Bay SPA.

Ballymacoda Bay SPA is 12.9km from the Proposed Wind Farm site. Flight activity surveys did not suggest birds travelling between this SPA and the Proposed Wind Farm site. Suitable habitats for this species recorded within the Proposed Wind Farm site are common and widespread in the intervening landscape between the Proposed Wind Farm sites and the SPA. Therefore, it is unlikely that the black-headed gull population at the SPA is utilising the Proposed Wind Farm site. The majority of black-headed gull activity in the hinterland was in farmland to the north of the Proposed Wind Farm and at Dungarvan Harbour, therefore it is likely that birds observed at the Proposed Wind Farm site originated from these areas.

3.2.5.2.2 *Chough*

Breeding chough tend to forage within 1km from their nest; Trewby et al., 2006; Reid et al., 2008). There are no SPAs within this distance of the Proposed Wind Farm site. In addition, chough was only recorded at the Proposed Wind Farm site during the winter season (non-breeding birds).

3.2.5.2.3 *Curlew*

This species' core foraging range is estimated to be 1km (SNH, 2016). The separation distance between the Proposed Wind Farm site and Dungarvan Harbour SPA is greater than this distance. However, the maximum foraging range is estimated to be usually within 2km (SNH, 2016). There are no Proposed Turbines or infrastructure within 2km of the SPA boundary. There are also no other SPAs within 2km of the Proposed Wind Farm site.

3.2.5.2.4 *Dunlin*

The core foraging range of dunlin is estimated to be 500m (SNH, 2016). There are no SPAs within this distance from the Proposed Wind Farm site. The maximum foraging range is estimated to be 3km (SNH, 2016). Dungarvan Harbour SPA is within this distance. However, dunlin was not recorded at the Proposed Wind Farm site during any surveys, demonstrating that the population does not utilise the Proposed Wind Farm site. There are no other SPAs within this distance.

3.2.5.2.5 *Oystercatcher*

The mean foraging range of oystercatcher is estimated to be 1.1km (Schwemmer and Garthe, 2011). The separation distance between the Proposed Wind Farm site and Dungarvan Harbour SPA is greater than this distance. The estimated foraging range could extend to 2.2km (Schwemmer and Garthe, 2011). Dungarvan Harbour SPA is within this distance. However, oystercatcher were not recorded at the Proposed Wind Farm site during any surveys, demonstrating that the population does not utilise the Proposed Wind Farm site. There are no other SPAs within this distance.

3.2.5.2.6 Peregrine falcon

The mean foraging range of peregrine falcon is estimated to be 2km (SNH, 2016). Dungarvan Harbour SPA is within this distance. Peregrine falcon is not an SCI of this SPA.

The conservation objectives for Helvick Head to Ballyquin SPA states that most prey items are caught within 2km of an eyrie, rarely beyond 6km (Hardey *et al.*, 2009). Helvick Head to Ballyquinn SPA is 5.8km from the Proposed Wind Farm site at the closest point. Given that this is close to the maximum foraging range and that the majority of the SPA area is further than 6km from the Proposed Wind Farm site, it is unlikely that an eyrie is within 6km of the Proposed Wind Farm site. There are also no Proposed Turbines within 6km of the SPA. In addition, suitable habitats for this species recorded within the Proposed Wind Farm site are common and widespread in the intervening landscape, it is unlikely that this population utilises the SPA.

3.2.5.2.7 Redshank

As no core foraging range was available in the literature, an estimate is based on the foraging range of the ecologically similar species greenshank, with a core foraging range of 2km (SNH, 2016). The separation distance between the Proposed Wind Farm site boundary and Dungarvan Harbour SPA is 1.9km, however, there are no Proposed Turbines or infrastructure within 2km of the SPA boundary. As no maximum foraging distance for redshank was available in the literature, an estimate is based on the maximum foraging range of ecologically similar species greenshank, with a maximum foraging range of 3km (SNH, 2016). Dungarvan Harbour SPA is within this distance. However, redshank was not recorded at the Proposed Wind Farm site during any surveys, demonstrating that the population does not utilise the Proposed Wind Farm site. There are no other SPAs within this distance.

3.2.5.2.8 Ringed plover

As no core foraging range was available in the literature, an estimated is based on the core foraging range of the ecologically similar dunlin (500m; SNH, 2016). There are no SPAs within this distance from the Proposed Wind Farm site. The maximum foraging range is estimated to be 3km (based on dunlin; SNH, 2016). Dungarvan Harbour SPA is within this distance. However, ringed plover were not recorded at the Proposed Wind Farm site during any surveys, demonstrating that the population does not utilise the Proposed Wind Farm site. There are no other SPAs within this distance.

3.2.5.2.9 Teal

The mean foraging range of teal is estimated to be 8.4km (Johnston et al., 2013). Dungarvan Harbour SPA, Blackwater Estuary SPA and Helvick Head to Ballyquin SPA are within this distance. Teal is not an SCI of any of these SPAs.

3.2.5.2.10 Wigeon

The mean foraging range of wigeon is estimated to be 2.8km (Johnston et al., 2013). Dungarvan Harbour SPA is within this distance. Wigeon is not an SCI of this SPA.

3.2.5.2.11 Marine and coastal species

The following species are SCIs of SPAs within proximity to the Proposed Wind Farm site. These are primarily marine habitat species and are unlikely to utilise the habitat within the Proposed Wind Farm site, which is not coastal:

- Grey Plover (Dungarvan Harbour SPA & Ballymacoda Bay SPA)
- Kittiwake (Helvick Head to Ballyquin SPA)
- Knot (Dungarvan Harbour SPA)

- Red-breasted Merganser (Dungarvan Harbour SPA)
- Sanderling (Ballymacoda Bay SPA)
- Shelduck (Dungarvan Harbour SPA)
- Turnstone (Dungarvan Harbour SPA & Ballymacoda Bay SPA)

The target species recorded within 500m of the Proposed Wind Farm during field surveys are listed in Table 3-2, along with a summary of key findings. Detailed species accounts are then provided under individual headings. This includes incidental records of species which were not the target species of a survey or were observed outside of survey times. Target species as defined above that were not recorded during any surveys and listed in Table 3-2 are not further considered in this assessment.

Table 3-2 Target species recorded within 500m of the Proposed Wind Farm

Species	Key findings
Golden plover	**Non-breeding.** There was no evidence of breeding at the Proposed Wind Farm site. **Probable roosting and foraging.** Three probable roosting and foraging areas have been identified during the survey period. Two are within or partially within the Proposed Wind Farm site. The remaining is 200m from the Proposed Wind Farm.
Black-tailed godwit	**Non-breeding.** There was no evidence of breeding at the Proposed Wind Farm site. **No regularly used roosts identified.** There was no evidence of roosting at the Proposed Wind Farm site.
Cormorant	**Non-breeding:** There was no evidence of breeding at the Proposed Wind Farm.
Lapwing	**Non-breeding.** There was no evidence of breeding at the Proposed Wind Farm site. **No regularly used roosts identified.** There was no evidence of roosting at the Proposed Wind Farm site during surveys.
Common gull	**Non-breeding.** There was no evidence of breeding at the Proposed Wind Farm site during surveys. **No regularly used roosts identified.** There was no evidence of roosting at the Proposed Wind Farm site during surveys.
Herring gull	**Non-breeding.** There was no evidence of breeding at the Proposed Wind Farm site during surveys.

Species	Key findings
	No regularly used roosts identified. There was no evidence of roosting at the Proposed Wind Farm site during surveys.
Lesser black-backed gull	**Non-breeding.** There was no evidence of breeding at the Proposed Wind Farm site during surveys. **No regularly used roosts identified.** There was no evidence of roosting at the Proposed Wind Farm site during surveys.

3.2.5.3 Golden plover

Golden plover were observed in the winter and passage season (April and September).

Vantage point survey

Golden plover was recorded 147 times during vantage point surveys, or on average once every 12 hours of winter and passage season surveys. Of these records, 64 were within 500m of the Proposed Turbines. Between 1 and 500 individuals were observed during the winter and passage season. The average flock size was 48 birds.

Golden plover was recorded 19 times landing and, on the ground, (likely feeding, though some birds may have been roosting) during the winter seasons of 2024-2025 and 2025-2026. On eight different observations in four distinct months (September, October 2024 and January, October 2025), flocks of 2 to 500 birds were observed flying and landing near Kilnafarna Upper (approximately 200m from the Proposed Wind Farm). These records of repeated landing in the same area during the winter season suggest an area of landing for feeding and/or roosting. Also, six records of flocks of 12 to 52 birds were seen flying, landing and on the ground in three distinct months (March, October 2025 and January 2026) near Slievegrine Hill, suggesting a regularly used landing area. This area is located within the Proposed Wind Farm site. In November 2024 and November 2025, three records of flocks between 80 and 350 were observed flying, circling and landing near Carronbeg partially within the Proposed Wind Farm site. Additionally, in January 2025, two birds were observed landing near Monacullee (within the Proposed Wind Farm site) and in February 2025, a flock of 34 birds was observed landing near Drumslig.

Of the remaining records, 70 were of flocks ranging from 1 to 350 birds flying and that may be associated with landed flocks foraging or roosting on the ground, which is typical golden plover behaviour. The remaining 58 records were of golden plovers flying, circling and travelling over the Proposed Wind Farm site and wider surroundings.

Winter transect survey

Golden plover was recorded 13 times during winter transect surveys, on 11 of the 42 survey dates (24%). Of these records, one was within the Proposed Wind Farm site and for 11 flight paths were not mapped by the surveyor. Between 1 and 220 individuals were observed. The average flock size was 26 birds.

Birds were flying, circling and travelling in the Proposed Wind Farm and wider surroundings. In October 2023, five birds were recorded near Reamanagh East within the Proposed Wind Farm. In October 2024, one bird was recorded 200m of the Proposed Wind Farm. Two unmapped records of 3 and 220 birds were recorded during transect surveys respectively in October 2024 and December 2025. Other unmapped records were of birds flying or flushed throughout the Proposed Wind Farm.

Wintering golden plover survey

Golden plover was recorded 27 times during wintering golden plover surveys, on 16 of the 18 surveys dates (89%). Of these records, two were within the Proposed Wind Farm site. Between 1 and 2,300 birds were observed. The average flock size was 312 birds.

In November, December 2024, October 2025 and February 2026, four records of flock of 2 to 200 birds have been observed flying and roosting. On eight distinct dates (within December 2024, March, April, October and November 2025 and February, March 2026) 1 to 98 birds have been observed flying and foraging. Additionally, in November 2024, golden plover was recorded calling (no number could be determined) within the Proposed Wind Farm. In February 2026, there was two observations of 12 and 88 birds on the ground, roosting and preening respectively, within 500m of the Proposed Wind Farm. In January 2025 and January 2026, two flocks of 2,000 birds were observed flying near Dungarvan Harbour. In February 2025, one flock of 2,300 birds was observed at Ballynaclash Quay. The remaining observations were of birds foraging and roosting in the wider surroundings of the Proposed Wind Farm, mainly at Ballynaclash Quay and Dungarvan Harbour.

Incidental records

There were 10 incidental observations of golden plover during hen harrier roost surveys, vantage point surveys (outside of the survey effort) and birds of prey surveys. Between 1 and 30 birds were observed. The average flock size was 10 birds.

In October 2024 and January 2025, two records, of one and nine birds, respectively, flying and foraging. In early April 2025, there were two records of one bird flying and one bird flushed. In November 2025, there was one record of one bird flying. In October 2024 and March 2025, there were three records of birds calling and flying near Toor North, partially within the Proposed Wind Farm. The remaining two observations were of birds flying in the wider surroundings of the Proposed Wind Farm.

Supplementary data

There were 101 records of golden plover in the supplementary data. Of these records, 66 were observed within the Proposed Wind Farm (five were not mapped). Between 1 and 250 birds were observed. The average flock size was 51 birds.

In November 2023, five birds were observed feeding at GP-1. Of the remaining observations, 53 were of flocks flying above the previously identified landing areas (GP-1 to GP-3). Other records were of birds flying at the Proposed Wind Farm and its surroundings.

3.2.5.4 Black-tailed godwit

Black-tailed godwit was observed in the breeding and winter season.

Vantage point survey

Black-tailed godwit was recorded six times during vantage point surveys, or on average once every 414 hours of surveys. Of these records, three were within 500m of the Proposed Turbines. Flocks between 10 and 40 birds were observed. The average flock size was 19 birds.

Black-tailed godwit were seen flying over the Proposed Wind Farm in July 2024, August 2024, August 2025 and November 2025. Flocks of 11, 14 and 40 birds were seen over the Proposed Wind Farm. Of the remaining records, flocks were recorded in the wider surroundings of the Proposed Wind Farm.

Incidental records

There were seven incidental observations of black-tailed godwit during wintering golden plover surveys. Flocks between 1 and 362 birds were recorded. The average flock size was 63 birds. Two records were around Dungarvan Harbour, and five records were at Ballynaclash Quay, respectively at 2.2km and 4.6km of the Proposed Wind Farm.

3.2.5.5 Cormorant

Cormorant was observed in the winter and breeding seasons.

Vantage point survey

Cormorant was recorded 9 times during vantage point surveys or on average every 274 hours of surveys. Of these records, four were within 500m of the Proposed Turbines. Between one and ten birds were observed each time. The average number of birds seen was two.

Cormorant were seen flying over the Proposed Wind Farm in August 2024, August 2025, February 2026 and March 2026. Between one and four birds were seen over the Proposed Wind Farm. Of the remaining records, birds were recorded in the wider surroundings of the Proposed Wind Farm.

Incidental records

There were 13 incidental observations of cormorant during wintering golden plover surveys, birds of prey surveys and whooper swan surveys. Observations were of between one and ten birds. The average number of birds seen was two. Seven of these observations were at Ballynaclash Quay on the River Blackwater approximately 4.6km from the Proposed Wind Farm. The remaining observations came from single birds present, foraging or flying at the River Brickey

3.2.5.6 Lapwing

Lapwing were observed in the winter season.

Vantage point survey

Lapwing were recorded twice during vantage point surveys, or on average once every 608 hours of winter surveys. Of these records, one was within 500m of the Proposed Turbines. Flocks between 1 and 25 birds were observed. The average flock size was 13 birds.

There was one record of a flock of 25 birds flying through the Proposed Wind Farm in November 2025. The remaining record was of one bird flying in the wider surroundings.

Winter transect survey

Lapwing was recorded once during winter transect surveys, on 1 of the 42 survey dates (2%). The species was recorded on T2A but the flight path was not mapped in December 2025.

3.2.5.7 Common gull

Common gull were observed in the winter and passage (September) season.

Vantage point survey

Common gull was recorded four times during vantage point surveys, or on average once every 458 hours of winter and passage surveys. Of these records, three were within 500m of the Proposed Turbines. Flocks between two and ten birds were observed. The average flock size was five birds.

All four records of common gulls were of birds flying, three records (of two to ten birds) were observed near Cloghraun (within 500m of the Proposed Turbines) in December 2024, January 2025 and January 2026. The remaining record was of one flock of two birds near Coollroe (700m of the closest Proposed Turbine) in September 2024.

Winter transect survey

Common gull were recorded three times during winter transect surveys, on 2 of the 42 survey dates (5%). The species was recorded flying and roosting on T4A and T4D in October 2025 and January 2026, but for all three records flight paths were not mapped by the surveyor; these transects are within the Proposed Wind Farm. Two birds were roosting in the fields to the west of the south end of T4a according to the surveyor, which is the Drumslig area in January 2026.

3.2.5.8 Herring gull

Herring gull were observed in the winter and breeding season.

Vantage point survey

Herring gull were recorded 291 times during vantage point surveys, or on average once every 9 hours of surveys. Of these records, 180 were within 500m of the Proposed Turbines and for seven records flight paths were not mapped by the surveyor. Flocks between 1 and 106 birds were observed. The average flock size was five birds.

There were seven records of flocks of herring gull foraging and on the ground (likely foraging or roosting), three of these records were within 500m of the Proposed Turbines. Eight herring gulls were recorded on the ground near Slievegrine Hill in July 2025, two birds were recorded on the ground near Reamanagh East in August 2025, and four birds were observed foraging near Cloghraun in January 2026. Of the remaining records, herring gulls were flying, circling and soaring throughout the Proposed Wind Farm and its surroundings.

Winter transect survey

Herring gull were recorded ten times during winter transect surveys, on 6 of the 42 survey dates (14%). None of these records was mapped by the surveyor. The species was recorded flying and roosting on TA Drumhill, T3 and T4; these transect are within the Proposed Wind Farm. Observations included flying and foraging. A large flock of 200 herring gull were roosting in the fields to the west of the south end of T4a, which is the Drumslig area.

Breeding transect survey

Herring gull were recorded 31 times during breeding transect surveys, on 16 of the 30 survey dates (53%). Of these, for 19 records flight paths were not mapped by the surveyor. Observations included flying, no breeding sites were recorded within the Proposed Wind Farm site. Four records were within the Proposed Wind Farm.

Incidental records

There were 31 incidental observations of herring gull during bird of prey surveys, breeding woodcock surveys, hen harrier roost surveys and wintering golden plover surveys. Flocks between 1 and 76 birds were recorded. The average flock size was 10 birds. Of these records, six were within the Proposed Wind Farm and two records were not mapped by the surveyor. A flock of five herring gull were recorded foraging in agricultural grassland near Cloghraun within the Proposed Wind Farm in June 2024. The remaining five of these records were of birds flying. The other remaining records were of birds flying and foraging in the wider surroundings of the Proposed Wind Farm.

3.2.5.9 Lesser black-backed gull

Lesser black-backed gull were observed in the winter and breeding seasons.

Vantage point survey

Lesser black-backed gull were recorded 163 times during vantage point surveys, or on average once every 15 hours of surveys. Of these records, 97 were within 500m of the Proposed Turbines and three were not mapped by the surveyor. Flocks between 1 and 145 birds were observed. The average flock size was five birds.

There were two records of foraging lesser black-backed gull. Six birds were recorded foraging near Cloghraun (within the Proposed Wind Farm) in September 2025. Additionally, three birds were recorded foraging near Ahaun (1.5km of the Proposed Wind Farm) in May 2024. All the remaining records were of birds flying over the Proposed Wind Farm and its wider surroundings.

Winter transect survey

Lesser black-backed gull was recorded three times during winter transect surveys, on 2 of the 42 survey dates (5%). Between one and nine birds were recorded each time. The average flock size was seven birds. The species was recorded on T3, T4D and T4C but flight paths were not mapped by the surveyor; these transect are within the Proposed Wind Farm. One of these records is of one bird foraging, other records describe birds flying.

Breeding transect survey

Lesser black-backed gull were recorded nine times during breeding transect surveys, on 8 of the 30 survey dates (27%). Between 1 and 14 birds were recorded each time. The average flock size was four birds. For seven records flight paths were not mapped by the surveyor, no breeding sites were recorded within the Proposed Wind Farm site. Two mapped records of Lesser black-backed gull were within the Proposed Wind Farm.

Incidental records

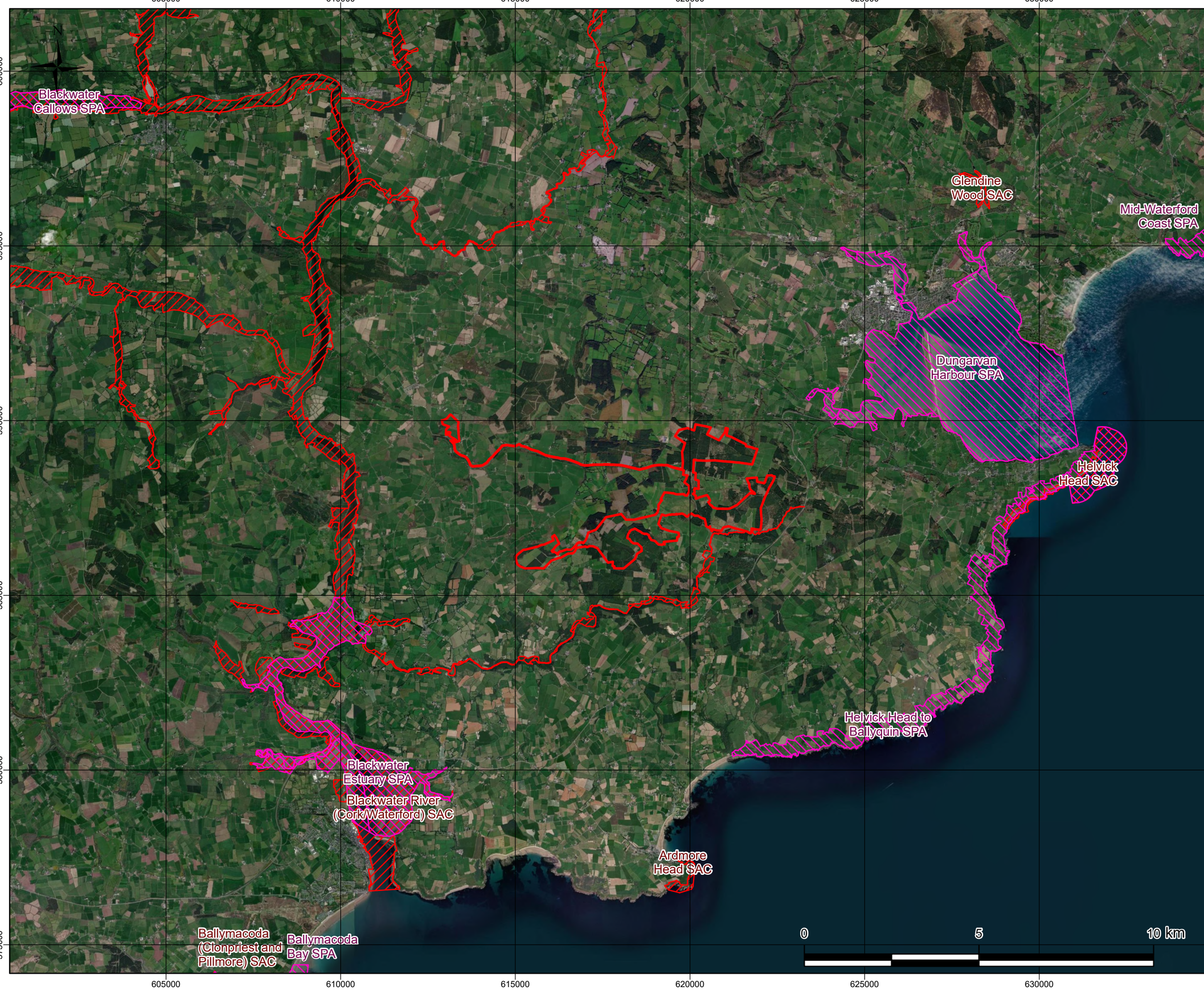
There were 21 incidental observations of lesser black-backed gull during bird of prey surveys, breeding woodcock surveys, vantage point surveys (outside of survey effort) and wintering golden plover surveys. Flocks between 1 and 25 birds were recorded. The average flock size was seven birds. Two records of Lesser black-backed gull were within the Proposed Wind Farm, one of which was a flock of 24 birds foraging at Cloghraun in June 2024. The other record was of one bird flying in August 2025. The remaining records were of birds flying and foraging in the wider surroundings of the Proposed Wind

4. APPROPRIATE ASSESSMENT SCREENING

4.1 Identification of Relevant European Sites

The following methodology was used to establish any European Sites upon which there is a potential for a likely significant effect to occur either individually or in combination with other plans and projects as a result of the Proposed Project:

- Initially the most up to date GIS spatial datasets for European Designated Sites and water catchments were downloaded from the NPWS website (www.npws.ie) and the EPA website (www.epa.ie).
- All European Sites that could potentially be affected were identified using a source-pathway - receptor model. To provide context for the assessment, European Sites surrounding the Proposed Project are shown on Figure 4-1. Information on these sites according to the site-specific conservation objectives is provided in Table 4-1. Sites that were further away from the Proposed Project were also considered and no complete source-pathway-receptor chain for significant effect was identified for any other European Site.
- The catchment mapping was used to establish or discount potential hydrological connectivity between the Site and any European Sites. The hydrological catchments are also shown in Figure 1-1.
- In relation to Special Protection Areas, in the absence of any specific European or Irish guidance in relation to such sites, the Scottish Natural Heritage (SNH) Guidance, '*Assessing Connectivity with Special Protection Areas* (SPA)' (2016) was consulted. This document provides guidance in relation to the identification of connectivity between the proposed project and Special Protection Areas. The guidance takes into consideration the distances species may travel beyond the boundary of their SPAs and provides information on dispersal and foraging ranges of bird species which are frequently encountered when considering plans and projects.
- Table 4-1, provides details of all relevant European Sites as identified in the preceding steps and assesses the potential for likely significant effects on each.
- The assessment considers any likely direct or indirect impacts of the Proposed Project, both alone and in combination with other plans and projects, on European Sites by virtue of criteria including the following: size and scale, land-take, distance from the European Site or key features of the site, resource requirements, emissions, excavation requirements, transportation requirements and duration of construction, operation and decommissioning were considered in this assessment.
- The site synopses and conservation objectives of these sites, as per the NPWS website (www.npws.ie), were consulted and reviewed at the time of preparing this report.
- Where potential pathways for Likely Significant Effect are identified, the site is included within the Likely Zone of Influence and further assessment is required within the NIS.
- The potential for the Proposed Project to result in cumulative impacts on any European Sites in combination with other plans and projects was considered in the assessment that is presented in Table 4-1. Plans and projects considered include those that are listed in Appendix 4.



Map Legend

- Red Line Boundary
- Special Area of Conservation
- Special Protection Areas

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

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SITE LOCATION - NOT TO SCALE

Drawing Title
European Designated Sites

Project Title
Slievegrine Renewable Energy Development

Project No.	Drawing No.	Scale
240740	4-1	1:100,000
Drawn By	Checked By	Date
AMcL	MNR	08/10/2026

Email: info@mkoireland.ie/ Website: www.mkoireland.ie

Table 4-1 Identification of European Sites within the Likely Zone of Influence

European Sites and distance from Proposed Project	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for Likely Significant Effects (LSEs) Yes/No
Special Areas of Conservation (SAC)				
Blackwater River (Cork/Waterford) SAC [002170] Distance: 2.8km from Proposed Grid Connection site The Proposed Wind Farm site borders the boundary of the SAC to the southeast.	› Freshwater Pearl Mussel (*Margaritifera margaritifera*) [1029] › White-clawed Crayfish (*Austropotamobius pallipes*) [1092] › Sea Lamprey (*Petromyzon marinus*) [1095] › Brook Lamprey (*Lampetra planeri*) [1096] › River Lamprey (*Lampetra fluviatilis*) [1099] › Twaite Shad (*Alosa fallax*) [1103] › Atlantic Salmon (*Salmo salar*) (only in fresh water) [1106] › Estuaries [1130] › Mudflats and sandflats not covered by seawater at low tide [1140] › Perennial vegetation of stony banks [1220]	Detailed conservation objectives for this site, (Version 1, July 2012), were reviewed as part of the assessment and are available at www.npws.ie	The Proposed Wind Farm site boundary borders the boundary of the SAC to the southeast. However, the Proposed Project is located completely outside of the SAC, and there is no potential for direct effects. Several tributaries of the River Licky traverse the Proposed Wind Farm site, flowing in a southerly direction. As the SAC encompasses the mainstem of the River Licky which is located along the southern boundary of the Proposed Wind Farm site, a hydrological pathway exists between the Proposed Wind Farm site and the SAC via these tributaries. Therefore, there is potential for a deterioration of water quality within the SAC as a result of the Proposed Project, which could result in likely significant effects on the aquatic dependent QI species and habitats of the SAC. **A complete source pathway receptor chain was identified and in the absence of mitigation, there is potential for the Proposed Project to result in likely significant effects on this European Site. Therefore, the European Site is located within the Likely Zone of Influence and is considered further in this assessment.**	**Yes**

European Sites and distance from Proposed Project	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for Likely Significant Effects (LSEs) Yes/No
	› *Salicornia* and other annuals colonizing mud and sand [1310] › Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] › Otter (*Lutra lutra*) [1355] › Mediterranean salt meadows (*Juncetalia maritimi*) [1410] › Killarney Fern (*Trichomanes speciosum*) [1421] › Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] › Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] › *Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]			

European Sites and distance from Proposed Project	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for Likely Significant Effects (LSEs) Yes/No
	› **Taxus baccata* woods of the British Isles [91J0]			
Helvick Head SAC [000665] Distance: 9.1km from Proposed Grid Connection site 6.7km from Proposed Wind Farm site	› Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] › European dry heaths [4030]	Detailed conservation objectives for this site, (Version 1, November 2016), were reviewed as part of the assessment and are available at www.npws.ie. In addition, the detailed Conservation Measures for the SAC were also reviewed[5].	There will be no direct effects as the Proposed Project is located entirely outside the Designated Site. The QI habitats are terrestrial in nature and therefore, due to the significant intervening distance between the Proposed Project and the SAC, there is no potential for likely significant effects on the QI habitats of this SAC. **No pathway for likely significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. This European Site is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.**	**No**
Ardmore Head SAC [002123] Distance:	› Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] › European dry heaths [4030]	Detailed conservation objectives for this site, (Version 1, November 2016), were reviewed as part of the assessment and are available at www.npws.ie. In	There will be no direct effects as the Proposed Project is located entirely outside the Designated Site. The QI habitats are terrestrial in nature and therefore, due to the significant intervening distance between the Proposed Project and the SAC, there is no potential for likely significant effects on the QI habitats of this SAC.	**No**

[5] *https://www.npws.ie/sites/default/files/protected-sites/conservation-measures/CM000665.pdf*

European Sites and distance from Proposed Project	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for Likely Significant Effects (LSEs) Yes/No
10.8km from Proposed Grid Connection site 8.5km from Proposed Wind Farm site		addition, the detailed Conservation Measures for the SAC were also reviewed[6].	**No pathway for likely significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. This European Site is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.**	
Glendine Wood SAC [002324] Distance: 11.2km from Proposed Grid Connection site 9.5km from Proposed Wind Farm site	› Killarney Fern (*Trichomanes speciosum* [6985]	Detailed conservation objectives for this site, (Version 1, December 2020), were reviewed as part of the assessment and are available at www.npws.ie. In addition, the detailed Conservation Measures for the SAC were also reviewed[7].	There will be no direct effects as the Proposed Project is located entirely outside the Designated Site. The QI species is terrestrial in nature and therefore, due to the significant intervening distance between the Proposed Project and the SAC, there is no potential for likely significant effects on the QI species of this SAC. **No pathway for likely significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. This European Site is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.**	**No**

[6] *https://www.npws.ie/sites/default/files/protected-sites/conservation-measures/CM002123.pdf*
[7] *https://www.npws.ie/sites/default/files/protected-sites/conservation-measures/CM002324.pdf*

European Sites and distance from Proposed Project	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for Likely Significant Effects (LSEs) Yes/No
Comeragh Mountains SAC [001952] Distance: 15.5km from Proposed Grid Connection site 14km from Proposed Wind Farm site	› Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] › Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] › Northern Atlantic wet heaths with *Erica tetralix* [4010] › European dry heaths [4030] › Alpine and Boreal heaths [4060] › Slender Green Feather-moss (*Hamatocaulis vernicosus*) [6216] › Blanket bogs (* if active bog) [7130] › Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani)* [8110]	Detailed conservation objectives for this site, (Version 1, November 2021), were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct effects as the Proposed Project is located entirely outside the Designated Site. There is no surface water connectivity between the Proposed Project and this SAC. Therefore, no complete source-pathway-receptor chain exists between the Proposed Project and this SAC and therefore, no potential for indirect effects were identified. **No pathway for likely significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. This European Site is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.**	**No**

European Sites and distance from Proposed Project	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for Likely Significant Effects (LSEs) Yes/No
	› Calcareous rocky slopes with chasmophytic vegetation [8210] › Siliceous rocky slopes with chasmophytic vegetation [8220]			
Ballymacoda (Clonpriest and Pillmore) SAC [000077] Distance; 16.2km from Proposed Grid Connection site 14.3km from Proposed Wind Farm site	› Estuaries [1130] › Mudflats and sandflats not covered by seawater at low tide [1140] › *Salicornia* and other annuals colonizing mud and sand [1310] › Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] › Mediterranean salt meadows (Juncetalia maritimi) [1410]	Detailed conservation objectives for this site, (Version 3, March 2026), were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct effects as the Proposed Project is located entirely outside the Designated Site. There is no surface water connectivity between the Proposed Project and this SAC. Therefore, no complete source-pathway-receptor chain exists between the Proposed Project and this SAC and as such, no potential for indirect effects were identified. **No pathway for likely significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. This European Site is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.**	**No**
Special Protection Area (SPA)				

European Sites and distance from Proposed Project	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for Likely Significant Effects (LSEs) Yes/No
Dungarvan Harbour SPA [004032] Distance: 3.8km from the Proposed Grid Connection site 2km from Proposed Wind Farm site	› Great Crested Grebe (*Podiceps cristatus*) [A005] › Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] › Shelduck (*Tadorna tadorna*) [A048] › Red-breasted Merganser (*Mergus serrator*) [A069] › Oystercatcher (*Haematopus ostralegus*) [A130] › Golden Plover (*Pluvialis apricaria*) [A140] › Grey Plover (Pluvialis squatarola) [A141] › Lapwing (*Vanellus vanellus*) [A142] › Knot (Calidris canutus) [A143] › Dunlin (*Calidris alpina*) [A149] › Black-tailed Godwit (*Limosa limosa*) [A156] › Bar-tailed Godwit (*Limosa lapponica*) [A157] › Curlew (*Numenius arquata*) [A160]	Detailed conservation objectives for this site (Version 1, January 2012) were reviewed as part of the assessment and are available at www.npws.ie	The Proposed Project is located completely outside of the SPA. Therefore, there is no potential for direct effect via habitat loss. The Proposed Wind Farm site is located within the documented foraging range of some of the listed SCI species. Therefore the potential for likely significant effect via ex-situ collision impacts, or impacts via habitat loss, displacement or disturbance, requires further assessment. The Proposed Wind Farm site is partially located within the same hydrological catchment as this SPA. Therefore, the potential for likely significant effect to the SPA as a result of downstream water quality deterioration requires further assessment. **A complete source pathway receptor chain was identified and in the absence of mitigation, there is potential for the Proposed Project to result in likely significant effects on this European Site. Therefore, the European Site is located within the Likely Zone of Influence and is considered further in this assessment.**	**Yes**

European Sites and distance from Proposed Project	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for Likely Significant Effects (LSEs) Yes/No
	› Redshank (*Tringa totanus*) [A162] › Turnstone (*Arenaria interpres*) [A169] › Wetlands [A999]			
Blackwater Estuary SPA [004028] Distance: 5.4km from Proposed Grid Connection site 4.6km from Proposed Wind Farm site	› Wigeon (*Mareca penelope*) [A050] › Golden Plover (*Pluvialis apricaria*) [A140] › Lapwing (*Vanellus vanellus*) [A142] › Dunlin (*Calidris alpina*) [A149] › Black-tailed Godwit (*Limosa limosa*) [A156] › Bar-tailed Godwit (*Limosa lapponica*) [A157] › Curlew (*Numenius arquata*) [A160] › Redshank (*Tringa totanus*) [A162] › Wetlands [A999]	Detailed conservation objectives for this site (Version 1, May 2012) were reviewed as part of the assessment and are available at www.npws.ie	The Proposed Project is located completely outside of the SPA. Therefore, there is no potential for direct effect via habitat loss. The Proposed Wind Farm site is located within the documented foraging range of some of the listed SCI species. Therefore, the potential for likely significant effect via ex-situ collision impacts, or impacts via habitat loss, displacement or disturbance, requires further assessment. The Proposed Project is located upstream of this SPA. Therefore, a potential for likely significant effect via deterioration of water quality has been identified. **A complete source pathway receptor chain was identified and in the absence of mitigation, there is potential for the Proposed Project to result in likely significant effects on this European Site. Therefore, the European Site is located within the Likely Zone of Influence and is considered further in this assessment.**	**Yes**

European Sites and distance from Proposed Project	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for Likely Significant Effects (LSEs) Yes/No
Helvick Head to Ballyquin SPA [004192] Distance: 8.3km from Proposed Grid Connection site 6km from Proposed Wind Farm site	› Cormorant (*Phalacrocorax carbo*) [A017] › Peregrine Falcon (*Falco peregrinus*) [A103] › Herring gull (*Larus argentatus*) [A184] › Kittiwake (*Rissa tridactyla*) [A188] › Chough (Pyrrhocorax pyrrhocorax) [A346]	Detailed conservation objectives for this site (Version 1, May 2025) were reviewed as part of the assessment and are available at www.npws.ie	The Proposed Project is located completely outside of the SPA. Therefore, there is no potential for direct effect via habitat loss. The Proposed Wind Farm site is located within the documented foraging range of some of the listed SCI species. Therefore, the potential for likely significant effect via ex-situ collision impacts, or impacts via habitat loss, displacement or disturbance, requires further assessment. **A complete source pathway receptor chain was identified and in the absence of mitigation, there is potential for the Proposed Project to result in likely significant effects on this European Site. Therefore, the European Site is located within the Likely Zone of Influence and is considered further in this assessment.**	**Yes**
Blackwater Callows SPA Distance: 12.6km from Proposed Grid Connection site 17.9km from Proposed Wind Farm site	› Whooper Swan (*Cygnus cygnus*) [A038] › Wigeon (*Mareca penelope*) [A050] › Teal (*Anas crecca*) [A052] › Black-tailed Godwit (*Limosa limosa*) [A156] › Wetlands [A999]	Detailed conservation objectives for this site (Version 1, March 2024) were reviewed as part of the assessment and are available at www.npws.ie	There is no potential for direct effect as the Proposed Project is located completely outside of the European Designated Site. There is no downstream hydrological connectivity from the Proposed Project to the SPA, therefore there is no potential for likely significant effect to the SPA via water quality deterioration. The Proposed Wind Farm site lies outside of the document foraging ranges for the SCI species of this SPA, negating the possibility that the Proposed Wind Farm site is utilised by the SCI species associated with this SPA. Due to the large intervening distance between the Proposed Project and the SPA, there is no pathway for likely	**No**

European Sites and distance from Proposed Project	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for Likely Significant Effects (LSEs) Yes/No
			significant effect on the SCI species due to ex-situ habitat loss, disturbance or collision risk. **No pathway for likely significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. This European Site is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.**	
Ballymacoda Bay SPA [004023] Distance: 15km from Proposed Grid Connection site 12.9km from Proposed Wind Farm site	› Wigeon (*Mareca penelope*) [A050] › Teal (*Anas crecca*) [A052] › Ringed Plover (*Charadrius hiaticula*) [A137] › Golden Plover (*Pluvialis apricaria*) [A140] › Grey Plover (*Pluvialis squatarola*) [A141] › Lapwing (*Vanellus vanellus*) [A142] › Sanderling (*Calidris alba*) [A144] › Dunlin (*Calidris alpina*) [A149] › Black-tailed Godwit (*Limosa limosa*) [A156]	Detailed conservation objectives for this site (Version 1, February 2015) were reviewed as part of the assessment and are available at www.npws.ie	The Proposed Project is located completely outside of the SPA. Therefore, there is no potential for direct effect via habitat loss. The Proposed Wind Farm site is located within the documented foraging range of some of the listed SCI species including golden plover and lapwing. Therefore, the potential for likely significant effect via ex-situ collision impacts, or impacts via habitat loss, displacement or disturbance, requires further assessment. The Proposed Project is located within a completely separate hydrological catchment to the SPA, therefore there is no potential for likely significant effect via water quality deterioration. **A complete source pathway receptor chain was identified and in the absence of mitigation, there is potential for the Proposed Project to result in likely significant effects on this European Site. Therefore, the European Site is located within the Likely Zone of Influence and is considered further in this assessment.**	**Yes**

European Sites and distance from Proposed Project	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for Likely Significant Effects (LSEs) Yes/No
	› Bar-tailed Godwit *(Limosa lapponica*) [A157] › Curlew (*Numenius arquata*) [A160] › Redshank (*Tringa totanus*) [A162] › Turnstone (*Arenaria interpres*) [A169] › Black-headed Gull (*Chroicocephalus ridibundus*) [A179] › Common Gull (*Larus canus*) [A182] › Lesser Black-backed Gull (*Larus fuscus*) [A183] › Wetlands [A999]			
Mid-Waterford Coast SPA [004193] Distance: 15.1km from Proposed Grid Connection site	› Cormorant (*Phalacrocorax carbo*) [A017] › Peregrine Falcon (*Falco peregrinus*) [A103] › Herring gull (*Larus argentatus*) [A184] › Chough (Pyrrhocorax pyrrhocorax) [A346]	Detailed conservation objectives for this site (Version 1, August 2024) were reviewed as part of the assessment and are available at www.npws.ie	The Proposed Project is located completely outside of the SPA. Therefore, there is no potential for direct effect via habitat loss. The Proposed Wind Farm site is located within the documented foraging range of some of the listed SCI species. Therefore, the potential for likely significant effect via ex-situ collision impacts, or impacts via habitat loss, displacement or disturbance, requires further assessment.	**Yes**

European Sites and distance from Proposed Project	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for Likely Significant Effects (LSEs) Yes/No
13.1km from Proposed Wind Farm site			There is no downstream hydrological connectivity from the Proposed Project to the SPA, therefore there is no potential for likely significant effect via water quality deterioration. **A complete source pathway receptor chain was identified and in the absence of mitigation, there is potential for the Proposed Project to result in likely significant effects on this European Site. Therefore, the European Site is located within the Likely Zone of Influence and is considered further in this assessment.**	

4.2 Appropriate Assessment Screening Conclusion

It cannot be excluded beyond reasonable scientific doubt, in view of best scientific knowledge, on the basis of objective information and in light of the conservation objectives of the relevant European sites, that the Proposed Project, individually or in combination with other plans and projects, would be likely to have a significant effect on the following European Sites:

- Blackwater River (Cork/Waterford) SAC
- Dungarvan Harbour SPA
- Blackwater Estuary SPA
- Helvick Head to Ballyquin SPA
- Mid-Waterford Coast SPA
- Ballymacoda Bay SPA

As a result, an Appropriate Assessment (AA) of the Proposed Project is required. Information to enable the competent authority to carry out an AA of the Proposed Project is presented in Sections 5 – 9 of this report.

5. INFORMATION TO INFORM APPROPRIATE ASSESSMENT

The potential for likely significant effects on the following European Sites in the absence of any mitigation, individually or cumulatively with other plans or projects, was identified in the preceding section:

- River Blackwater (Cork/Waterford) SAC
- Dungarvan Harbour SPA
- Blackwater Estuary SPA
- Helvick Head to Ballyquin SPA
- Ballymacoda Bay SPA
- Mid Waterford Coastal SPA

The following sections consider each European site individually to:

1. Determine which individual qualifying features have the potential to be adversely affected by the Proposed Project.
2. Provide information with regard to the Conservation Objectives and site-specific pressures and threats for those qualifying features that have the potential to be adversely affected.

5.1 Identification of relevant Qualifying Features

5.1.1 Blackwater River (Cork/Waterford) SAC [002170]

The potential for impacts on this SAC was identified in Section 4.1 above. The identified pathways for likely significant effect include the following:

The boundary of the Proposed Wind Farm site borders the boundary of the SAC to the southeast of the Site. Specifically, the Licky River within this SAC flows along the southern boundary of the Proposed Wind Farm site. The Proposed Wind Farm infrastructure is over 300m from the SAC boundary. The QI population of freshwater pearl mussel is located within the Licky River within the SAC boundary. In addition, a number of tributaries of the Licky River traverse the Proposed Wind Farm site.

The Proposed Grid Connection also crosses a number of watercourses over 5km direct distance from the SAC and over 14 km hydrological connection from the SAC. Therefore, there is a potential for water quality deterioration thus affecting downstream aquatic habitats and species of the SAC.

Furthermore, the potential for disturbance of QI species otter due to construction of the Proposed Project requires further consideration.

Table 5-1 below lists the QIs of this European Site and determines, in the light of their Conservation Objectives, whether there is any complete source-pathway-receptor chain, by which adverse effects may occur.

5.1.1.1 Identification of Individual Qualifying Interest Species with the Potential to be Affected

Table 5-1 Assessment of Qualifying Interest species potentially affected.

Qualifying feature	Conservation Objective (NPWS, Version 1, July 2012)	Rationale	Potential for Adverse Effects Yes/No
[1029] Freshwater Pearl Mussel (*Margaritifera margaritifera*)	To restore the favourable conservation condition of the Freshwater Pearl Mussel in the Blackwater River (Cork/Waterford) SAC	According to the Site-Specific Conservation Objectives (SSCO) (NPWS, 2012), freshwater pearl mussel is known to occur within the River Licky within the SAC. Surveys carried out by MKO confirmed the presence of over 127 live mussels within a 1km stretch in survey Area 1 (Figure 1-1 Aquatic survey locations) of the River Licky downstream of the Proposed Wind	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 1, July 2012)	Rationale	Potential for Adverse Effects Yes/No
		Farm site. The closest freshwater pearl mussel record was located over 400m downstream of the Proposed Wind Farm site. No freshwater pearl mussels were recorded during surveys carried out within the tributaries of the River Licky within the Proposed Wind Farm site or during aquatic surveys of the Proposed Grid Connection. According to the SSCO, water quality deterioration and sedimentation are two factors that can result in adverse effects to this QI species. Notably, an increase in fine sediment within the River Licky has the potential to result in a decrease in juvenile recruitment as the river substratum is altered, such sedimentation impacts could result from construction of the Proposed Wind Farm. The Proposed Wind Farm infrastructure is over 300m from the Licky River within the SAC boundary. A decrease in the water quality within the River Licky also has the potential to result in a decrease in salmonids within the river which are important host fish for freshwater pearl mussel larvae. A decrease in the abundance of host fish within the River Licky, particularly Brown trout (*Salmo trutta*) would result in a decrease in the quantity of recruitment of juvenile freshwater pearl mussels. The Proposed Grid Connection also crosses a number of watercourses over 5km direct distance from the SAC and over 14 km hydrological connection from the SAC. Therefore, there is a potential for water quality deterioration thus affecting downstream aquatic habitats and species of the SAC. Therefore, due to the potential for the construction phase of the Proposed Project to result in a deterioration of water quality within the SAC, there is potential for the Proposed Project to result in adverse effects to the designated QI population of freshwater pearl mussel within the SAC. **A complete source-pathway-receptor chain for adverse effects on this QI was identified, and it is assessed further in this NIS.**	

Qualifying feature	Conservation Objective (NPWS, Version 1, July 2012)	Rationale	Potential for Adverse Effects Yes/No
[1092] White-clawed Crayfish (*Austropotamobius pallipes*)	To maintain the favourable conservation condition of White-clawed Crayfish in the Blackwater River (Cork/Waterford) SAC	According to Map 9 of the SSCO, the records of this aquatic QI species are located within the upper stretches of the Blackwater River system in the Awbeg River and are therefore, not hydrologically connected to the Proposed Project. The SSCO notes that the main Blackwater River is considered to be chemically unsuitable for this species, however, other records of this species have been recorded elsewhere within the SAC. eDNA surveys carried out within the Site showed no positive records of white-clawed crayfish. Therefore, it can be inferred that this species is not present within the Site or immediately downstream. However, by taking a precautionary approach, there is potential for this species to be present further downstream along the River Licky. Therefore, by taking a precautionary approach, there is potential for a deterioration of water quality within the SAC as a result of the Proposed Project to result in adverse effects to this aquatic QI species. **A complete source-pathway-receptor chain for adverse effects on this QI was identified, and it is assessed further in this NIS.**	**Yes**
[1095] Sea Lamprey (*Petromyzon marinus*)	To restore the favourable conservation condition of Sea Lamprey in the Blackwater River (Cork/Waterford) SAC	According to Map 10 of the SSCO there are records of Sea Lamprey located in the lower sections of the River Licky which is hydrologically connected to the Proposed Project. No Sea Lamprey were recorded within any of the aquatic surveys undertaken of rivers hydrologically connected to the Site. As there are records of this aquatic QI species within the River Licky downstream, there is potential adverse effects on this species resulting from potential deterioration of water quality during the construction phase of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this QI was identified, and it is assessed further in this NIS.**	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 1, July 2012)	Rationale	Potential for Adverse Effects Yes/No
[1096] Brook Lamprey (*Lampetra planeri*)	To maintain the favourable conservation condition of Brook Lamprey in the Blackwater River (Cork/Waterford) SAC	According to Map 10 of the SSCO there are records of Brook Lamprey located in the lower sections of the River Licky which is hydrologically connected to the Proposed Project. No Sea Lamprey were recorded within any of the aquatic surveys undertaken of rivers hydrologically connected to the Site. As there are records of this aquatic QI species within the River Licky downstream, there is potential adverse effects on this species resulting from potential deterioration of water quality during the construction phase of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this species was identified as such this species is considered further in the assessment.**	**Yes**
[1099] River Lamprey (*Lampetra fluviatilis*)	To maintain the favourable conservation condition of River Lamprey in the Blackwater River (Cork/Waterford) SAC	According to Map 10 of the SSCO there are records of River Lamprey located in the lower sections of the River Licky which is hydrologically connected to the Proposed Project. No Sea Lamprey were recorded within any of the aquatic surveys undertaken of rivers hydrologically connected to the Site. As there are records of this aquatic QI species within the River Licky downstream, there is potential adverse effects on this species resulting from potential deterioration of water quality during the construction phase of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this QI was identified, and it is assessed further in this NIS.**	**Yes**
[1103] Twaite Shad (*Alosa fallax*)	To restore the favourable conservation condition of Twaite	This species was not recorded in any of the aquatic surveys that were carried out. This species is generally recorded within the estuarine areas of this SAC and is therefore, located	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 1, July 2012)	Rationale	Potential for Adverse Effects Yes/No
	Shad in the Blackwater River (Cork/Waterford) SAC	downstream of the Proposed Project (King and Linnane, 2004[8]). As the designated population of this aquatic QI species is located downstream of the Proposed Project, there is potential for adverse effects on this QI species as a result deterioration in water quality associated with the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this QI was identified, and it is assessed further in this NIS.**	
[1106] Atlantic Salmon (*Salmo salar*) (only in fresh water)	To maintain the favourable conservation condition of Atlantic Salmon in the Blackwater River (Cork/Waterford) SAC	The primary salmonid sections within the SAC are located within the areas of the Blackwater River upstream of Lismore and along the Bride River. Neither of these rivers are located downstream of the Proposed Project and are therefore, not hydrologically connected to the Proposed Project. Electro fishing surveys recorded Atlantic Salmon fry and parr in six survey locations along the River Licky. Due to the presence of this designated aquatic QI species within the River Licky, there is potential for a deterioration in water quality to result in adverse effects to this QI species. **A complete source-pathway-receptor chain for adverse effects on this QI was identified, and it is assessed further in this NIS.**	**Yes**
[1130] Estuaries	To maintain the favourable conservation condition of Estuaries in the Blackwater River (Cork/Waterford) SAC	According to Map 3 of the SSCO, this aquatic dependant QI habitat is located approx. 8.3km downstream of the Proposed Project along the River Licky. Therefore, due to the potential for the construction phase of the Proposed Project to result in a deterioration of water quality, there is potential for adverse effects on this QI habitat.	**Yes**

[8] *King J. J. and Linnane S. M. (2004) The status and distribution of lamprey and shad in the Slaney and Munster Blackwater SACs. Irish Wildlife Manuals, No. 14. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.*

Qualifying feature	Conservation Objective (NPWS, Version 1, July 2012)	Rationale	Potential for Adverse Effects Yes/No
		A complete source-pathway-receptor chain for adverse effects on this QI was identified, and it is assessed further in this NIS.	
[1140] Mudflats and sandflats not covered by seawater at low tide	To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in the Blackwater River (Cork/Waterford) SAC	According to Map 3 of the SSCO, this coastal QI habitat is located approx. 9.6km downstream of the Proposed Project along the River Licky. Therefore, due to the potential for the construction phase of the Proposed Project to result in a deterioration of water quality, there is potential for adverse effects on this QI habitat. **A complete source-pathway-receptor chain for adverse effects on this QI was identified, and it is assessed further in this NIS.**	**Yes**
[1220] Perennial vegetation of stony banks	To maintain the favourable conservation condition of Perennial vegetation of stony banks in the Blackwater River (Cork/Waterford) SAC	According to the SSCO, the current area of this habitat within the SAC is unknown, however, this is a coastal QI habitat and therefore, there is no potential for this QI habitat to be recorded within the stretches of the SAC within the vicinity of the Proposed Project. Therefore, due to the terrestrial nature of this QI habitat, there is no potential for the Proposed Project to result in adverse effects on to this QI habitat. **No complete source-pathway-receptor chain for adverse effects on this QI was identified and as such it is not considered further in the assessment.**	**No**
[1310] *Salicornia* and other annuals colonizing mud and sand	To maintain the favourable conservation condition of *Salicornia* and other annuals colonizing mud and sand in the Blackwater River (Cork/Waterford) SAC	According to the SSCO, the extent of this habitat un-mapped, however this is a coastal habitat and therefore, is likely found within the Blackwater Estuary, over 9.3km downstream of the Proposed Project along the River Licky. Therefore, due to the potential for the construction phase of the Proposed Project to result in a deterioration of water quality, there is potential for the Proposed Project to result in adverse effects on this QI habitat.	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 1, July 2012)	Rationale	Potential for Adverse Effects Yes/No
		A complete source-pathway-receptor chain for adverse effects on this QI was identified, and it is assessed further in this NIS.	
[1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	To restore the favourable conservation condition of Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) in the Blackwater River (Cork/Waterford) SAC	According to the SSCO, there is potential that there are unmapped areas of this habitat located within the Blackwater Estuary, over 9.3km downstream of the Proposed Project along the River Licky. Therefore, due to the potential for the construction phase of the Proposed Project to result in a deterioration of water quality, there is potential for the Proposed Project to result in adverse effects on this QI habitat. **A complete source-pathway-receptor chain for adverse effects on this QI was identified, and it is assessed further in this NIS.**	**Yes**
[1355] Otter (*Lutra lutra*)	To restore the favourable conservation condition of Otter in the Blackwater River (Cork/Waterford) SAC	No otter holts, couches, spraints, prints or other signs of otter were recorded within the boundary of the Site. However, otter spraints, prints and slides were recorded along the banks of the River Licky, downstream of the Proposed Wind Farm site. Otter is a wide-ranging species, with territories and foraging ranges typically extending several kilometres along watercourses and their tributaries (NPWS, 2011[9]). Therefore, individuals associated with the River Licky are considered likely to utilise tributaries within the Site for commuting and foraging. Therefore, there is potential for adverse disturbance and displacement effects on this QI species during the construction phase of the Proposed Project. A deterioration in water quality within the SAC could result in adverse effects on this QI species. Reduced water quality has the potential to affect this QI species through degradation	**Yes**

[9] *National Parks and Wildlife Service (NPWS). 2011. Monitoring Techniques for Otter Lutra lutra. Irish Wildlife Manuals, No. 55. Department of Arts, Heritage and the Gaeltacht, Dublin.*

Qualifying feature	Conservation Objective (NPWS, Version 1, July 2012)	Rationale	Potential for Adverse Effects Yes/No
		of its supporting habitat and by reducing the abundance and availability of prey resources within the SAC. **A complete source-pathway-receptor chain for adverse effects on this QI was identified, and it is assessed further in this NIS.**	
[1410] Mediterranean salt meadows (*Juncetalia maritimi*)	To maintain the favourable conservation condition of Mediterranean salt meadows (*Juncetalia maritimi*) in the Blackwater River (Cork/Waterford) SAC	According to the SSCO, there is potential that there are unmapped areas of this habitat located within the Blackwater Estuary, over 9.3km downstream of the Proposed Project along the River Licky. Therefore, due to the potential for the construction phase of the Proposed Project to result in a deterioration of water quality, there is potential for the Proposed Project to result in adverse effects on this QI habitat. **A complete source-pathway-receptor chain for adverse effects on this QI was identified, and it is assessed further in this NIS.**	**Yes**
[1421] Killarney Fern (*Trichomanes speciosum*)	To maintain the favourable conservation condition of Killarney Fern in the Blackwater River (Cork/Waterford) SAC	According to Map 10 of the SSCO, the closest record of this terrestrial QI species is located approx. 8.9km from the Proposed Project. Therefore, due to the significant intervening distance and the terrestrial nature of this QI species, there is no potential for the Proposed Project to result in adverse effects to this QI species. **No complete source-pathway-receptor chain for adverse effects on this QI was identified and as such it is not considered further in the assessment.**	**No**
[3260] Water courses of plain to montane levels with the *Ranunculion fluitantis* and	To maintain the favourable conservation condition of Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation in	According to the SSCO, the extent and distribution of this aquatic QI habitat within the SAC are unknown. However, given the hydrological connectivity between the Proposed Project and the SAC, there is potential for the Proposed Project to result in adverse effects to this habitat through a deterioration in water quality if it occurs downstream.	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 1, July 2012)	Rationale	Potential for Adverse Effects Yes/No
Callitricho-Batrachion vegetation	the Blackwater River (Cork/Waterford) SAC	**A complete source-pathway-receptor chain for adverse effects on this QI was identified, and it is assessed further in this NIS.**	
[91A0] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles	To restore the favourable conservation condition of Old sessile oak woods with *Ilex* and *Blechnum* in the Blackwater River (Cork/Waterford) SAC	According to Map 7 of the SSCO, two areas of this terrestrial QI habitat are located downstream of the Proposed Project: Cladagh Wood and Rincrew Wood, situated along the banks of the River Licky and the Blackwater Estuary, respectively. Given the terrestrial nature of this habitat, there is no potential for adverse effect to this habitat. **No complete source-pathway-receptor chain for adverse effects on this QI was identified and as such it is not considered further in the assessment.**	**No**
[91E0] *Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)	To restore the favourable conservation condition of Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) in the Blackwater River (Cork/Waterford) SAC	According to the SSCO, there are no mapped areas of this terrestrial QI habitat located downstream of the Proposed Project, however, the SSCO also states that '*further unsurveyed areas are almost certainly present within the SAC*'. Given the hydrological connectivity between the Proposed Wind Farm site and the SAC, there is potential for the Proposed Project to result in adverse effects to this habitat through a deterioration in water quality if it occurs downstream of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this QI was identified, and it is assessed further in this NIS.**	**Yes**
[91J0] **Taxus baccata* woods of the British Isles	The status of *Taxus baccata* woods of the British Isles as a qualifying Annex I habitat for the Blackwater River (Cork/Waterford) SAC is currently under review.	Given the terrestrial nature of this habitat and the intervening distance between the SAC and Proposed Project, there is no potential for adverse effect to this habitat. **No complete source-pathway-receptor chain for adverse effects on this QI was identified and as such it is not considered further in the assessment.**	**No**

5.1.1.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form for the Blackwater River (Cork/Waterford) SAC the site-specific threats, pressures and activities with potential to impact on the European Site were reviewed and considered in relation to the Proposed Project. These are provided in Table 5-2 below.

Table 5-2 Site-specific threats, pressures and activities for the Blackwater River (Cork/Waterford) SAC [002162]

Negative Impacts		
Rank	Threats and Pressures	
High	A08	Fertilisation
	A04	Grazing
	A03	Mowing / cutting of grassland
Medium	E02	Industrial or commercial areas
	I01	Invasive non-native species
	J02.01	Landfill, land reclamation and drying out, general
	F02.03	Leisure fishing
	B	Sylviculture, forestry
	E01	Urbanised areas, human habitation
Low	E03.01	Disposal of household / recreational facility waste
	K01.01	Erosion
	J02.01	Landfill, land reclamation and drying out, general
	G01.01	Nautical sports
	D01.04	Railway lines, TGV
	D01.02	Roads, motorways

Negative Impacts		
Rank	Threats and Pressures	
	C01.01	Sand and gravel extraction
	D01.116	Sport and leisure structures
	B	Sylviculture, forestry

No potential pathways for effect associated with the Proposed Project with regard to site-specific threats, pressures and activities were identified.

5.1.1.3 QI Specific Information

5.1.1.3.1 [1029] Freshwater Pearl Mussel (*Margaritifera margaritifera*)

According to the SSCO document (NPWS, 2012), the freshwater pearl mussel is known from the main Blackwater River, two tributaries (Owentaraglin and Allow) and the Licky River, which discharges to the Upper Blackwater Estuary. Information on the size of the population in the Blackwater and its tributaries is poor but estimated at less than 10,000 for the Blackwater main channel and between 10,000 and 20,000 for the Allow tributary. The Licky population is a distinct population, being separated from the Blackwater by brackish water and a hydrological distance of approx. 30km, making genetic exchange very unlikely. The Licky population was estimated as just greater than 10,000 in 2005 but was estimated to have declined to approx. 4,700 by 2009.

The Article 17 Report (2025), states that the pressures impacting on the species come from a wide variety of sources (e.g. forestry, farming, pollution from urban wastewater, and development activities), often quite removed from the habitat of the species. The species also suffers direct impacts from in-stream works such as channelisation, bridge repairs/construction and recreational fishery structures. Flow changes, caused by activities such as land drainage, have been highlighted as an important contributor to the species' demise.

The overall conservation status for this QI species is 'Bad' and the overall Conservation Trend is 'Deteriorating'.

Targets and Attributes

The Conservation Objective for Freshwater Pearl Mussel is '*To restore the favourable conservation condition of the Freshwater Pearl Mussel in the Blackwater River (Cork/Waterford) SAC*'.

The targets and attributes for this species are provided in Table 5-3 below.

Table 5-3 Targets and attributes associated with the site-specific conservation objectives for Freshwater Pearl Mussel

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Distribution	Maintain at 161km.	**Yes** – There is potential that the Proposed Project will result in a decrease in the distribution of this species within the Licky River via a potential

		deterioration of water quality as a result of the construction phase of the Proposed Project.
Population size	Restore to 35,000 adult mussels	**Yes** – There is potential that the Proposed Project will result in a decrease in the population size of this species within the Licky River via a potential deterioration of water quality as a result of the construction phase of the Proposed Project.
Population structure: recruitment	Restore to least 20% of population no more than 65mm in length; and at least 5% of population no more than 30mm in length	**Yes** – There is potential that the Proposed Project will result in impacts to the recruitment of juvenile mussels as a result of potential for the construction phase of the Proposed Project to result in a degradation of supporting habitat via sedimentation and water quality deterioration.
Population structure: adult mortality	No more than 5% decline from previous number of live adults counted; dead shells less than 1% of the adult population and scattered in distribution	**Yes** – There is potential that the Proposed Project will result in the increased mortality of this species within the Licky River via a potential deterioration of water quality as a result of the construction phase of the Proposed Project.
Habitat extent	Restore suitable habitat in more than 35km and any additional stretches necessary for salmonid spawning	**Yes** – There is potential that the Proposed Project will result in impacts to the habitat extent of this species as a result of potential for the construction phase of the Proposed Project to result in a degradation of supporting habitat via sedimentation and water quality deterioration.
Water quality: macroinvertebrate and phytobenthos (diatoms)	Restore water quality- macroinvertebrates: EQR greater than 0.90; phytobenthos: EQR greater than 0.93	**Yes** – There is potential for the construction phase of the Proposed Project to result in a decrease in macroinvertebrates and phytobenthos within the SAC via a potential deterioration of water quality.
Substratum quality: filamentous algae (macroalgae), macrophytes (rooted higher plants)	Restore substratum quality- filamentous algae: absent or trace (<5%); macrophytes: absent or trace (<5%)	**Yes**- pollution caused by the construction phase of the Proposed Project could cause siltation which could artificially elevate the levels of fine sediments and provide a rooting medium for macrophytes.
Substratum quality: sediment	Restore substratum quality- stable cobble and gravel substrate with very little fine material; no artificially elevated levels of fine sediment	**Yes**- pollution caused by the construction phase of the Proposed Project could cause siltation which could artificially elevate the levels of fine sediments and prevent recruitment of juvenile mussels.
Substratum quality: oxygen availability	Restore to no more than 20% decline from water column to 5cm depth in substrate	**Yes -** Increased siltation in watercourses could lead to a temporary reduction in oxygen levels.
Hydrological regime: flow variability	Restore appropriate hydrological regimes	**No** -There is no potential for impact on the flow variability as a result of the Proposed Project
Host fish	Maintain sufficient juvenile salmonids to host glochidial larvae	**Yes** - deterioration in water quality and habitat degradation of the SAC as a result of the construction phase of the Proposed Project could impact numbers of juvenile salmonid host fish

5.1.1.3.2 [1092] White-clawed Crayfish (*Austropotamobius pallipes*)

According to the SSCO document (NPWS, 2012), within the Blackwater River system, white-clawed crayfish is present only on the Awbeg River. The Awbeg flows through limestone geology. There are other tributaries of the Blackwater with limestone geology but are not known to contain the species. The main Blackwater is considered chemically unsuitable for the crayfish. However, there have been two recent records from other parts of the river system. One was downstream of the confluence of the Awbeg and Blackwater and may simply represent a specimen moving out of the Awbeg. The second was upstream of Mallow and this may represent a new population or an introduction.

The Article 17 Report (2025) states that in most of its range, White-clawed Crayfish is found principally in first order streams, but in Ireland it utilises a much broader spectrum of habitats extending from smallest streams and drains to large rivers and medium-sized lakes wherever there is sufficient lime. The White-clawed Crayfish is generally associated with good quality waters, but this is not necessarily the case in Ireland where it can occur in water of lower quality. It is now generally considered as a keystone species rather than as a bioindicator, because of its traditional importance and its large size, longevity and dominant position in the ecosystem.

The overall conservation status for this QI species is 'Bad' and the overall Conservation Trend is 'Deteriorating'.

Targets and Attributes

The Conservation Objective for White-clawed Crayfish is '*To maintain the favourable conservation condition of White-clawed Crayfish in the Blackwater River (Cork/Waterford) SAC*'.

The targets and attributes for this species are provided in Table 5-4 below.

Table 5-4 Targets and attributes associated with the site-specific conservation objectives for White-clawed Crayfish

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Distribution	No reduction from baseline	**Yes** – There is potential that the Proposed Project will result in a decrease in the distribution of this species within the SAC via a potential deterioration of water quality as a result of the construction phase of the Proposed Project.
Population structure: recruitment	Juveniles and/or females with eggs in at least 50% of positive samples	**Yes** – There is potential that the Proposed Project will result in impacts to the population structure of this species within the SAC via a potential deterioration of water quality as a result of the construction phase of the Proposed Project.
Negative indicator species	No alien crayfish species	**No** – There is no potential for the Proposed Project to result in the introduction of invasive crayfish within the SAC.
Disease	No instances of disease	**No** – There is no potential for the Proposed Project to result in the introduction of crayfish plague within the SAC.
Water quality	At least Q3-4 at all sites sampled by EPA	**Yes** – There is potential for the Proposed Project to result in a deterioration of water quality within the SAC as a result of the potential release of

		sediment and other pollutants into the SAC during the construction phase.
Habitat quality: heterogeneity	No decline in heterogeneity or habitat quality	**Yes** – There is potential that the Proposed Project may result in the release of sediment into the SAC which may impact the heterogeneity and habitat quality of this species

5.1.1.3.3 [1095] Sea Lamprey (*Petromyzon marinus*)

According to the SSCO document (NPWS, 2012), Lampreys spawn in clean gravels and a survey in 2010 indicated accumulations of redds downstream of major weirs. Juveniles burrow in areas of fine sediment in still water.

The Article 17 Report (2025) states that the life cycle of the Sea Lamprey (*Petromyzon marinus*) contains both a marine phase and a freshwater phase. Adult Sea Lamprey at sea are external parasites on host fish or marine mammals and grow in length from 60 to 100 cm before migrating in spring into freshwater to excavate redds or spawning nests in gravelled areas of large rivers. Upriver migration occurs at a time of, generally, falling water levels and substantial spawning activity has been recorded in gravelled areas downstream of large weirs in the major Irish SAC rivers. Egg laying follows nest excavation and the resulting larvae or 'ammocoetes' hatch out within days. These swim or drift downstream to areas of fine sediment into which they can burrow. The larva is a filter feeder and retains its burrowing habit in fine-grained sediment over a period of years. Transformation to the young adult stage occurs in late summer and the juvenile Sea Lamprey migrate downriver to estuarine waters and the open sea in late autumn – winter.

The overall conservation status for this QI species is 'Bad' and the overall Conservation Trend is 'Deteriorating'.

Targets and Attributes

The Conservation Objective for Sea Lamprey is '*To restore the favourable conservation condition of Sea Lamprey in the Blackwater River (Cork/Waterford) SAC*'.

The targets and attributes for this species are provided in Table 5-5 below.

Table 5-5 Targets and attributes associated with the site-specific conservation objectives for Sea Lamprey

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Distribution: extent of anadromy	Greater than 75% of main stem length of rivers accessible from estuary.	**No** - Proposed Project will not result in any barriers to movement.
Population structure of juveniles	At least three age/size groups present	**Yes** - deterioration in water quality and habitat quality as a result of the construction phase of the Proposed Project could result in a decline in the population structure of this species.
Juvenile density in fine sediment	Juvenile density at least 1/m²	**Yes** - deterioration in water quality and habitat quality as a result of the construction phase of the Proposed Project could result in a decline in the juvenile density of this species.

Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds.	**Yes** – There is potential that sedimentation as a result of the construction phase of the Proposed Project may result in a decrease in the extent and distribution of spawning habitat (Clean gravels)
Availability of juvenile habitat	More than 50% of sample sites positive.	**Yes** - deterioration in water quality and habitat degradation as a result of silt laden run-off and other pollutants from the construction phase of the Proposed Project could undermine this target.

5.1.1.3.4 [1096] Brook Lamprey (*Lampetra planeri*)

According to the SSCO document (NPWS, 2012), juveniles burrow in areas of fine sediment in still water. Many sites with suitable larval attributes i.e. fine sediment in low velocity habitat, are found not to contain larval lamprey. This may be a function of chance or probability, or may be a consequence of insufficient recruitment to fill all spatial niches.

The Article 17 Report (2025) states that Brook Lamprey (*Lampetra planeri*) is the smallest of the three lampreys recorded in Ireland typically reaching no more than 15-18 cm in length. Unlike the anadromous Sea Lamprey (*Petromyzon marinus*) and River Lamprey (*Lampetra fluviatilis*), the Brook Lamprey is nonparasitic and non-migratory as an adult, living its entire life in freshwater. Adults spawn in spring, excavating shallow nests in relatively small sized gravels in areas of reduced flow. After hatching, the larvae (also called ammocoetes) drift or swim downstream to areas of riverbed or margins with fine silt and sand deposits. They burrow into this substrate and live as filter feeders over a period of years before transforming into young adult fish. The young adults overwinter before migrating short distances upstream to gravelled areas where they spawn. The adult fish die after spawning.

The overall conservation status for this QI species is 'Favourable' and the overall Conservation Trend is 'Stable'.

Targets and Attributes

The Conservation Objective for Brook Lamprey is '*To maintain the favourable conservation condition of Brook Lamprey in the Blackwater River (Cork/Waterford) SAC*'.

The targets and attributes for this species are provided in Table 5-6 below.

Table 5-6 Targets and attributes associated with the site-specific conservation objectives for Brook Lamprey

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Distribution	Access to all water courses down to first order streams	**No** - Proposed Project will not result in any barriers to movement.
Population structure of juveniles	At least three age/size groups of brook/river lamprey present	**Yes** - deterioration in water quality and habitat quality as a result of the construction phase of the Proposed Project could result in a decline in the population structure of this species.
Juvenile density in fine sediment	Mean catchment juvenile density of brook/river lamprey at least 2/m²	**Yes** - deterioration in water quality and habitat quality as a result of the construction phase of the Proposed Project could result in a decline in the juvenile density of this species.

Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds	**Yes** – There is potential that sedimentation as a result of the construction phase of the Proposed Project may result in a decrease in the extent and distribution of spawning habitat (Clean gravels)
Availability of juvenile habitat	More than 50% of sample sites positive.	**Yes** - deterioration in water quality and habitat degradation as a result of silt laden run-off and other pollutants from the construction phase of the Proposed Project could undermine this target.

5.1.1.3.5 [1099] River Lamprey (*Lampetra fluviatilis*)

According to the SSCO document (NPWS, 2012), juveniles burrow in areas of fine sediment in still water. Many sites with suitable larval attributes i.e. fine sediment in low velocity habitat, are found not to contain larval lamprey. This may be a function of chance or probability, or may be a consequence of insufficient recruitment to fill all spatial niches.

The Article 17 Report (2025) states that River Lamprey (*Lampetra fluviatilis*) breeds in freshwater rivers and streams. Adults spawn in spring, excavating shallow nests in riverine sections comprising fine gravels and small stones. After hatching, the larvae or 'ammocoetes' drift or swim downstream to areas of riverbed or margins with fine silt deposits. They burrow into this bed material where they live as filter feeders over a period of years before transforming into young adult fish and migrating downriver to estuarine and marine habitats. As adults they are parasitic, attaching to and feeding on larger fish in coastal waters. They can grow up to 25-30 cm at maturity at which stage they return to freshwater habitats to spawn, attracted by pheromones exuded by their larvae within the system. The adult fish die after spawning. River and Brook Lamprey are indistinguishable as larvae.

The overall conservation status for this QI species is 'Inadequate' and the overall Conservation Trend is 'Unknown'.

Targets and Attributes

The Conservation Objective for River Lamprey is '*To maintain the favourable conservation condition of River Lamprey in the Blackwater River (Cork/Waterford) SAC*'.

The targets and attributes for this species are provided in Table 5-7 below.

Table 5-7 Targets and attributes associated with the site-specific conservation objectives for River Lamprey

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Distribution	Access to all water courses down to first order streams	**No** - Proposed Project will not result in any barriers to movement.
Population structure of juveniles	At least three age/size groups of river/brook lamprey present	**Yes** - deterioration in water quality and habitat quality as a result of the construction phase of the Proposed Project could result in a decline in the population structure of this species.
Juvenile density in fine sediment	Mean catchment juvenile density of brook/river lamprey at least 2/m²	**Yes** - deterioration in water quality and habitat quality as a result of the construction phase of the

		Proposed Project could result in a decline in the juvenile density of this species.
Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds	**Yes** – There is potential that sedimentation as a result of the construction phase of the Proposed Project may result in a decrease in the extent and distribution of spawning habitat (Clean gravels)
Availability of juvenile habitat	More than 50% of sample sites positive. See map 10 for recorded locations of brook/river lamprey juveniles	**Yes** - deterioration in water quality and habitat degradation as a result of silt laden run-off and other pollutants from the construction phase of the Proposed Project could undermine this target.

5.1.1.3.6 [1103] Twaite Shad (*Alosa fallax*)

According to the SSCO document (NPWS, 2012), in some catchments, artificial barriers block twaite shads' upstream migration, thereby limiting species to lower stretches and restricting access to spawning areas. Major weirs on the Blackwater prevent potential exploitation of adult spawning grounds. Regular breeding has been confirmed in the River Blackwater in recent years.

The Article 17 Report (2025) states that species numbers have declined across its range with the main causes attributed to dam construction, pollution, overexploitation, and habitat destruction. The species spends most of its life in estuaries and coastal waters but it returns to freshwaters to spawn during April to July. In Ireland, there are four spawning populations which occur in the Barrow, Nore, Suir and Munster Blackwater rivers, all of which are SACs for this species. All the SAC estuaries designated for *A. fallax* are at risk of not meeting their environmental objectives and the ecological status of the water bodies where they spawn has deteriorated since the previous reporting cycle. Reduced water quality can impact both larval and adult stages and diffuse nutrient loss and sedimentation to surface waters due to agriculture and urban wastewater have been identified as the major pressures.

The overall conservation status for this QI species is 'Bad' and the overall Conservation Trend is 'Deteriorating'.

Targets and Attributes

The Conservation Objective for Twaite Shad is '*To restore the favourable conservation condition of Twaite Shad in the Blackwater River (Cork/Waterford) SAC*'.

The targets and attributes for this species are provided in Table 5-8 below.

Table 5-8 Targets and attributes associated with the site-specific conservation objectives for Twaite Shad

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Distribution: extent of anadromy	Greater than 75% of main stem length of rivers accessible from estuary	**No** - Proposed Project will not result in any barriers to movement.
Population structure: age classes	More than one age class present	**Yes** - deterioration in water quality and habitat quality as a result of the construction phase of the Proposed Project could result in a decline in the population structure of this species

Extent and distribution of spawning habitat	No decline in extent and distribution of spawning habitats	**Yes** – There is potential that sedimentation as a result of the construction phase of the Proposed Project may result in a decrease in the extent and distribution of spawning habitat.
Water quality: oxygen levels	No lower than 5mg/l	**Yes**- pollution caused by the construction phase of the Proposed Project could cause siltation which could reduce oxygen levels.
Spawning habitat quality: Filamentous algae; macrophytes; sediment	Maintain stable gravel substrate with very little fine material, free of filamentous algal (macroalgae) growth and macrophyte (rooted higher plant) growth	**Yes**- pollution caused by the construction phase of the Proposed Project could cause siltation which could artificially elevate the levels of fine sediments and provide a rooting medium for macrophytes.

5.1.1.3.7 [1106] Atlantic Salmon (*Salmo salar*) (only in fresh water)

According to the SSCO document (NPWS, 2012), Salmon spawn in clean gravels and smolt abundance can be negatively affected by a number of impacts such as estuarine pollution, predation and sea lice (*Lepeophtheirus salmonis*).

The Article 17 Report (2025) states that Atlantic Salmon is an anadromous species indigenous to the North Atlantic. The Irish population generally comprises fish that spend two years (small numbers spend one or three years) as sub-adults in freshwater before going to sea as smolts. The majority of fish spend one winter at sea before returning to their natal rivers, mainly during the summer, as grilse. Smaller numbers spend two winters at sea, returning mainly in spring, hence 'spring' salmon. A small proportion of the adult population returns to the sea post-spawning and can return to spawn again.

The overall conservation status for this QI species is 'Bad' and the overall Conservation Trend is 'Deteriorating'.

Targets and Attributes

The Conservation Objective for Atlantic Salmon is '*To maintain the favourable conservation condition of Atlantic Salmon in the Blackwater River (Cork/Waterford) SAC*'.

The targets and attributes for this species are provided in Table 5-9 below.

Table 5-9 Targets and attributes associated with the site-specific conservation objectives for Atlantic Salmon

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Distribution: extent of anadromy	100% of river channels down to second order accessible from estuary	**No** – the Proposed Project will not result in any barriers to movement.
Adult spawning fish	Conservation Limit (CL) for each system consistently exceeded	**Yes** – there is potential that a deterioration of water quality as a result of the construction phase of the Proposed Project will result in a decline in the abundance of adult spawning fish.
Salmon fry abundance	Maintain or exceed 0+ fry mean catchment-wide abundance threshold	**Yes** – there is potential that a deterioration of water quality as a result of the construction phase

	value. Currently set at 17 salmon fry/5 min sampling	of the Proposed Project will result in a decrease in salmon fry abundance within the SAC.
Out-migrating smolt abundance	No significant decline	**Yes** – there is potential that a deterioration of water quality as a result of the construction phase of the Proposed Project will result in an decline in the abundance of out-migrating smolt.
Number and distribution of redds	No decline in number and distribution of spawning redds due to anthropogenic causes	**Yes** – there is potential that sedimentation as a result of the construction phase of the Proposed Project will result in a decrease in the number and distribution of spawning redds which require clean gravels.
Water quality	At least Q4 at all sites sampled by EPA	**Yes** – there is potential for a deterioration of water quality as a result of the construction phase of the Proposed Project due to the potential release of sediment and other pollutants into the SAC.

5.1.1.3.8 [1130] Estuaries

According to the SSCO document (NPWS, 2012), the area of this QI habitat within the SAC was estimated as 1208ha using OSi data and the Transitional Water Body area as defined under the Water Framework Directive.

The Article 17 Report (2025) states that river estuaries are coastal inlets where, unlike 'Large shallow inlets and bays', there is generally a significant freshwater influence. Estuaries are an extremely diverse and dynamic habitat and play a major role in maintaining the health of coastal ecosystems. They support a mosaic of other habitats depending on their geomorphology and hydrology. In Ireland, winter floods can carry large volumes of water and their associated sediment load into an estuarine system while during the summer months the influence of freshwater and sediment loading can be less. The gradient in salinity along the system, from the mouth of the estuary to the limit of the tidal influence, dictates the diversity of species present along the length of the estuary. Sediment deposition on the estuary bed and suspended solids within the water column also greatly influence species distribution and abundance within the habitat. While increased turbidity of the waterbody can be caused by natural forces leading to the resuspension of bottom sediments, the dredging of estuary channels to facilitate navigation can also contribute to increased water turbidity in addition to the disturbance of benthic species.

The overall conservation status for this QI habitat is 'Bad' and the overall Conservation Trend is 'Stable'.

Targets and Attributes

The Conservation Objective for Estuaries is '*To maintain the favourable conservation condition of Estuaries in the Blackwater River (Cork/Waterford) SAC.*

The targets and attributes for this habitat are provided in Table 5-10 below.

Table 5-10 Targets and attributes associated with the site-specific conservation objectives for Estuaries

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target

Habitat area	The permanent habitat area is stable or increasing, subject to natural processes.	**No** – There is no potential for the Proposed project to result in a decrease to the area of this habitat within the SAC.
Community extent	Maintain the extent of the *Mytilus edulis*-dominated community, subject to natural processes	**Yes** – By taking a precautionary approach, there is potential that the release of sediment and pollutants into the SAC during the construction phase of the Proposed Project to decrease the extent of *Mytilus-edulis* within the SAC.
Community structure: *Mytilus* edulis density	Conserve the high quality of the *Mytilus edulis*-dominated community, subject to natural processes	**Yes** – By taking a precautionary approach, there is potential that the release of sediment and pollutants into the SAC during the construction phase of the Proposed Project to decrease the density of *Mytilus-edulis* within the SAC.
Community distribution	Conserve the following community types in a natural condition: Intertidal estuarine sandy mud community complex; Subtidal estuarine fine sand with *Bathyporeia* spp. community complex; Sand and mixed sediment with polychaetes and crustaceans community complex; Coarse sediment community complex.	**Yes** – By taking a precautionary approach, there is potential that the release of sediment and pollutants into the SAC during the construction phase of the Proposed Project the community types within the SAC.

5.1.1.3.9 [1140] Mudflats and sandflats not covered by seawater at low tide

According to the SSCO document (NPWS, 2012), the area of this QI habitat within the SAC was estimated using OSi data as 284ha.

The Article 17 Report (2025) states that this QI habitat is a dynamic ecosystem, dependent on the balance of natural accretion and erosion. The fundamental building block of this habitat is sediment ranging from around 1 micron to 2 millimetres. The finer silt and clay sediments are dominant in mudflats and the larger sand fractions are associated with areas exposed to significant wave energy. The fine sediment of intertidal mudflats is most often associated with rivers. A range of physical pressures operate in these habitats including dynamic fluctuations in salinity, temperature, and immersion. Small sediment grains can be very closely packed and the consequent minimal exchange of water may lead to oxygen deprivation of underlying sediments.

The overall conservation status for this QI habitat is 'Inadequate' and the overall Conservation Trend is 'Stable'.

Targets and Attributes

The Conservation Objective for Mudflats and sandflats not covered by seawater at low tide is '*To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in the Blackwater River (Cork/Waterford) SAC*'.

The targets and attributes for this habitat are provided in Table 5-11 below.

Table 5-11 Targets and attributes associated with the site-specific conservation objectives for Tidal mudflats and sandflats not covered by seawater at low tide

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target

Habitat area	The permanent habitat area is stable or increasing, subject to natural processes	**No** – There is no potential for the Proposed project to result in a decrease to the area of this habitat within the SAC.
Community extent	Maintain the extent of the *Zostera*- and *Mytilus edulis*- dominated communities, subject to natural processes.	**Yes** – By taking a precautionary approach, there is potential that the release of sediment and pollutants into the SAC during the construction phase of the Proposed Project to decrease the extent of *Zostera* and *Mytilus-edulis* within the SAC.
Community structure: *Zostera* shoot density	Conserve the high quality of the *Zostera*-dominated community, subject to natural processes	**Yes** – By taking a precautionary approach, there is potential that the release of sediment and pollutants into the SAC during the construction phase of the Proposed Project to alter the shoot density of *Zostera* within the SAC.
Community structure: *Mytilus edulis* density	Conserve the high quality of the *Mytilus edulis*-dominated community, subject to natural processes	**Yes** – By taking a precautionary approach, there is potential that the release of sediment and pollutants into the SAC during the construction phase of the Proposed Project to alter the species density of *Mytilus-edulis* within the SAC.
Community distribution	The following community types should be conserved in a natural condition: Intertidal estuarine sandy mud community complex and Sand and mixed sediment with polychaetes and crustaceans community complex	**Yes** – By taking a precautionary approach, there is potential that the release of sediment and pollutants into the SAC during the construction phase of the Proposed Project the community types within the SAC.

5.1.1.3.10 [1310] *Salicornia* and other annuals colonizing mud and sand

According to the SSCO document (NPWS, 2012), this habitat but is known to occur at Foxhole, Black Bog and Tourig at the mouth of the Blackwater Estuary. The extent of this habitat has not been mapped and it is likely that there are other areas of this habitat within the SAC. *Salicornia* is an annual species, so its distribution can vary significantly from year to year.

The Article 17 Report (2025) this habitat is a pioneer saltmarsh community that may occur on muddy sediment seaward of established saltmarsh, or form patches within other saltmarsh communities where the elevation is suitable and there is regular tidal inundation. As this habitat is dominated by annuals it can be ephemeral or transient in nature and is highly susceptible to erosion. Its distribution can vary considerably from year to year and it can move in response to changing conditions, e.g. in estuaries with shifting river channels.

The overall conservation status for this QI habitat is 'Bad' and the overall Conservation Trend is 'Deteriorating'.

Targets and Attributes

The Conservation Objective for *Salicornia* and other annuals colonizing mud and sand is '*To maintain the favourable conservation condition of Salicornia and other annuals colonizing mud and sand in the Blackwater River (Cork/Waterford) SAC*'.

The targets and attributes for this habitat are provided in Table 5-12 below.

Table 5-12 Targets and attributes associated with the site-specific conservation objectives for Salicornia and other annuals colonizing mud and sand

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Habitat area	Area stable or increasing, subject to natural processes, including erosion and succession	**No** – There is no potential for the Proposed project to result in a decrease to the area of this habitat within the SAC.
Habitat distribution	No decline, or change in habitat distribution, subject to natural processes	**No** – There is no potential for the Proposed project to result in a decrease to the distribution of this habitat within the SAC.
Physical structure: sediment supply	Maintain natural circulation of sediments and organic matter, without any physical obstructions	**Yes** – There is potential that the release of sediment into the SAC during the construction phase of the Proposed Project will alter the sediment supply within the SAC.
Physical structure: creeks and pans	Maintain creek and pan structure, subject to natural processes, including erosion and succession	**No** – There is no potential for the Proposed Project to impact the creeks and pans structures within this QI habitat.
Physical structure: flooding regime	Maintain natural tidal regime	**No** – There is no potential for the Proposed Project to impact the flooding regime within this QI habitat.
Vegetation structure: zonation	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	**No** - There is no potential for the Proposed Project to impact the vegetation structure within this QI habitat.
Vegetation structure: vegetation height	Maintain structural variation within sward	**No** - There is no potential for the Proposed Project to impact the vegetation height within this QI habitat.
Vegetation structure: vegetation cover	Maintain more than 90% of area outside creeks vegetated	**No** - There is no potential for the Proposed Project to impact the vegetation cover within this QI habitat.
Vegetation composition: typical species and sub-communities	Maintain the presence of species-poor communities with typical species listed in saltmarsh Monitoring Project (McCorry and Ryle, 2009)	**No** - There is no potential for the Proposed Project to alter the vegetation composition within the SAC.
Vegetation structure: negative indicator species: *Spartina anglica*	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%	**No** - There is no potential for the Proposed Project to result in the spread of *Spartina angelica* within the SAC.

5.1.1.3.11 [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

According to the SSCO document (NPWS, 2012), within the SAC one sub-site that supported Atlantic salt meadow was mapped (2.77ha) and additional areas of potential saltmarsh (28.13ha) were identified from an examination of aerial photographs, giving a total estimated area of 30.90ha. Saltmarsh habitat also occurs at Tourig Hall and Ballintray House.

The Article 17 Report (2025) Atlantic salt meadows generally occupy the widest part of the saltmarsh gradient. They also contain a distinctive topography with an intricate network of creeks and salt pans occurring on the medium to large-sized saltmarshes. This habitat is also important for other wildlife including wintering waders and wildfowl. Atlantic salt meadows are distributed around most of the coastline of Ireland. The intricate topography of the Irish coastline with many inlets has created an abundance of sites that are sheltered and allow muddy sediments to accumulate, leading to the development of saltmarsh.

The overall conservation status for this QI habitat is 'Bad' and the overall Conservation Trend is 'Deteriorating'.

Targets and Attributes

The Conservation Objective for Atlantic salt meadows *(Glauco-Puccinellietalia mariitimae)* is '*To restore the favourable conservation condition of Atlantic salt meadows (Glauco-Puccinellietalia maritimae) in the Blackwater River (Cork/Waterford) SAC*'.

The targets and attributes for this habitat are provided in Table 5-13 below.

Table 5-13 Targets and attributes associated with the site-specific conservation objectives for Atlantic salt meadows

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Habitat area	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: Kinsalebeg - 2.77ha	**No** – There is no potential for the Proposed project to result in a decrease to the area of this habitat within the SAC.
Habitat distribution Occurrence	No decline or change in habitat distribution, subject to natural processes.	**No** – There is no potential for the Proposed project to result in a decrease to the distribution of this habitat within the SAC.
Physical structure: sediment supply	Maintain natural circulation of sediments and organic matter, without any physical obstructions	**Yes** – There is potential that the release of sediment into the SAC during the construction phase of the Proposed Project will alter the sediment supply within the SAC.
Physical structure: creeks and pans	Maintain creek and pan structure, subject to natural processes, including erosion and succession	**No** – There is no potential for the Proposed Project to impact the creeks and pans structures within this QI habitat.
Physical structure: flooding regime	Maintain natural tidal regime	**No** – There is no potential for the Proposed Project to impact the flooding regime within this QI habitat.
Vegetation structure: zonation	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	**No** - There is no potential for the Proposed Project to impact the vegetation structure within this QI habitat.
Vegetation structure: vegetation height	Maintain structural variation within sward	**No** - There is no potential for the Proposed Project to impact the vegetation height within this QI habitat.
Vegetation structure: vegetation cover	Maintain more than 90% of the saltmarsh area vegetated	**No** - There is no potential for the Proposed Project to impact the vegetation cover within this QI habitat.

Vegetation composition: typical species and sub-communities	Maintain range of sub- communities with typical species listed in Saltmarsh Monitoring Project (McCorry and Ryle, 2009)	**No** - There is no potential for the Proposed Project to alter the vegetation composition within the SAC.
Vegetation structure: negative indicator species - *Spartina anglica*	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%	**No** - There is no potential for the Proposed Project to result in the spread of *Spartina angelica* within the SAC.

5.1.1.3.12 [1355] Otter (*Lutra lutra*)

According to the SSCO document (NPWS, 2012), the extent of the terrestrial habitat for this species within the SAC is calculated as 103ha above high-water mark and 1165.7ha along river banks/ around ponds.

The Article 17 Report (2025) Ireland continues to remain a stronghold for the Eurasian Otter (*Lutra lutra*). Five national surveys have been conducted to date. The first in 1980/81 found signs of Otters throughout the country, at 88% of sites surveyed. There have been some declines since then, but the most recent survey (2023/24) indicates that the population has stabilised overall and that the species remains widespread. Otters have two basic requirements: aquatic prey and safe refuges where they can rest. In Ireland, Otter populations are found along rivers, lakes and coasts, where fish and other prey are abundant, and where the bank-side habitat offers plenty of cover. The Otter is an opportunistic predator with a broad and varied diet. In coastal areas fish, crabs and molluscs are eaten. In freshwater areas a variety of fish from sticklebacks to salmon and eels will be taken, while crayfish and frogs can be important locally or seasonally. The main threats to the Otter include water pollution, habitat disturbance and accidental deaths (road traffic)

The overall conservation status for this QI species is 'Favourable' and the overall Conservation Trend is 'Stable'.

Targets and Attributes

The Conservation Objective for Otter is '*To restore the favourable conservation condition of Otter in the Blackwater River (Cork/Waterford) SAC*'.

The targets and attributes for this species are provided in Table 5-14 below.

Table 5-14 Targets and attributes associated with the site-specific conservation objectives for otter

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Distribution	No significant decline	**No** – The Proposed Project will not result in the decrease in the distribution of this species.
Extent of terrestrial habitat	No significant decline. Area mapped and calculated as 103ha above high water mark (HWM); 1165.7ha along river banks/ around ponds	**No -** The Proposed Project will not result in the decrease in the extent of terrestrial habitat for this species.

Extent of marine habitat	No significant decline. Area mapped and calculated as 647.2ha	**No** - The Proposed Project will not result in the decrease in the extent of marine habitat for this species.
Extent of freshwater (river) habitat	No significant decline. Length mapped and calculated as 599.54km	**No** - The Proposed Project will not result in the decrease in the extent of freshwater habitat for this species.
Extent of freshwater (lake) habitat	No significant decline. Area mapped and calculated as 25.06ha	**No** - The Proposed Project will not result in the decrease in the extent of freshwater habitat for this species.
Couching sites and holts	No significant decline	**No** - The Proposed Project will not result in the loss of any couching sites or holts.
Fish biomass available	No significant decline	**Yes** – A potential deterioration of water quality as a result of sediment/pollution run-off during the construction phase of the Proposed Project may result in a decrease in fish biomass within the SAC.
Barriers to connectivity	No significant increase	No – The Proposed Project will not result in the addition of any barriers within the SAC.

5.1.1.3.13 [1410] Mediterranean salt meadows (*Juncetalia maritimi*)

According to the SSCO document (NPWS, 2012), within the SAC one sub-site that supports Mediterranean salt meadows was mapped (1.36ha) and additional areas of potential saltmarsh (8.67ha) were identified from an examination of aerial photographs, giving a total estimated area of 10.03ha.

The Article 17 Report (2025) Mediterranean salt meadows occupy the upper zone of saltmarshes and usually occur adjacent to the boundary with terrestrial habitats. They are widespread on the Irish coastline; however, they are not as extensive as Atlantic salt meadows (1330). The habitat is distinguished from Atlantic salt meadows by the presence of rushes such as Sea Rush (*Juncus maritimus*) and/or Sharp Rush (*Juncus acutus*), along with a range of species typically found in Atlantic salt meadows, including Sea Aster (*Aster tripolium*), Sea Purslane (*Atriplex portulacoides*), Sea-milkwort (*Glaux maritima*), Saltmarsh Rush (*Juncus gerardii*), Parsley Water-dropwort (*Oenanthe lachenalii*), Sea plantain (*Plantago maritima*) and Common Saltmarsh-grass (*Puccinellia maritima*).

The overall conservation status for this QI habitat is 'Inadequate' and the overall Conservation Trend is 'Deteriorating'.

Targets and Attributes

The Conservation Objective for Mediterranean salt meadows (*Juncetalia maritimi*) is '*To maintain the favourable conservation condition of Mediterranean salt meadows (Juncetalia maritimi) in the Blackwater River (Cork/Waterford) SAC*'.

The targets and attributes for this habitat are provided in Table 5-15 below.

Table 5-15 Targets and attributes associated with the site-specific conservation objectives for Mediterranean salt meadows

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target

Habitat area	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: Kinsalebeg: 1.36ha.	**No** – There is no potential for the Proposed project to result in a decrease to the area of this habitat within the SAC.
Habitat distribution	No decline, or change in habitat distribution, subject to natural processes	**No** – There is no potential for the Proposed project to result in a decrease to the distribution of this habitat within the SAC.
Physical structure: sediment supply	Maintain natural circulation of sediments and organic matter, without any physical obstructions	**Yes** – There is potential that the release of sediment into the SAC during the construction phase of the Proposed Project will alter the sediment supply within the SAC.
Physical structure: creeks and pans	Maintain creek and pan structure, subject to natural processes, including erosion and succession	**No** – There is no potential for the Proposed Project to impact the creeks and pans structures within this QI habitat.
Physical structure: flooding regime	Maintain natural tidal regime	**No** – There is no potential for the Proposed Project to impact the flooding regime within this QI habitat.
Vegetation structure: zonation	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	**No** - There is no potential for the Proposed Project to impact the vegetation structure within this QI habitat.
Vegetation structure: vegetation height	Maintain structural variation within sward	**No** - There is no potential for the Proposed Project to impact the vegetation height within this QI habitat.
Vegetation structure: vegetation cover	Maintain more than 90% of area outside creeks vegetated	**No** - There is no potential for the Proposed Project to impact the vegetation cover within this QI habitat.
Vegetation composition: typical species	Maintain range of sub- communities with typical species listed in Saltmarsh Monitoring Project (McCorry and Ryle, 2009)	**No** - There is no potential for the Proposed Project to alter the vegetation composition within the SAC.
Vegetation structure: negative indicator species - *Spartina anglica*	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%	**No** - There is no potential for the Proposed Project to result in the spread of *Spartina angelica* within the SAC.

5.1.1.3.14 [3260] Watercourses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation

According to the SSCO document (NPWS, 2012), the full distribution of this habitat and its sub-types in this site are currently unknown. The basis of the selection of the SAC for the habitat was the presence of plant species listed in the Interpretation Manual (European Commission, 2007), recorded during the Natural Heritage Area (NHA) survey of the river (internal NPWS files). The dominant floating- leaved species appears to be the common and widespread stream water-crowfoot (*Ranunculus penicillatus* subsp. *penicillatus*). No high conservation value sub- types are known to occur in the SAC and further survey is required to determine whether any such are present. Only one rare/threatened

vascular plant species is known to occur in the SAC, the protected opposite-leaved pondweed (*Groenlandia densa*), which is abundant in the tidal stretches around Cappoquin.

The Article 17 Report (2025) this Annex I habitat has a broad definition, covering from upland, flashy, oligotrophic, bryophyte- and algal-dominated rivers, to tidal reaches dominated by higher plants. In Ireland, the highest riverine conservation interest is associated with lowland depositing and tidal rivers and unmodified, fast-flowing, low-nutrient rivers. Many Irish rivers have been heavily modified, particularly through arterial drainage and channelisation. These activities have changed channel morphology and introduced larger amounts of fine sediment. Such fines provide a rooting medium for plants and, as a result, Water-crowfoot (*Ranunculus penicillatus*) has increased in abundance. In consequence, the habitat has, erroneously, become synonymous with Water-crowfoot in Ireland. Crowfoot-dominated reaches frequently have low diversity and are of low conservation value, and an abundance of the species generally indicates poor condition and damage. The main problems for river habitats in Ireland are damage through hydrological and morphological change, eutrophication and other water pollution. The EPA is also continuing to highlight the decline in high quality rivers. While not all variants of the river habitat require low nutrient conditions, this trend is a significant concern. Agriculture and municipal and industrial discharges are the most significant sources of nutrient and organic pollution.

The overall conservation status for this QI habitat is 'Inadequate' and the overall Conservation Trend is 'Deteriorating'.

Targets and Attributes

The Conservation Objective for Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation is '*To maintain the favourable conservation condition of Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation in the Blackwater River (Cork/Waterford) SAC*'.

The targets and attributes for this habitat are provided in Table 5-16 below.

Table 5-16 Targets and attributes associated with the site-specific conservation objectives for Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Habitat distribution	No decline, subject to natural processes	**No** – The Proposed Project will not result in the loss of the distribution of this QI habitat
Habitat area	Area stable or increasing, subject to natural processes	**No** – The Proposed Project will not result in the loss of the area of this QI habitat
Hydrological regime: river flow	Maintain appropriate hydrological regimes	**No** – The Proposed Project will not have any impact on the hydrological regime within the SAC.
Hydrological regime: tidal influence	Maintain natural tidal regime	**No** – The Proposed Project will not have any impact on the tidal regime within the SAC.
Substratum composition: particle size range	The substratum should be dominated by the particle size ranges, appropriate to the habitat sub-type (typically sands, gravels and cobbles)	**Yes** – There is potential that sedimentation as a result of the construction stage of the Proposed Project may alter the substratum composition within this QI habitat.

Water quality: nutrients	The concentration of nutrients in the water column should be sufficiently low to prevent changes in species composition or habitat condition	**No** – The Proposed Project will not result in an increase in the levels of nutrients within this QI habitat.
Vegetation composition: typical species	Typical species of the relevant habitat sub-type should be present and in good condition	**Yes** – There is potential that a deterioration in water quality as a result of pollutant run-off during the construction phase of the Proposed Project may alter the vegetation composition within this QI habitat.
Floodplain connectivity: area	The area of active floodplain at and upstream of the habitat should be maintained	**No** – There is no potential for the Proposed Project to result in the loss of active floodplain area for this QI habitat.

5.1.1.3.15 [91E0] *Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)

According to the SSCO document (NPWS, 2012), there is a minimum of 6 sites with this habitat within the SAC, however, further unsurveyed areas are almost certainly present within the SAC.

The Article 17 Report (2025) there are two types of this habitat that occur in Ireland, of which the most common is that of the riparian forests of *Fraxinus excelsior* and *Alnus glutinosa* (*Alno-Padion*) of temperate and Boreal Europe lowland and hill watercourses. These stands usually occur within the hydrological systems of fast or slow-flowing rivers or streams, but some examples are spring-fed or flush-fed. Second of these classes that occurs in Ireland is that of gallery forests of tall willows (*Salicion albae*) that occur alongside lowland river channels and occasionally on river islands, where the tree roots are almost continuously submerged. Flooding may occur frequently (annually or more often) or infrequently (at intervals of several years) but the inundation will nonetheless determine the vegetation.

The overall conservation status for this QI habitat is 'Bad' and the overall Conservation Trend is 'Deteriorating'.

Targets and Attributes

The Conservation Objective for Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) is '*To restore the favourable conservation condition of Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) in the Blackwater River (Cork/Waterford) SAC*'.

The targets and attributes for this habitat are provided in Table 5-17 below.

Table 5-17 Targets and attributes associated with the site-specific conservation objectives for Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Habitat area	Area stable or increasing, subject to natural processes, at least 19.2ha for sites surveyed.	**Yes** – The Proposed Project has the potential to result in a decrease in the area of this QI habitat within the SAC due to potential impacts on water quality.
Habitat distribution	No decline.	**No** – The Proposed Project will not result in a decrease in the distribution of this QI habitat within the SAC.

Woodland size	Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and "small" woods at least 3ha in size	**No** – The Proposed Project will not result in a decrease in the woodland size of this QI habitat within the SAC.
Woodland structure: cover and height	Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semi- mature trees and shrubs; and well-developed herb layer	**No** – The Proposed Project will not result in a decrease in the woodland height and cover in this QI habitat within the SAC.
Woodland structure: community diversity and extent	Maintain diversity and extent of community types	**No** – The Proposed Project will not result in an alteration of the woodland structure within this QI habitat within the SAC.
Woodland structure: natural regeneration	Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy	**No** – The Proposed Project will not result in an impact to the natural regeneration in this QI habitat within the SAC.
Hydrological regime: flooding depth/height of water table	Appropriate hydrological regime necessary for maintenance of alluvial vegetation	**No** – The Proposed Project will not result in any impacts to the hydrological regime within this QI habitat.
Woodland structure: dead wood	At least 30m³/ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter (greater than 20cm diameter in the case of alder)	**No** – The Proposed Project will not result in an impact to the quantity of dead wood in this QI habitat within the SAC.
Woodland structure: veteran trees	No decline	**No** – The Proposed Project will not result in the loss of any veteran trees within this QI habitat.
Woodland structure: indicators of local disctinctiveness	No decline	**No** - The Proposed Project will not result in the loss of any indicators of local distinctiveness within this QI habitat.
Vegetation composition: native tree cover	No decline. Native tree cover not less than 95%	**No** - The Proposed Project will not result in the loss of any native tree cover within this QI habitat.
Vegetation composition: typical species	A variety of typical native species present, depending on woodland type, including alder (*Alnus glutinosa*), willows (*Salix* spp.) and, locally, oak (*Quercus robur*) and ash (*Fraxinus excelsior*)	**No** – The Proposed Project will not result in the loss of the variety of native woodland species within this QI habitat.
Vegetation composition: negative indicator species	Negative indicator species, particularly non-native invasive species, absent or under control	**No** – The Proposed Project will not result in the establishment of negative indicator species within this QI habitat.

5.1.2 Dungarvan Harbour SPA [004032]

The potential for impacts on this SPA were identified in Section 4.1 above. The identified pathways for effect include the following:

- Likely significant effect on SCI species due to ex-situ habitat loss, disturbance or collision risk.
- The SPA wetland habitat is located 3.2km downstream of the Proposed Wind Farm site. Therefore, a potential for water quality deterioration to SCI supporting habitat was identified.

Table 5-18 below lists the qualifying interests of this European Site and determines, in the light of their Conservation Objectives, whether there is any complete source-pathway-receptor chain, by which adverse effects may occur.

5.1.2.1 Identification of Individual Qualifying Interest species with the Potential to be Affected.

Table 5-18 Assessment of Special Conservation Interests potentially affected.

Qualifying feature	Conservation Objective (NPWS, Version 1, January 2012)	Rationale	Potential for Adverse Effects Yes/No
[A005] Great Crested Grebe (*Podiceps cristatus*)	To maintain the favourable conservation condition of Great Crested Grebe in Dungarvan Harbour SPA	The Proposed Wind Farm site is located approx. 2km over-land from the SPA. The Proposed Wind Farm site is within the core foraging range of this species (5km, Piersma *et al.*, 1988) However, the species was not recorded using the Site. Therefore, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement or habitat loss. Given the nature and scale of works and the habitats associated with the Proposed Grid Connection, there is no potential for loss of suitable supporting habitat or ex-situ disturbance of this species as a result of the Proposed Grid Connection. However, taking a precautionary approach, the potential for indirect effect on this species, due to water quality deterioration and degradation of SCI supporting habitat was identified as a result of the Proposed Project.	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 1, January 2012)	Rationale	Potential for Adverse Effects Yes/No
		A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.	
[A046] Light-bellied Brent Goose (*Branta bernicla hrota*)	To maintain the favourable conservation condition of Light-bellied Brent Goose in Dungarvan Harbour SPA	The Proposed Wind Farm site is located approx. 2km over-land from the SPA. The Proposed Wind Farm site is within the core foraging range of this species (8.2km, Summers and Critchley, 1990). However, the species was not recorded using the Site. Therefore, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement or habitat loss. Given the nature and scale of works and the habitats associated with the Proposed Grid Connection, there is no potential for loss of suitable supporting habitat or ex-situ disturbance of this species as a result of the Proposed Grid Connection. However, taking a precautionary approach, the potential for indirect effect on this species, due to water quality deterioration and degradation of SCI supporting habitat was identified as a result of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.**	**Yes**
[A048] Shelduck (Tadorna tadorna)	To maintain the favourable conservation condition of Shelduck in Dungarvan Harbour SPA	The Proposed Wind Farm site is located 2km from the SPA at the nearest point. This species is a primarily marine habitat species and unlikely to use the habitat within the proposed Wind Farm site, which is not coastal. Therefore, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement or habitat loss.	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 1, January 2012)	Rationale	Potential for Adverse Effects Yes/No
		Given the nature and scale of works and the habitats associated with the Proposed Grid Connection, there is no potential for loss of suitable supporting habitat or ex-situ disturbance of this species as a result of the Proposed Grid Connection. However, taking a precautionary approach, the potential for indirect effect on this species, due to water quality deterioration and degradation of SCI supporting habitat was identified as a result of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.**	
[A069] Red-breasted Merganser (*Mergus serrator*)	To maintain the favourable conservation condition of Red-breasted Merganser in Dungarvan Harbour SPA	The Proposed Wind Farm site is located 2km from the SPA at the nearest point. This species is a primarily marine habitat species and unlikely to use the habitat within the proposed Wind Farm site, which is not coastal. Therefore, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement or habitat loss. Given the nature and scale of works and the habitats associated with the Proposed Grid Connection, there is no potential for loss of suitable supporting habitat or ex-situ disturbance of this species as a result of the Proposed Grid Connection. However, taking a precautionary approach, the potential for indirect effect on this species, due to water quality deterioration and degradation of SCI supporting habitat was identified as a result of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.**	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 1, January 2012)	Rationale	Potential for Adverse Effects Yes/No
[A130] Oystercatcher (*Haematopus ostralegus*)	To maintain the favourable conservation condition of Oystercatcher in Dungarvan Harbour SPA	The Proposed Wind Farm site is located approx. 2km over-land from the SPA. The Proposed Wind Farm site is outside of the core foraging range of this species (1.1km, Schwemmer and Garthe, 2011). Therefore, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement or habitat loss. Given the nature and scale of works and the habitats associated with the Proposed Grid Connection, there is no potential for loss of suitable supporting habitat or ex-situ disturbance of this species as a result of the Proposed Grid Connection. However, taking a precautionary approach, the potential for indirect effect on this species, due to water quality deterioration and degradation of SCI supporting habitat was identified as a result of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.**	**Yes**
[A140] Golden Plover (*Pluvialis apricaria*)	To maintain the favourable conservation condition of Golden Plover in Dungarvan Harbour SPA	The Proposed Wind Farm site is located 2km from the SPA at the nearest point. The Proposed Wind Farm site is within the core foraging range of this species. Golden plover was observed using the Site in the winter and passage season (April and September). Therefore, there is potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement. Given the nature and scale of works and the habitats associated with the Proposed Grid Connection, there is no potential for loss of suitable supporting habitat or ex-situ disturbance of this species as a result of the Proposed Grid Connection.	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 1, January 2012)	Rationale	Potential for Adverse Effects Yes/No
		However, taking a precautionary approach, the potential for indirect effect on this species, due to water quality deterioration and degradation of SCI supporting habitat was identified as a result of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.**	
[A141] Grey Plover (*Pluvialis squatarola*)	To maintain the favourable conservation condition of Grey Plover in Dungarvan Harbour SPA	This species is a primarily marine habitat species and unlikely to use the habitat within the Proposed Wind Farm site, which is not coastal. Therefore, there is no potential for adverse effect on the species as a result of direct, ex-situ collision risk, disturbance or habitat loss impacts. Given the nature and scale of works and the habitats associated with the Proposed Grid Connection, there is no potential for loss of suitable supporting habitat or ex-situ disturbance of this species as a result of the Proposed Grid Connection. However, taking a precautionary approach, the potential for indirect effect on this species, due to water quality deterioration and degradation of SCI supporting habitat was identified as a result of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.**	**Yes**
[A142] Lapwing (*Vanellus Vanellus*)	To maintain the favourable conservation condition of Lapwing in Dungarvan Harbour SPA	The Proposed Wind Farm site is located approx. 2km over-land from the SPA. No population of ecological significance was recorded utilising the Proposed Wind Farm site during the extensive suite of surveys conducted. As such, the potential for direct habitat loss,	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 1, January 2012)	Rationale	Potential for Adverse Effects Yes/No
		disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Proposed Wind Farm site is of significance to this species. Given the nature and scale of works and the habitats associated with the Proposed Grid Connection, there is no potential for loss of suitable supporting habitat or ex-situ disturbance of this species as a result of the Proposed Grid Connection. However, taking a precautionary approach, the potential for indirect effect on this species, due to water quality deterioration and degradation of SCI supporting habitat was identified as a result of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.**	
[A143] Knot (*Calidris canutus*)	To maintain the favourable conservation condition of Knot in Dungarvan Harbour SPA	This species is a primarily marine habitat species and unlikely to use the habitat within the Proposed Wind Farm site, which is not coastal. Therefore, there is no potential for adverse effect on the species as a result of ex-situ impacts. Given the nature and scale of works and the habitats associated with the Proposed Grid Connection, there is no potential for loss of suitable supporting habitat or ex-situ disturbance of this species as a result of the Proposed Grid Connection. However, taking a precautionary approach, the potential for indirect effect on this species, due to water quality deterioration and degradation of SCI supporting habitat was identified as a result of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.**	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 1, January 2012)	Rationale	Potential for Adverse Effects Yes/No
[A149] Dunlin (*Calidris alpina*)	To maintain the favourable conservation condition of Dunlin in Dungarvan Harbour SPA	This species is a primarily marine habitat species and unlikely to use the habitat within the Proposed Wind Farm site, which is not coastal and is located 2km from the SPA at the nearest point which is outside of the foraging range of this species (500m; SNH, 2016). Therefore, there is no potential for adverse effect on the species as a result of ex-situ impacts. Given the nature and scale of works and the habitats associated with the Proposed Grid Connection, there is no potential for loss of suitable supporting habitat or ex-situ disturbance of this species as a result of the Proposed Grid Connection. However, taking a precautionary approach, the potential for indirect effect on this species, due to water quality deterioration and degradation of SCI supporting habitat was identified as a result of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.**	**Yes**
[A156] Black-tailed Godwit (*Limosa limosa*)	To maintain the favourable conservation condition of Black-tailed Godwit in Dungarvan Harbour SPA	The Proposed Wind Farm site is located 2km from the SPA at the nearest point. No core foraging range for this species was available in the literature. Based on the ecology of ecologically similar wading species such as golden plover, greenshank and curlew, an average value of 2km will be assumed for this assessment (2.8km; Johnston *et al.,* 2013). The Proposed Wind Farm site is within of the core foraging range of this species. Black-tailed godwit was observed using the Site in the breeding and winter season. Therefore, there is potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement. Given the nature and scale of works and the habitats associated with the Proposed Grid Connection, there is no potential for loss of suitable supporting habitat or ex-situ disturbance of this species as a result of the Proposed Grid Connection.	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 1, January 2012)	Rationale	Potential for Adverse Effects Yes/No
		However, taking a precautionary approach, the potential for indirect effect on this species, due to water quality deterioration and degradation of SCI supporting habitat was identified as a result of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.**	
[A157] Bar-tailed Godwit (*Limosa lapponica*)	To maintain the favourable conservation condition of Bar-tailed Godwit in Dungarvan Harbour SPA	The Proposed Wind Farm site is located 2km from the SPA at the nearest point. However, the species was not recorded using the Proposed Wind Farm site during ornithological surveys. Therefore, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement or habitat loss. Given the nature and scale of works and the habitats associated with the Proposed Grid Connection, there is no potential for loss of suitable supporting habitat or ex-situ disturbance of this species as a result of the Proposed Grid Connection. However, taking a precautionary approach, the potential for indirect effect on this species, due to water quality deterioration and degradation of SCI supporting habitat was identified as a result of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.**	**Yes**
[A160] Curlew (*Numenius Arquata*)	To maintain the favourable conservation condition of Curlew in Dungarvan Harbour SPA	The Proposed Wind Farm site is located 2km from the SPA at the nearest point, which is outside of the foraging range of this species (1km; SNH, 2016). Therefore, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement or habitat loss.	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 1, January 2012)	Rationale	Potential for Adverse Effects Yes/No
		Given the nature and scale of works and the habitats associated with the Proposed Grid Connection, there is no potential for loss of suitable supporting habitat or ex-situ disturbance of this species as a result of the Proposed Grid Connection. However, taking a precautionary approach, the potential for indirect effect on this species, due to water quality deterioration and degradation of SCI supporting habitat was identified as a result of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.**	
[A162] Redshank (*Tringa totanus*)	To maintain the favourable conservation condition of Redshank in Dungarvan Harbour SPA	The Proposed Wind Farm site is located 2km from the SPA at the nearest point. However, the species was not recorded using the Proposed Wind Farm site during ornithological surveys. Therefore, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement or habitat loss. Given the nature and scale of works and the habitats associated with the Proposed Grid Connection, there is no potential for loss of suitable supporting habitat or ex-situ disturbance of this species as a result of the Proposed Grid Connection. However, taking a precautionary approach, the potential for indirect effect on this species, due to water quality deterioration and degradation of SCI supporting habitat was identified as a result of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.**	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 1, January 2012)	Rationale	Potential for Adverse Effects Yes/No
[A169] Turnstone (*Arenaria interpres*)	To maintain the favourable conservation condition of Turnstone in Dungarvan Harbour SPA	The Proposed Wind Farm site is located 2km from the SPA at the nearest point. This species is a primarily marine habitat species and unlikely to use the habitat within the proposed Wind Farm site, which is not coastal. Therefore, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement or habitat loss. Given the nature and scale of works and the habitats associated with the Proposed Grid Connection, there is no potential for loss of suitable supporting habitat or ex-situ disturbance of this species as a result of the Proposed Grid Connection. However, taking a precautionary approach, the potential for indirect effect on this species, due to water quality deterioration and degradation of SCI supporting habitat was identified as a result of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.**	**Yes**
[A999] Wetlands	To maintain the favourable conservation condition of the wetland habitat in Dungarvan Harbour SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.	Taking a precautionary approach, the potential for indirect effect on SCI supporting habitat of the SPA due to water quality deterioration was identified. The SPA is located downstream of the northern section of the Proposed Wind Farm site. **A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.**	**Yes**

5.1.2.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form for the Dungarvan Harbour SPA the site-specific threats, pressures and activities with potential to impact on the European Site were reviewed and considered in relation to the Proposed Project. These are provided in Table 5-19 below.

Table 5-19 Site-specific threats, pressures and activities for the Dungarvan Harbour [004032]

Negative Impacts		
Rank	Threats and Pressures	
High	D01.31	Urbanised areas, human habitation
Medium	A08	Fertilisation
	D01.54	Marine and Freshwater Aquaculture
	D01.104	Walking, horse riding and non-motorised vehicles
Low	D01.70	Leisure fishing

No potential pathways for effect associated with the Proposed Project with regard to site-specific threats, pressures and activities were identified.

5.1.2.3 SCI Specific Information

The conservation objectives for the relevant SCI species, and SCI habitat within the SPA, are set out in Table 5-18 above. For SCI bird species, the following common targets and attributes are set:

Table 5-20 SCI Bird Species - Targets and Attributes – Dungarvan Harbour SPA

Attribute	Target
Population Trend	Long term population trend stable or increasing
Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation.

A potential for impacts on the achievement of the above listed targets was identified due to water quality deterioration and impacts on SCI supporting habitat for all listed SCI bird species. In addition, the potential for impacts via ex-situ collision risk, disturbance/displacement and habitat loss has been identified the listed species below as outlined in Table 5-18 above.

- Golden Plover (*Pluvialis apricaria*) [A140]
- Black-tailed Godwit (*Limosa limosa*) [A156]

The target and attribute associated with [A999] Wetlands is as follows:

Wetland habitat area - The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 2,219ha, other than that occurring from natural patterns of variation.

A potential for impact on this target was identified as a result of deterioration in water quality and indirect effect via habitat degradation due to the Proposed Project.

5.1.3 Blackwater Estuary SPA [004028]

The potential for impacts on this SPA were identified in Section 4.1 above. The identified pathways for effect include the following:

A pathway for indirect effects on the Qualifying Interest Wetland [A999] of the SPA exists in the form of water quality deterioration as a result of the Proposed Project given that the SPA is location 10.7km downstream of the Proposed Wind Farm site, and 13.8km downstream of the Proposed Grid Connection site.
Likely significant effect on the SCI species due to ex-situ habitat loss, disturbance or collision risk as a result of the Proposed Project, given that the Proposed Wind Farm site is located 4.6km over-land from the SPA.

Table 5-21 below lists the qualifying interests of this European Site and determines, in the light of their Conservation Objectives, whether there is any complete source-pathway-receptor chain, by which adverse effects may occur.

5.1.3.1 Identification of Individual Qualifying Interest species with the Potential to be Affected.

Table 5-21 Assessment of Special Conservation Interests potentially affected.

Qualifying feature	Conservation Objective (NPWS, Version 1, May 2012)	Rationale	Potential for Adverse Effects Yes/No
[A050] Wigeon (*Mareca Penelope*)	To maintain the favourable conservation condition of Wigeon in Blackwater Estuary SPA	The Proposed Wind Farm site is located 4.6km over-land from the SPA at the nearest point. The Proposed Wind Farm site is outside of the core foraging range of this species (2.8km, (Johnson *et al.* 2014). Therefore, there is no potential for adverse effect on the species as a result of direct collision or ex-situ disturbance/displacement or habitat loss. Given the nature and scale of works and the habitats associated with the Proposed Grid Connection, there is no potential for loss of suitable supporting habitat or ex-situ disturbance of this species as a result of the Proposed Grid Connection. However, taking a precautionary approach, the potential for indirect effect on this species, due to water quality deterioration and degradation of SCI supporting habitat was identified as a result of the Proposed Project.	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 1, May 2012)	Rationale	Potential for Adverse Effects Yes/No
		A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.	
[A140] Golden Plover (*Pluvialis apricaria*)	To maintain the favourable conservation condition of Golden Plover in Blackwater Estuary SPA	The Proposed Wind Farm site is located 4.6km over-land from the SPA at the nearest point. The Proposed Wind Farm site is within the core foraging range of this species (10-12km, Gillings and Fuller, 1999). Golden plover was observed using the Site in the winter and passage season (April and September). Therefore, there is potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement. Given the nature and scale of works and the habitats associated with the Proposed Grid Connection, there is no potential for loss of suitable supporting habitat or ex-situ disturbance of this species as a result of the Proposed Grid Connection. However, taking a precautionary approach, the potential for indirect effect on this species, due to water quality deterioration and degradation of SCI supporting habitat was identified as a result of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.**	**Yes**
[A142] Lapwing (*Vanellus Vanellus*)	To maintain the favourable conservation condition of Lapwing in Blackwater Estuary SPA	The Proposed Wind Farm site is located 4.6km over-land from the SPA at the nearest point. No population of ecological significance was recorded utilising the Proposed Wind Farm site during the extensive suite of surveys conducted. As such, the potential for direct habitat loss, disturbance/displacement and collision risk are limited and there is no evidence to suggest that the Proposed Wind Farm site is of significance to this species. Given the nature and scale of works and the habitats associated with the Proposed Grid Connection, there is no potential for loss of suitable supporting habitat or ex-situ disturbance of this species as a result of the Proposed Grid Connection.	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 1, May 2012)	Rationale	Potential for Adverse Effects Yes/No
		However, taking a precautionary approach, the potential for indirect effect on this species, due to water quality deterioration and degradation of SCI supporting habitat was identified as a result of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.**	
[A149] Dunlin (*Calidris alpina*)	To maintain the favourable conservation condition of Dunlin in Blackwater Estuary SPA	This species is a primarily marine habitat species and unlikely to use the habitat within the Proposed Wind Farm site, which is not coastal. The Proposed Wind Farm site is located 4.6km from the SPA at the nearest point which is outside of the core foraging range of this species (2.8km; Johnston et al., 2013). Therefore, there is no potential for adverse effect on the species as a result of direct ex-situ impacts. Given the nature and scale of works and the habitats associated with the Proposed Grid Connection, there is no potential for loss of suitable supporting habitat or ex-situ disturbance of this species as a result of the Proposed Grid Connection. However, taking a precautionary approach, the potential for indirect effect on this species, due to water quality deterioration and degradation of SCI supporting habitat was identified as a result of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.**	**Yes**
[A156] Black-tailed Godwit (*Limosa limosa*)	To maintain the favourable conservation condition of Black-tailed Godwit in Blackwater Estuary SPA	The Proposed Wind Farm site is located 4.6km from the SPA at the nearest point. The Proposed Wind Farm site is outside of the core foraging range of this species (2.8km; Johnston *et al.,* 2013). Therefore, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement or habitat loss.	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 1, May 2012)	Rationale	Potential for Adverse Effects Yes/No
		Given the nature and scale of works and the habitats associated with the Proposed Grid Connection, there is no potential for loss of suitable supporting habitat or ex-situ disturbance of this species as a result of the Proposed Grid Connection. However, taking a precautionary approach, the potential for indirect effect on this species, due to water quality deterioration and degradation of SCI supporting habitat was identified as a result of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.**	
[A157] Bar-tailed Godwit (*Limosa lapponica*)	To maintain the favourable conservation condition of Bar-tailed Godwit in Blackwater Estuary SPA	The Proposed Wind Farm site is located 4.6km from the SPA at the nearest point. The Proposed Wind Farm site is outside of the core foraging range of this species (2.8km; Johnston *et al.,* 2013). Therefore, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement or habitat loss. Given the nature and scale of works and the habitats associated with the Proposed Grid Connection, there is no potential for loss of suitable supporting habitat or ex-situ disturbance of this species as a result of the Proposed Grid Connection. However, taking a precautionary approach, the potential for indirect effect on this species, due to water quality deterioration and degradation of SCI supporting habitat was identified as a result of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.**	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 1, May 2012)	Rationale	Potential for Adverse Effects Yes/No
[A160] Curlew (*Numenius Arquata*)	To maintain the favourable conservation condition of Curlew in Blackwater Estuary SPA	The Proposed Wind Farm site is located 4.6km from the SPA at the nearest point. The Proposed Wind Farm site is outside of the core foraging range of this species (2.8km; Johnston *et al.,* 2013). Therefore, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement or habitat loss. Given the nature and scale of works and the habitats associated with the Proposed Grid Connection, there is no potential for loss of suitable supporting habitat or ex-situ disturbance of this species as a result of the Proposed Grid Connection. However, taking a precautionary approach, the potential for indirect effect on this species, due to water quality deterioration and degradation of SCI supporting habitat was identified as a result of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.**	**Yes**
[A162] Redshank (*Tringa totanus*)	To maintain the favourable conservation condition of Redshank in Blackwater Estuary SPA	The Proposed Wind Farm site is located 4.6km from the SPA at the nearest point. The Proposed Wind Farm site is outside of the core foraging range for this species (2.8km; Johnston *et al.,* 2013). Therefore, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement or habitat loss. Given the nature and scale of works and the habitats associated with the Proposed Grid Connection, there is no potential for loss of suitable supporting habitat or ex-situ disturbance of this species as a result of the Proposed Grid Connection. However, taking a precautionary approach, the potential for indirect effect on this species, due to water quality deterioration and degradation of SCI supporting habitat was identified as a result of the Proposed Project.	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 1, May 2012)	Rationale	Potential for Adverse Effects Yes/No
		A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.	
[A999] Wetlands	To maintain the favourable conservation condition of the wetland habitat in Blackwater Estuary SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.	The Proposed Project is hydrologically linked to the SPA and taking a precautionary approach it is considered that the Proposed Project has the potential to undermine the favourable conservation status of this SCI supporting habitat through a deterioration of water quality during the construction and operational phases of the Proposed Project. A deterioration of water quality has the potential to result in habitat degradation and reduced prey availability which could have overall implications for maintaining favourable conversation status for the SCI species. **A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.**	**Yes**

5.1.3.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form for the Blackwater Estuary SPA the site-specific threats, pressures and activities with potential to impact on the European Site were reviewed and considered in relation to the Proposed Project. These are provided in Table 5-22 below.

Table 5-22 Site-specific threats, pressures and activities for the Blackwater Estuary SPA [004028]

Negative Impacts		
Rank	**Threats and Pressures**	
High	D01.02	Roads, motorways
	D01.31	Urbanised areas, human habitation
Medium	A08	Fertilisation
	D01.70	Leisure fishing
	D01.101	Nautical sports
Low	A04	Grazing
	D01.75	Hunting

No potential pathways for effect associated with the Proposed Project with regard to site-specific threats, pressures and activities were identified.

5.1.3.3 SCI Specific Information

The conservation objectives for the relevant SCI species, and SCI habitat within the SPA, are set out in Table 5-21 above. For SCI bird species, the following common targets and attributes are set:

Table 5-23 SCI Bird Species - Targets and Attributes – Blackwater Estuary SPA

Attribute	Target
Population Trend	Long term population trend stable or increasing
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by (waterbird), other than that occurring from natural patterns of variation.

A potential for impacts on the achievement of the above listed targets was identified due to water quality deterioration and impacts on SCI supporting habitat for all listed SCI bird species. In addition, the potential for impacts via ex-situ collision risk, disturbance/displacement and habitat loss has been identified the listed species below as outlined in Table 5-21 above.

Golden Plover (*Pluvialis apricaria*) [A140]

The target and attribute associated with [A999] Wetlands is as follows:

Wetland habitat area - The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 871ha, other than that occurring from natural patterns of variation.

A potential for impact on this target was identified as a result of deterioration in water quality and indirect effect via habitat degradation due to the Proposed Project.

5.1.4 Helvick Head to Ballyquin SPA [004192]

The potential for impacts on this SPA was identified in Section 4.1 above. The identified pathways for effect include the following:

- Likely significant effect on the SCI species due to ex-situ habitat loss, disturbance or collision risk. The Proposed Wind Farm site is located 6km over-land from the SPA.

Table 5-24 below lists the qualifying interests of this European Site and determines, in the light of their Conservation Objectives, whether there is any complete source-pathway-receptor chain, by which adverse effects may occur.

5.1.4.1 Identification of Individual Qualifying Interest species with the Potential to be Affected.

Table 5-24 Assessment of Special Conservation Interests potentially affected.

Qualifying feature	Conservation Objective (NPWS, Version 1, May 2025)	Rationale	Potential for Adverse Effects Yes/No
[A017] Cormorant (*Phalacrocorax carbo*)	To restore the Favourable conservation condition of Cormorant in Helvick Head to Ballyquin SPA	The Proposed Project is located 6km from the SPA at the nearest point. The Proposed Wind Farm site is within the core foraging range of this species (7km, (Power et al. 2021). Therefore, there is potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement. There is no potential for such effects as a result of the Proposed Grid Connection. **A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.**	**Yes**
[A103] Peregrine (*Falco peregrinus*)	To restore the Favourable conservation condition of Peregrine in Helvick Head to Ballyquin SPA	The conservation objectives for Helvick Head to Ballyquin SPA states that most prey items are caught within 2km of an eyrie, rarely beyond 6km (Hardey *et al.*, 2009). Helvick Head to Ballyquinn SPA is 5.8km from the Proposed Wind Farm site at the closest point. Given that this is close to the maximum foraging range and that the majority of the SPA area is further than 6km from the Proposed Wind Farm site, it is unlikely that an eyrie is within 6km of the Proposed Wind Farm site. There are also no Proposed Turbines within 6km of the SPA. In	**No**

Qualifying feature	Conservation Objective (NPWS, Version 1, May 2025)	Rationale	Potential for Adverse Effects Yes/No
		addition, suitable habitats for this species recorded within the Proposed Wind Farm site are common and widespread in the intervening landscape, it is unlikely that this population utilises the SPA. There is no potential for such effects as a result of the Proposed Grid Connection. **No complete source-pathway-receptor chain for adverse effects on this SCI was identified and as such it is not considered further in the assessment.**	
[A184] Herring Gull (*Larus argentatus*)	To restore the Favourable conservation condition of Herring Gull in Helvick Head to Ballyquin SPA	The Proposed Project is located 6km from the SPA at the nearest point. The Proposed Wind Farm site is within the core foraging range of this species (15km, (Power et al. 2021). Therefore, there is potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement, habitat loss. There is no potential for such effects as a result of the Proposed Grid Connection. **A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.**	**Yes**
[A188] Kittiwake (*Rissa tridactyla*)	To restore the Favourable conservation condition of Kittiwake in Helvick Head to Ballyquin SPA	The Proposed Project is located 6km from the SPA at the nearest point. Although the Proposed Wind Farm site is within the core foraging range of this species (54km, (Power et al. 2021), Kittiwake are a surface-feeding seabird and as such are not expected to utilise the area of the Proposed Wind Farm site, which is entirely terrestrial, for feeding or maintenance activity. Therefore, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement. There is no potential for such effects as a result of the Proposed Grid Connection.	**No**

Qualifying feature	Conservation Objective (NPWS, Version 1, May 2025)	Rationale	Potential for Adverse Effects Yes/No
		No complete source-pathway-receptor chain for adverse effects on this SCI was identified and as such it is not considered further in the assessment.	
[A346] Chough (*Pyrrhocorax pyrrhocorax*)	To restore the Favourable conservation condition of Chough in Helvick Head to Ballyquin SPA	The Proposed Project is located 6km from the SPA at the nearest point. The Proposed Wind Farm site is outside of the core foraging range of this species (1km, (Trewby et al., 2006; Reid et al., 2008). Therefore, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement. There is no potential for such effects as a result of the Proposed Grid Connection. **No complete source-pathway-receptor chain for adverse effects on this SCI was identified and as such it is not considered further in the assessment.**	**No**

5.1.4.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form for the Helvick Head to Ballyquin SPA the site-specific threats, pressures and activities with potential to impact on the European Site were reviewed and considered in relation to the Proposed Project. These are provided in Table 5-25 below.

Table 5-25 Site-specific threats, pressures and activities for the Helvick Head to Ballyquin SPA [004192]

Negative Impacts		
Rank	Threats and Pressures	
Low	K01.01	Erosion
	I01	Invasive non-native species
	D01.105	Motorised vehicles

No potential pathways for effect associated with the Proposed Project with regard to site-specific threats, pressures and activities were identified.

5.1.4.3 QI Specific Information

5.1.4.3.1 [A184] Cormorant (Phalacrocorax carbo)

The conservation objective for this species within the SPA is *To restore the Favourable conservation condition of Cormorant in Helvick Head to Ballyquin SPA.* The targets and attributes for this conservation objective are assessed in light of the Proposed Project below.

CO Targets and Attributes –Cormorant

Table 5-26 Targets and attributes associated with the site-specific conservation objectives for Cormorant

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Breeding population size	Long term SPA population trend is stable or increasing	**Yes**- There is potential that the Proposed Project will result in decreasing population trends due to direct mortality through collision.
Productivity rate	Sufficient to maintain a stable or increasing population	**Yes**- There is potential that the Proposed Project will result in decreasing productivity rates due to direct mortality through collision.
Distribution: extent of available nesting options within the SPA	Sufficient availability of suitable nesting sites throughout the SPA to maintain a stable or increasing population	No- There is no potential that the Proposed Project will result in changes to the extent of available nesting options within the SPA
Forage spatial distribution, extent, abundance and availability	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	**Yes**- There is potential that the Proposed Project will result in the number of locations and area of suitable habitat due to habitat loss and disturbance during the construction of the Proposed Project as well as due to a displacement and barrier effect during the operation of the Proposed Wind Farm.
Disturbance at the breeding site	Disturbance occurs at levels that do not significantly impact on birds at the breeding site	No- There is no potential that the Proposed Project will result in disturbance at the breeding Site.
Disturbance at areas ecologically connected to the colony	Disturbance occurs at levels that do not significantly impact on breeding population	**No**- There is no potential that the Proposed Project will result in disturbances with impact on breeding populations due to disturbance during the construction phase, as there was no breeding, foraging or roosting activity recorded.

Barriers to connectivity	Barriers do not significantly impact the population's access to the SPA or other ecologically important sites outside the SPA	No- There is no potential that the Proposed Project will result in disturbance at the breeding Site.

5.1.4.3.2 *[A184] Herring gull (Larus argentatus)*

The conservation objective for this species within the SPA is *To restore the Favourable conservation condition of Herring Gull in Helvick Head to Ballyquin SPA.* The targets and attributes for this conservation objective are assessed in light of the Proposed Project below.

CO Targets and Attributes –Herring gull

Table 5-27 Targets and attributes associated with the site-specific conservation objectives for Herring gull

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Breeding population size	Long term SPA population trend is stable or increasing	**Yes**- There is potential that the Proposed Project will result in decreasing population trends due to direct mortality through collision.
Productivity rate	Sufficient to maintain a stable or increasing population	**Yes**- There is potential that the Proposed Project will result in decreasing productivity rates due to direct mortality through collision.
Distribution: extent of available nesting options within the SPA	Sufficient availability of suitable nesting sites throughout the SPA to maintain a stable or increasing population	No- There is no potential that the Proposed Project will result in changes to the extent of available nesting options within the SPA
Forage spatial distribution, extent, abundance and availability	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	**Yes**- There is potential that the Proposed Project will result in the number of locations and area of suitable habitat due to habitat loss and disturbance during the construction of the Proposed Project as well as due to a displacement and barrier effect during the operation of the Proposed Wind Farm.
Disturbance at the breeding site	Disturbance occurs at levels that do not significantly impact on birds at the breeding site	No- There is no potential that the Proposed Project will result in disturbance at the breeding Site.

Disturbance at areas ecologically connected to the colony	Disturbance occurs at levels that do not significantly impact on breeding population	**No**- There is no potential that the Proposed Project will result in disturbances with impact on breeding populations due to disturbance during the construction phase, as there was no breeding, foraging or roosting activity recorded.
Barriers to connectivity	Barriers do not significantly impact the population's access to the SPA or other ecologically important sites outside the SPA	**Yes**- There is potential that the Proposed Project will result in barriers to the connectivity to ecologically important sites outside the SPA.

5.1.5 Ballymacoda Bay SPA [004023]

The potential for impacts on this SPA were identified in Section 4.1 above. The identified pathways for effect include the following:

- Likely significant effect on the SCI species due to ex-situ habitat loss, disturbance or collision risk, habitat loss. The Proposed Wind Farm site is located 12.9km over-land from the SPA.

Table 5-28 below lists the qualifying interests of this European Site and determines, in the light of their Conservation Objectives, whether there is any complete source-pathway-receptor chain, by which adverse effects may occur.

5.1.5.1 Identification of Individual Qualifying Interest species with the Potential to be Affected.

Table 5-28 Assessment of Special Conservation Interests potentially affected.

Qualifying feature	Conservation Objective (NPWS, Version 1, May 2025)	Rationale	Potential for Adverse Effects Yes/No
[A050] Wigeon (*Mareca Penelope*)	To maintain the favourable conservation condition of Wigeon in Ballymacoda Bay SPA	The Proposed Wind Farm site is located 12.9km from the SPA at the nearest point. The Proposed Wind Farm is outside of the core foraging range of this species (2.8km, (Johnson *et al.* 2014). Therefore, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement or habitat loss. There is no potential for such effects as a result of the Proposed Grid Connection. There is no potential for indirect effects to SCI supporting habitat as there is no hydrological connectivity between the Proposed Project and the SPA. **No complete source-pathway-receptor chain for adverse effects on this SCI was identified and as such it is not considered further in the assessment.**	**No**

Qualifying feature	Conservation Objective (NPWS, Version 1, May 2025)	Rationale	Potential for Adverse Effects Yes/No
[A052] Teal (*Anas crecca*)	To maintain the favourable conservation condition of Teal in Ballymacoda Bay SPA	The Proposed Wind Farm site is located 12.9km from the SPA at the nearest point. The Proposed Wind Farm is outside of the core foraging range of this species (8.4km, (Johnson *et al.* 2014)). Therefore, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement or habitat loss. There is no potential for such effects as a result of the Proposed Grid Connection. There is no potential for indirect effects to SCI supporting habitat as there is no hydrological connectivity between the Proposed Project and the SPA. **No complete source-pathway-receptor chain for adverse effects on this SCI was identified and as such it is not considered further in the assessment.**	**No**
[A137] Ringed Plover (*Charadrius hiaticula)*	To maintain the favourable conservation condition of Ringed Plover in Ballymacoda Bay	The Proposed Wind Farm site is located 12.9km from the SPA at the nearest point. Given the large distance between the Proposed Wind Farm site and the SPA, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement or habitat loss. There is no potential for such effects as a result of the Proposed Grid Connection. There is no potential for indirect effects to SCI supporting habitat as there is no hydrological connectivity between the Proposed Project and the SPA. **No complete source-pathway-receptor chain for adverse effects on this SCI was identified and as such it is not considered further in the assessment.**	**No**
[A140] Golden Plover (*Pluvialis apricaria)*	To maintain the favourable conservation condition of Golden Plover in Ballymacoda Bay	The Proposed Wind Farm site is located 12.9km from the SPA at the nearest point. Golden Plover were recorded during ornithological surveys undertaken of the Proposed Wind Farm. However, the mean foraging range for breeding Golden Plover is within a core range of 3km, maximum foraging distances can range up to 11km and 12km in the breeding and wintering season, respectively (SNH 2016, Gillings& Fuller 1999). Therefore, based on the large intervening distance between the Proposed Wind Farm site and the SPA, there is no potential	**No**

Qualifying feature	Conservation Objective (NPWS, Version 1, May 2025)	Rationale	Potential for Adverse Effects Yes/No
		for adverse effect on the species as a result of collision, ex-situ disturbance/displacement or habitat loss. There is no potential for such effects as a result of the Proposed Grid Connection. There is no potential for indirect effects to SCI supporting habitat as there is no hydrological connectivity between the Proposed Project and the SPA. **No complete source-pathway-receptor chain for adverse effects on this SCI was identified and as such it is not considered further in the assessment.**	
[A141] Grey Plover (*Pluvialis squatarola)*	To maintain the favourable conservation condition of Grey Plover in Ballymacoda Bay SPA	The Proposed Wind Farm site is located 12.9km from the SPA at the nearest point. This species is a primarily marine habitat species and unlikely to use the habitat within the proposed Wind Farm site, which is not coastal. Therefore, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement or habitat loss. There is no potential for such effects as a result of the Proposed Grid Connection. There is no potential for indirect effects to SCI supporting habitat as there is no hydrological connectivity between the Proposed Project and the SPA. **No complete source-pathway-receptor chain for adverse effects on this SCI was identified and as such it is not considered further in the assessment.**	**No**
[A142] Lapwing (*Vanellus Vanellus)*	To maintain the favourable conservation condition of Lapwing in Ballymacoda Bay SPA	The Proposed Wind Farm site is located 12.9km from the SPA at the nearest point. The maximum recorded foraging distance of lapwing can range up to 12km in the wintering season (Gillings& Fuller 1999). Therefore, based on the large intervening distance between the Proposed Wind Farm site and the SPA, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement or habitat loss. There is no potential for such effects as a result of the Proposed Grid Connection.	**No**

Qualifying feature	Conservation Objective (NPWS, Version 1, May 2025)	Rationale	Potential for Adverse Effects Yes/No
		There is no potential for indirect effects to SCI supporting habitat as there is no hydrological connectivity between the Proposed Project and the SPA. **No complete source-pathway-receptor chain for adverse effects on this SCI was identified and as such it is not considered further in the assessment.**	
[A144] Sanderling (*Calidris alba)*	To maintain the favourable conservation condition of Sanderling in Ballymacoda Bay SPA	The Proposed Wind Farm site is located 12.9km from the SPA at the nearest point. This species is a primarily marine habitat species and unlikely to use the habitat within the proposed Wind Farm site, which is not coastal. Therefore, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement or habitat loss. There is no potential for such effects as a result of the Proposed Grid Connection. There is no potential for indirect effects to SCI supporting habitat as there is no hydrological connectivity between the Proposed Project and the SPA. **No complete source-pathway-receptor chain for adverse effects on this SCI was identified and as such it is not considered further in the assessment.**	**No**
[A149] Dunlin (*Calidris alpina alpina)*	To maintain the favourable conservation condition of Dunlin in Ballymacoda Bay SPA	The Proposed Wind Farm site is located 12.9km from the SPA at the nearest point. The Proposed Wind Farm site is outside of the core foraging range of this species (0.5km, (NSH 2016). Therefore, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement or habitat loss. There is no potential for such effects as a result of the Proposed Grid Connection. There is no potential for indirect effects to SCI supporting habitat as there is no hydrological connectivity between the Proposed Project and the SPA. **No complete source-pathway-receptor chain for adverse effects on this SCI was identified and as such it is not considered further in the assessment.**	**No**

Qualifying feature	Conservation Objective (NPWS, Version 1, May 2025)	Rationale	Potential for Adverse Effects Yes/No
[A156] Black-tailed Godwit (*Limosa limosa)*	To maintain the favourable conservation condition of Black-tailed Godwit in Ballymacoda	The Proposed Wind Farm site is located 12.9km from the SPA at the nearest point. No core foraging range for this species was available in the literature. Based on the ecology of ecologically similar wading species such as golden plover, greenshank and curlew, an average value of 2km will be assumed for this assessment. The Proposed Wind Farm is outside of the core foraging range of this species. Therefore, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement or habitat loss. There is no potential for such effects as a result of the Proposed Grid Connection. There is no potential for indirect effects to SCI supporting habitat as there is no hydrological connectivity between the Proposed Project and the SPA. **No complete source-pathway-receptor chain for adverse effects on this SCI was identified and as such it is not considered further in the assessment.**	**No**
[A157] Bar-tailed Godwit (*Limosa lapponica)*	To maintain the favourable conservation condition of Bar-tailed Godwit in Ballymacoda Bay	The Proposed Wind Farm site is located 12.9km from the SPA at the nearest point. No core foraging range for this species was available in the literature. Based on the ecology of ecologically similar wading species such as golden plover, greenshank and curlew, an average value of 2km will be assumed for this assessment. The Proposed Wind Farm is outside of the core foraging range of this species. Therefore, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement or habitat loss. There is no potential for such effects as a result of the Proposed Grid Connection. There is no potential for indirect effects to SCI supporting habitat as there is no hydrological connectivity between the Proposed Project and the SPA. **No complete source-pathway-receptor chain for adverse effects on this SCI was identified and as such it is not considered further in the assessment.**	**No**

Qualifying feature	Conservation Objective (NPWS, Version 1, May 2025)	Rationale	Potential for Adverse Effects Yes/No
[A160] Curlew (*Numenius Arquata)*	To maintain the favourable conservation condition of Curlew in Ballymacoda Bay SPA	The Proposed Wind Farm site is located 12.9km from the SPA at the nearest point. The Proposed Wind Farm is outside of the core foraging range of this species (1km, (NSH 2016). Therefore, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement or habitat loss. There is no potential for such effects as a result of the Proposed Grid Connection. There is no potential for indirect effects to SCI supporting habitat as there is no hydrological connectivity between the Proposed Project and the SPA. **No complete source-pathway-receptor chain for adverse effects on this SCI was identified and as such it is not considered further in the assessment.**	**No**
[A162] Redshank (*Tringa tetanus)*	To maintain the favourable conservation condition of Redshank in Ballymacoda Bay SPA	The Proposed Wind Farm site is located 12.9km from the SPA at the nearest point. No core foraging range for this species was available in the literature. Based on the ecology of ecologically similar wading species such as greenshank and a value of 2km will be assumed for this assessment. The Proposed Wind Farm is outside of the core foraging range of this species. Therefore, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement or habitat loss. There is no potential for such effects as a result of the Proposed Grid Connection. There is no potential for indirect effects to SCI supporting habitat as there is no hydrological connectivity between the Proposed Project and the SPA. **No complete source-pathway-receptor chain for adverse effects on this SCI was identified and as such it is not considered further in the assessment.**	**No**

Qualifying feature	Conservation Objective (NPWS, Version 1, May 2025)	Rationale	Potential for Adverse Effects Yes/No
[A169] Turnstone (*Arenaria interpres)*	To maintain the favourable conservation condition of Turnstone in Ballymacoda Bay SPA	The Proposed Wind Farm site is located 12.9km from the SPA at the nearest point. This species is a primarily marine habitat species and unlikely to use the habitat within the proposed Wind Farm, which is not coastal. Therefore, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement or habitat loss. There is no potential for such effects as a result of the Proposed Grid Connection. There is no potential for indirect effects to SCI supporting habitat as there is no hydrological connectivity between the Proposed Project and the SPA. **No complete source-pathway-receptor chain for adverse effects on this SCI was identified and as such it is not considered further in the assessment.**	**No**
[A179] Black-headed Gull (*Chroicocephalus ridibundus)*	To maintain the favourable conservation condition of Black-headed Gull in Ballymacoda	Ballymacoda Bay SPA is 12.9km from the Proposed Wind Farm site. Flight activity surveys did not suggest birds travelling between this SPA and the Proposed Wind Farm site. Suitable habitats for this species recorded within the Proposed Wind Farm site are common and widespread in the intervening landscape between the Proposed Wind Farm sites and the SPA. Therefore, it is unlikely that the black-headed gull population at the SPA is utilising the Proposed Wind Farm site. The majority of black-headed gull activity in the hinterland was in farmland to the north of the Proposed Wind Farm and at Dungarvan Harbour, therefore it is likely that birds observed at the Proposed Wind Farm site originated from these areas. There is no potential for indirect effects to SCI supporting habitat as there is no hydrological connectivity between the Proposed Project and the SPA. **No complete source-pathway-receptor chain for adverse effects on this SCI was identified and as such it is not considered further in the assessment.**	**No**

Qualifying feature	Conservation Objective (NPWS, Version 1, May 2025)	Rationale	Potential for Adverse Effects Yes/No
[A182] Common Gull (*Larus canus)*	To maintain the favourable conservation condition of Common Gull in Ballymacoda Bay	The Proposed Wind farm site is located 12.9km from the SPA at the nearest point. The Proposed Wind Farm site is within the core foraging range of this species (25km, Thaxter *et al.*, 2012). Therefore, there is potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement, habitat loss. There is no potential for such effects as a result of the Proposed Grid Connection. There is no potential for indirect effects to SCI supporting habitat as there is no hydrological connectivity between the Proposed Project and the SPA. **A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.**	**Yes**
[A183] Lesser Black-backed Gull (*Larus fuscus)*	To maintain the favourable conservation condition of Lesser Black-backed Gull in Ballymacoda Bay SPA	The Proposed Wind Farm site is located 12.9km from the SPA at the nearest point. The Proposed Wind Farm site is within the core foraging range of this species as this is a wide-ranging species (Thaxter *et al.*, 2012). Therefore, there is potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement, habitat loss. There is no potential for such effects as a result of the Proposed Grid Connection. There is no potential for indirect effects to SCI supporting habitat as there is no hydrological connectivity between the Proposed Project and the SPA. **A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.**	**Yes**
[A999] Wetlands	To maintain the favourable conservation condition of the wetland habitat in Ballymacoda Bay SPA as a	The SCI supporting wetland habitat of the SPA is located 12.9km away and within a separate hydrological catchment. There is no potential for impact on the habitat as a result of habitat degradation due to water quality deterioration or otherwise.	**No**

Qualifying feature	Conservation Objective (NPWS, Version 1, May 2025)	Rationale	Potential for Adverse Effects Yes/No
	resource for the regularly occurring migratory birds that utilise it.	**No complete source-pathway-receptor chain for adverse effects on this SCI was identified and as such it is not considered further in the assessment.**	

5.1.5.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form for the Ballymacoda Bay SPA the site-specific threats, pressures and activities with potential to impact on the European Site were reviewed and considered in relation to the Proposed Project. These are provided in Table 5-29 below.

Table 5-29 Site-specific threats, pressures and activities for the Ballymacoda Bay SPA [004023]

Negative Impacts		
Rank	Threats and Pressures	
High	A04	Grazing
Medium	A08	Fertilisation
	I01	Invasive non-native species
Low	F03.01	Hunting
	G01.02	Walking, horseridiing and non-motorised vehicles

No potential pathways for effect associated with the Proposed Project with regard to site-specific threats, pressures and activities were identified

5.1.5.3 QI Specific Information

5.1.5.3.1 [A182] Common gull (*Larus canus*)

The conservation objective for this species within the SPA is *To maintain the favourable conservation condition of Common Gull in Ballymacoda Bay SPA.* The targets and attributes for this conservation objective are assessed in light of the Proposed Project below.

CO Targets and Attributes –Common gull

Table 5-30 Targets and attributes associated with the site-specific conservation objectives for Common gull

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Population Trend	Long term SPA population trend is stable or increasing	**Yes**- There is potential that the Proposed Project will result in decreasing population trends due to direct mortality through collision.
Distribution	No significant decrease in the range, timing or intensity of use of areas by common gull, other than that occurring from natural patterns of variation	**Yes**- There is potential that the Proposed Project will result in the number or area used by common gull due to habitat loss and disturbance during the construction of the Proposed Project as well as due to a displacement and barrier effect during the operation of the Proposed Wind Farm.

5.1.5.3.2 [A183] Lesser black-backed gull (*Larus fusus*)

The conservation objective for this species within the SPA is *To maintain the favourable conservation condition of Lesser black-backed Gull in Ballymacoda Bay SPA.* The targets and attributes for this conservation objective are assessed in light of the Proposed Project below.

CO Targets and Attributes – Lesser black-backed gull

Table 5-31 Targets and attributes associated with the site-specific conservation objectives for Lesser black-backed gull

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Population Trend	Long term SPA population trend is stable or increasing	**Yes**- There is potential that the Proposed Project will result in decreasing population trends due to direct mortality through collision.

Distribution	No significant decrease in the range, timing or intensity of use of areas by lesser black-backed gull, other than that occurring from natural patterns of variation	**Yes**- There is potential that the Proposed Project will result in the number or area used by lesser black-backed gull due to habitat loss and disturbance during the construction of the Proposed Project as well as due to a displacement and barrier effect during the operation of the Proposed Wind Farm.

5.1.6 Mid-Waterford Coast SPA [004193]

The potential for impacts on this SPA were identified in Section 4.1 above. The identified pathways for effect include the following:

- Likely significant effect on the SCI species due to ex-situ habitat loss, disturbance or collision risk, habitat loss. The Proposed Wind Farm is located 13.1km over-land from the SPA.

Table 5-32 below lists the qualifying interests of this European Site and determines, in the light of their Conservation Objectives, whether there is any complete source-pathway-receptor chain, by which adverse effects may occur.

5.1.6.1 Identification of Individual Qualifying Interest species with the Potential to be Affected.

Table 5-32 Assessment of Special Conservation Interests potentially affected.

Qualifying feature	Conservation Objective (NPWS, Version 1, May 2025)	Rationale	Potential for Adverse Effects Yes/No
[A017] Cormorant (*Phalacrocorax carbo*)	To restore the Favourable conservation condition of Cormorant in Mid-Waterford Coast SPA	The Proposed Wind Farm site is located 13.1km from the SPA at the nearest point. The Proposed Wind Farm site is outside of the core foraging range of this species (7km, (Power et al. 2021). Therefore, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement. There is no potential for such effects as a result of the Proposed Grid Connection. **No complete source-pathway-receptor chain for adverse effects on this SCI was identified and as such it is not considered further in the assessment.**	**No**
[A103} Peregrine Falcon (*Falco peregrinus*)	To restore the Favourable conservation condition of Peregrine in Mid-Waterford Coast SPA	The Proposed Wind Farm site is located 13.1km from the SPA at the nearest point. The Proposed Wind Farm is outside of the core foraging range of this species (2km, (SNH 2016). Therefore, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement. There is no potential for such effects as a result of the Proposed Grid Connection.	**No**

Qualifying feature	Conservation Objective (NPWS, Version 1, May 2025)	Rationale	Potential for Adverse Effects Yes/No
		No complete source-pathway-receptor chain for adverse effects on this SCI was identified and as such it is not considered further in the assessment.	
[A184] Herring gull (*Larus argentatus*)	To restore the Favourable conservation condition of Herring Gull in Mid-Waterford Coast SPA	The Proposed Wind Farm site is located 13.1km from the SPA at the nearest point. The Proposed Wind Farm is within the core foraging range of this species (15km, (Power et al. 2021). Therefore, there is potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement. There is no potential for such effects as a result of the Proposed Grid Connection. **A complete source-pathway-receptor chain for adverse effects on this SCI was identified, and it is assessed further in this NIS.**	**Yes**
[A346] Chough (*Pyrrhocorax pyrrhocorax*)	To maintain the Favourable conservation condition of Chough in Mid-Waterford Coast SPA	The Proposed Wind Farm site is located 13.1km from the SPA at the nearest point. The Proposed Wind Farm site is outside of the core foraging range of this species (1km, (Trewby et al., 2006; Reid et al., 2008). Therefore, there is no potential for adverse effect on the species as a result of collision or ex-situ disturbance/displacement. There is no potential for such effects as a result of the Proposed Grid Connection. **No complete source-pathway-receptor chain for adverse effects on this SCI was identified and as such it is not considered further in the assessment.**	**No**

5.1.6.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form for the Mid-Waterford Coast SPA the site-specific threats, pressures and activities with potential to impact on the European Site were reviewed and considered in relation to the Proposed Project. These are provided in Table 5-33 below.

Table 5-33 Site-specific threats, pressures and activities for the Mid Waterford Coast [004193]

Negative Impacts		
Rank	Threats and Pressures	
Low	E04.01	Agricultural structures, buildings in the landscape
Low	A02	Modification of cultivation practices
Low	E05	Storage of materials
Low	A04.03	Abandonment of pastoral systems, lack of grazing

No potential pathways for effect associated with the Proposed Project with regard to site-specific threats, pressures and activities were identified

5.1.6.3 QI Specific Information

5.1.6.3.1 [A184] Herring gull (*Larus argentatus*)

The conservation objective for this species within the SPA is *To restore the Favourable conservation condition of Herring Gull in Mid-Waterford Coast SPA.* The targets and attributes for this conservation objective are assessed in light of the Proposed Project below.

CO Targets and Attributes –Herring gull

Table 5-34 Targets and attributes associated with the site-specific conservation objectives for Herring gull

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Breeding population size	Long term SPA population trend is stable or increasing	**Yes**- There is potential that the Proposed Project will result in decreasing population trends due to direct mortality through collision.
Productivity rate	Sufficient to maintain a stable or increasing population	**Yes**- There is potential that the Proposed Project will result in decreasing productivity rates due to direct mortality through collision.
Distribution: extent of available nesting options within the SPA	Sufficient availability of suitable nesting sites throughout the SPA to maintain a stable or increasing population	No- There is no potential that the Proposed Project will result in changes to the extent of available nesting options within the SPA
Forage spatial distribution, extent, abundance and availability	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	**Yes**- There is potential that the Proposed Project will result in the number of locations and area of suitable habitat due to habitat loss and disturbance during the construction of the Proposed Project as well as due to a displacement and barrier effect during the operation of the Proposed Wind Farm.
Disturbance at the breeding site	Disturbance occurs at levels that do not significantly impact on birds at the breeding site	No- There is no potential that the Proposed Project will result in disturbance at the breeding Site.
Disturbance at areas ecologically connected to the colony	Disturbance occurs at levels that do not significantly impact on breeding population	**No**- There is no potential that the Proposed Project will result in disturbances with impact on breeding populations due to disturbance during the construction phase, as

		there was no breeding, foraging or roosting activity recorded.
Barriers to connectivity	No significant increase	**Yes**- There is potential that the Proposed Project will result in barriers to the connectivity to ecologically important sites outside the SPA.

6. ASSESSMENT OF POTENTIAL EFFECTS & ASSOCIATED MITIGATION

This section of the NIS assesses the potential effects of the Proposed Project on the identified relevant Qualifying Interests/Special Conservation Interests. This assessment is undertaken in the absence of any mitigation and in respect of the conservation objectives of the European Site. The Conservation Objectives for these sites are available at the following locations:

Blackwater River (Cork/Waterford) SAC:

- https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002170.pdf

Dungarvan Harbour SPA:

- https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004032.pdf

Blackwater Estuary SPA:

- https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004028.pdf

Helvick Head to Ballyquin SPA:

- https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004192.pdf

Ballymacoda Bay SPA:

- https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004023.pdf

Mid-Waterford Coast SPA:

- https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004193.pdf

Following the initial impact assessment, mitigation is prescribed where necessary to avoid adverse effects on the Conservation Objectives of the relevant QIs.

6.1 Potential for Direct Effects on the European Sites

The Proposed Project is located outside of the boundary of any European site. There are no instream works required as part of the construction phase. Therefore, the only identified potential for direct effects on European sites is due to the potential for bird collision risk during operation of the Proposed Project, which is assessed in the sections below.

6.1.1 Operation

6.1.1.1 Collision Risk

A potential for direct effect on the following SCI species of the Dungarvan Harbour SPA, the Blackwater Estuary SPA, the Helvick Head to Ballyquin SPA, the Ballymacoda SPA and the Mid-Waterford Coast SPA in the form of collision risk during operation of the Proposed Project was identified.

Dungarvan Harbour SPA: Golden Plover (*Pluvialis apricaria*) and Black-tailed Godwit (*Limosa limosa*).

Blackwater Estuary SPA: Golden Plover (*Pluvialis apricaria*)

Helvick Head to Ballyquin SPA: Cormorant (*Phalacrocorax carbo*) and Herring gull (*Larus argentatus*)

Ballymacoda SPA: Common Gull (*Larus canus*) and Lesser Black-backed Gull (*Larus fuscus*) [A183]

Mid Waterford Coast SPA: Herring gull (*Larus argentatus*) [A184]

6.1.1.1.1 Golden Plover

The species was recorded flying within potential collision height (PCH) during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 8). The collision risk has been calculated a 3.634 collisions per year.

The origin of birds flying over the Proposed Wind Farm site is not known for certain, however, given that the SPAs are within foraging range, it is likely that the birds flying over the Proposed Wind Farm site include a mix of birds from the SPA populations and non-SPA birds from elsewhere in the region. Although numbers flying over the Proposed Wind Farm site may include birds originating from outside the SPA, on a precautionary basis, the increase in mortality is calculated individually for the Dungarvan Harbour SPA and Blackwater Estuary SPA, as well as the regional and national population.

Annual mortality of adult golden plover has been calculated at 27% per annum (Sandercock, 2003). If 3.634 collisions were to occur per year:

- Assuming all birds originated from Dungarvan Harbour SPA, losses at the Proposed Wind Farm site would increase the annual mortality of the Dungarvan Harbour SPA population (c. 3,454 birds) by approximately 0.39%.
- Assuming all birds originated from Blackwater Estuary SPA, losses at the Proposed Wind Farm site would increase the annual mortality of the Blackwater Estuary SPA population (c. 2,628 birds) by approximately 0.51%.
- Losses at the Proposed Wind Farm site would increase the annual mortality of the county population (c. 6,668 birds) by approximately 0.20%
- Losses at the Proposed Wind Farm site would increase the annual mortality of the national population (c. 82,290 birds) by approximately 0.02%.

The magnitude of the predicted collision risk is negligible.

Proposed Mitigation Measures:

Given the negligible magnitude of the predicted collision risk there is no requirement for mitigation.

Residual adverse effects: There will be no potential for residual adverse effects on golden plover as a result of a collision risk during the operational phase of the Proposed Project.

6.1.1.1.2 Black tailed godwit

The species was recorded flying within PCH during vantage point surveys. There were just three records of black-tailed godwit in flight in proximity to the Proposed Wind Farm site, however, on an extremely precautionary basis, due to the distance to the Dungarvan Harbour SPA, a collision risk assessment has been undertaken. The assessment was conducted for the three turbine dimensions (full details provided in Appendix 8). The collision risk has been calculated a 0.869 collisions per year, or one bird every year the lifetime of the Proposed Wind Farm site.

Annual mortality of adult black-tailed godwits has been calculated at 18.6% per year (Groen and Hemerik, 2002). If 0.869 collisions were to occur per year, it would mean that the losses at the Proposed Wind Farm site would increase the annual mortality of the Dungarvan Harbour SPA population (c. 706 birds) by approximately 0.66% and of the county population (c.2,224 birds) by 0.21%. The predicted collision risk is negligible.

Proposed Mitigation Measures:

Given the negligible magnitude of the predicted collision risk there is no requirement for mitigation.

Residual adverse effects: There will be no potential for residual adverse effects on black-tailed godwit as a result of a collision risk during the operational phase of the Proposed Project.

6.1.1.1.3 *Common gull*

The species was recorded flying within PCH during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 8). The collision risk has been calculated a 0.008804 collisions per year, which is less than one bird over the lifetime of the Proposed Wind Farm site. The predicted collision risk is negligible.

Proposed Mitigation Measures:

Given the negligible magnitude of the predicted collision risk there is no requirement for mitigation.

Residual adverse effects: There will be no potential for residual adverse effects on common gull as a result of a collision risk during the operational phase of the Proposed Project.

6.1.1.1.4 *Cormorant*

The species was recorded flying within PCH during vantage point surveys. There were just four records of cormorant in flight in proximity to the Proposed Wind Farm site, however, on an extremely precautionary basis, due to the distance to the Helvick Head to Ballyquin SPA, a collision risk assessment has been undertaken. The assessment was conducted for the three turbine dimensions (full details provided in Appendix 8). The collision risk has been calculated a 0.131 collisions per year, or one bird every eight years over the lifetime of the Proposed Wind Farm site.

Annual mortality of adult cormorant has been calculated at 12% per year (Frederiksen and Bregnballe, 2000). If 0.131 collisions were to occur per year, it would mean that the losses at the Proposed Wind Farm site would increase the annual mortality of the Helvick Head to Ballyquin SPA population (c. 146 birds; 73 pairs) by approximately 0.75% and of the county population (c.454 birds; 227 pairs) by 0.24%. The predicted collision risk is negligible.

Proposed Mitigation Measures:

Given the negligible magnitude of the predicted collision risk there is no requirement for mitigation.

Residual adverse effects: There will be no potential for residual adverse effects on cormorant as a result of a collision risk during the operational phase of the Proposed Project.

6.1.1.1.5 *Herring gull*

The species was recorded flying within PCH during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 8). The conservation objectives for herring gull at Helvick Head to Ballyquin SPA and Mid-Waterford Coast SPA are to restore the favourable

conservation status of the breeding population, therefore collision risk is considered for the breeding populations below.

The collision risk has been calculated at 1.117 collisions per breeding season. The origin of birds flying over the Proposed Wind Farm site is not known for certain, however, given that the SPAs are within foraging range, it is likely that the birds flying over the Proposed Wind Farm site include a mix of birds from the SPA breeding populations and non-SPA breeding or summering birds from elsewhere in the region. Breeding herring gull forage both in the marine and terrestrial environment: a study on Wadden Sea colony foraging behaviours by Enners *et al.* (2018) found that in a colony close to the mainland 37.1% of the foraging trips targeted the tidal flats, 20.6% targeted solely terrestrial habitats, and 42.3% were mixed. Although numbers flying over the Proposed Wind Farm site may include birds originating from outside the SPA, on a precautionary basis, the increase in mortality is calculated below assuming all originate from the SPAs.

To estimate contribution of each SPA to the number of collisions, the NatureScot (2017) guidance on apportioning impacts from marine renewable energy developments to breeding seabirds in SPAs was followed. In brief, the collision rate was weighted by colony size, distance from the colony (the shortest distance between the SPA boundary and the nearest turbine was used as a more conservative value than the geometric centre) and proportion of available sea area. The majority of breeding season observations were in July and August and included immature birds, therefore the population size was estimated from the number of apparently occupied nests while assuming 0.75 fledglings per nest outlined in a population viability analysis by Cook and Robinson (2010) and described in the conservation objectives. For Helvick Head to Ballyquin SPA, these input values were: population size of 627 birds, distance of 6.3km and 1.74 available sea area. For Mid-Waterford Coast SPA: population size of 1,414 birds, distance of 13.3km and 2.23 available sea area. The resulting weight for Helvick Head to Ballyquin SPA was 1.3 (0.61 of total weighting) and for Mid-Waterford Coast SPA was 0.85 (0.39 of total weighting). This is a respective contribution of 0.67 and 0.44 birds to the total number of collisions.

Annual mortality of adult herring gulls has been calculated at 16.6% per year (Horswill and Robinson, 2015) based on an established annual survival of 83.4% per year. At Helvick Head to Ballyquin SPA, if 0.67 collisions were to occur during each breeding season, it would mean that the losses at the Proposed Wind Farm site would increase the annual mortality of the SPA breeding population (c. 627 birds) by 0.65%. At Mid-Waterford Coast SPA, if 0.44 collisions were to occur during each breeding season, it would mean that the losses at the Proposed Wind Farm site would increase the annual mortality of the SPA breeding population (c. 1,414 birds) by 0.19%. The predicted collision risk is negligible.

Proposed Mitigation Measures:

Given the negligible magnitude of the predicted collision risk there is no requirement for mitigation.

Residual adverse effects: There will be no potential for residual adverse effects on herring gull as a result of a collision risk during operation of the Proposed Project.

6.1.1.1.6 *Lesser black-backed gull*

The species was recorded flying within PCH during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 8). The conservation objectives for lesser black-backed gull at Ballymacoda Bay SPA are to maintain the favourable conservation status of the non-breeding population, therefore collision risk is considered for the winter season below.

The collision risk has been calculated at 0.2591 collisions per year. Annual mortality of adult lesser black-backed gull has been calculated at 9% per year (Wanless *et al.*, 1996). If 0.2591 collisions were to occur per year, it would mean that the losses at the Proposed Wind Farm site would increase the

annual mortality of the Ballymacoda Bay SPA population (c. 736 birds) by 0.39%. The predicted collision risk is negligible.

Proposed Mitigation Measures:

Given the negligible magnitude of the predicted collision risk there is no requirement for mitigation.

Residual adverse effects: There will be no potential for residual adverse effects on lesser black-backed gull as a result of a collision risk during the operational phase of the Proposed Project.

6.1.1.1.7 *Residual adverse effects*

There will be no potential for residual adverse effects as a result of a collision risk during the operational phase of the Proposed Project.

6.2 Potential for Indirect Effects on the European Sites

6.2.1 Construction

6.2.1.1 Hydrological Impact - Water Quality/Habitat Degradation

Blackwater River (Cork/Waterford) SAC

A potential for indirect effect on the following QI species/habitats of the Blackwater River (Cork/Waterford) SAC and the Blackwater Estuary SPA in the form of water quality deterioration and habitat degradation via surface and ground water pathways during construction and operation of the Proposed Project was identified.

Species:

- *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029]
- *Austropotamobius pallipes* (White-clawed Crayfish) [1092]
- *Petromyzon marinus* (Sea Lamprey) [1095]
- *Lampetra planeri* (Brook Lamprey) [1096]
- *Lampetra fluviatilis* (River Lamprey) [1099]
- *Alosa fallax fallax* (Twaite Shad) [1103]
- *Salmo salar* (Salmon) [1106]
- *Lutra lutra* (Otter) [1355]

Habitats:

- Estuaries [1130]
- Mudflats and sandflats not covered by seawater at low tide [1140]
- *Salicornia* and other annuals colonising mud and sand [1310]
- Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]
- Mediterranean salt meadows (Juncetalia maritimi) [1410]
- Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0]

Blackwater Estuary SPA

A potential for indirect effect on the following SCI species of the Blackwater Estuary SPA was identified in the form of water quality deterioration and habitat degradation as a result of the Proposed Project.

- Wigeon (*Mareca penelope*) [A050]
- Golden Plover (*Pluvialis apricaria*) [A140]
- Lapwing (*Vanellus vanellus*) [A142]
- Dunlin (*Calidris alpina*) [A149]
- Black-tailed Godwit (*Limosa limosa*) [A156]
- Bar-tailed Godwit (*Limosa lapponica*) [A157]
- Curlew (*Numenius arquata*) [A160]
- Redshank (*Tringa totanus*) [A162]
- Wetland and Waterbirds [A999]

Dungarvan Harbour SPA

- Great Crested Grebe (*Podiceps cristatus*) [A005]
- Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]
- Shelduck (*Tadorna tadorna*) [A048]
- Red-breasted Merganser (*Mergus serrator*) [A069]
- Oystercatcher (*Haematopus ostralegus*) [A130]
- Golden Plover (*Pluvialis apricaria*) [A140]
- Grey Plover (*Pluvialis squatarola*) [A141]
- Lapwing (*Vanellus vanellus*) [A142]
- Knot (Calidris canutus) [A143]
- Dunlin (*Calidris alpina*) [A149]
- Black-tailed Godwit (*Limosa limosa*) [A156]
- Bar-tailed Godwit (*Limosa lapponica*) [A157]
- Curlew (*Numenius arquata*) [A160]
- Redshank (*Tringa totanus*) [A162]
- Turnstone (*Arenaria interpres*) [A169]
- Wetland and Waterbirds [A999]

6.2.1.1.2 *Construction Impacts in the Vicinity of the Licky River (and associated freshwater pearl mussel population)*

The Site is drained by a network of natural watercourses and manmade land drains, which drain into the Licky River which flows along the southern boundary of the Site. The Proposed Wind Farm site is over 300m from the Licky River, which hosts the freshwater pearl mussel population, at its closest point.

The Goish flows parallel with the Proposed 110kV Underground Cabling Route. There is no hydrological connectivity between the Proposed 110kV Underground Cabling Route and the Licky River. Therefore, there is no potential for direct or indirect impact as a result of this element of the Proposed Project on freshwater pearl mussel.

To facilitate the construction of the Proposed Wind Farm roads, 4 no. watercourse crossings (of EPA mapped watercourses) are required within the Site. One of these will comprise flatbed formation over an existing crossing. Two watercourse crossings will consist of bottomless culverts. One crossing will comprise a clear-span structure. There are no instream works required for the construction of these structures.

The potential for construction impacts on the freshwater pearl mussel population was assessed following the Guidance on Assessment and Construction Management in Margaritifera Catchments in Ireland (Atkinson et al. 2024). This guidance outlines that potential impacts include:

- Direct physical damage
- Changes to river morphology and flow
- Chemical and nutrient pollution
- Sediment release and siltation
- Effects on host fish and other biological factors

A potential hydrological pathway exists through surface runoff and/or site drainage during construction, resulting in water quality impacts and therefore impacts on the freshwater pearl mussel population within the Licky River. Construction works include vegetation clearance, topsoil stripping, excavation, soil stockpiling and the movement of heavy machinery over exposed ground. These works could mobilise fine sediment and increase its transport to the river, with soil compaction potentially creating new, or more rapid, runoff pathways. Deposition of fine sediment within the riverbed could clog the interstitial spaces in gravel and cobble substrates, restrict water exchange and reduce oxygen availability. This would be of concern for freshwater pearl mussels which depend on clean, stable and

well-oxygenated gravels. Freshwater pearl mussel is extremely vulnerable to environmental changes due to its complex life cycle and its sensitive habitat. As salmonids form part of the life cycle of freshwater pearl mussel, changes in salmonid populations directly affect the freshwater pearl mussel population (Atkinson et al. 2024)

Accidental releases of fuels, oils or other chemicals from machinery, refuelling and material storage could result in acute toxicity to mussels and their salmonid host fish. Concrete pouring, washout water and lime-rich construction materials have potential to generate highly alkaline runoff, altering the pH and chemical quality of surface water and potentially causing an aquatic environment toxic to freshwater pearl mussel.

The below mitigation sections outline the measures that have been designed specifically for the Proposed Project in order to mitigate the potential impacts specific to freshwater pearl mussel, as outline in Atkinson et al. (2023).

Proposed Mitigation Measures

Mitigation by design:

The Proposed Project was carefully designed to maintain buffer distances between ecological features and the Proposed Project footprint. The closest distance between Proposed Project footprint and the Licky River (where freshwater pearl mussel are located) is 300.

Mitigation for water quality impacts and sedimentation:

The impact on water quality is mitigated by a range of mitigation measures outlined in Section 6.2.1.1.3 to 6.2.1.1.11 below. In addition to these mitigation measures, a freshwater pearl mussel management plan (Appendix 5) accompanies this application, which outlines specific measures, including the handling of clay pan material during construction, and monitoring measures by ECoW, including the installation of sondes and establishing specific water quality triggers.

Residual adverse effects: There will be no potential for residual adverse effects on the Licky River or the QI freshwater pearl mussel population therein as a result of the construction of the Proposed Project.

6.2.1.1.3 *Clear felling of Coniferous Plantation*

Clear-felling is part of preparatory groundworks for the Proposed Wind Farm. A total of 69.27 ha of coniferous trees will be felled to accommodate the Proposed Project. Tree felling is subject to a Felling Licence application to the Forest Service, in accordance with the Forestry Act 2014 and the Forestry Regulations 2017 (SI No. 191/2017) and as per the Forest Service's policy on granting felling licenses for wind farm developments.

Clear-felling involves the use of heavy machinery. The activity results in physical disturbance of soils and subsoils. The disturbance is from vehicle tracking and skidding, forwarding extraction methods, and damage to existing tracks and timber/brush in stacking areas. The related activity can release sediments, organic matter (including dissolved organic carbon) and nutrients into drains.

Mitigation by design: Best practice methods will be incorporated, in accordance with:

- DAFM (2019): Standards for Felling and Reforestation.
- Coillte (2009): Forest Operations and Water Protection Guidelines.
- Coillte (2009): Methodology for Clear Felling Harvesting Operations; Forest Service (Draft).
- Forest Service of the Department of Agriculture, Food & the Marine (2008): Forestry and Freshwater Pearl Mussel Requirements – Site Assessment and Mitigation Measures.

- Forest Service (2000): Forestry and Water Quality Guidelines. Forest Service, DAF, Johnstown Castle Estate, Co. Wexford.

There is a requirement in the Forest Service Code of Practice and in the FSC Certification Standard for the installation of buffer zones adjacent to aquatic zones. Minimum buffer zone widths are set out in the Forest Service (2000) guidance document "*Forestry and Water Quality Guidelines*".

During the Proposed Project construction phase a self-imposed buffer zone of minimum 50 metres will be maintained for all natural watercourses where possible. It is proposed that 2.97ha of forestry will be felled within 50 m of natural watercourses within the Proposed Wind Farm site.

Mitigation measures will be implemented wherever clear-felling is planned. The objective will be to mitigate the risk of mobilising suspended solids and nutrients into drains and surface water courses, as follows in the design stage:

- Small felling areas (<25ha), sequencing of felling to avoid intense felling in one subcatchment.
- Limiting felling areas and sequencing the felling to avoid intense felling (>25ha) in one subcatchment.
- Machine combinations (i.e. handheld or mechanical) will be chosen which are most suitable for ground conditions and which will minimise soils disturbance.
- Sediment/Silt traps will be strategically placed downslope within plantation drains near watercourses before ground preparation. The purpose is to slow water flow, increase residence time, and allow settling of silt. No direct discharge of such drains to water courses will occur.
- Crossing of watercourses away from bridges and culverts will not be permitted. Checking and maintenance of roads and culverts will be on-going throughout felling activity. No tracking of vehicles through watercourses will occur. Existing interceptor drains will also not be disturbed.
- Clay, soil and silts will be removed from roads during wet periods and dust will be suppressed during dry spells.
- Main drains that accommodate the discharge from collector drains will include rock armour, as required, where there are steep gradients.
- On steep slopes and where felling inside the 50-metre buffer is required, it will be necessary to install double or triple sediment traps. All drainage channels will taper out before entering the buffer zone. This ensures that discharged water fans out over the buffer zone before entering the aquatic zone, with sediment filtered out by ground vegetation within the zone.
- Drains and silt traps will be maintained throughout all felling works, ensuring that they are clear of sediment build-up and are not severely eroded. Machine access will be maintained to enable the accumulated sediment to be excavated. Sediment will be carefully disposed of in the borrow pits.
- Correct drain alignment, spacing and depth will ensure that erosion and sediment build-up are minimized and controlled.
- Branches, logs or debris will not be allowed to build up in aquatic zones. All such material will be removed when harvesting operations have been completed, but care will be taken to avoid removing natural debris deflectors.
- Extraction tracks near drains need to be broken up and diversion channels created to ensure that water in the tracks spreads out over the adjoining ground. Culverts on drains exiting the Site will be unblocked.
- Brash mats will be used to support vehicles on soft ground, reducing soil erosion and avoiding the formation of rutted areas. Brash mat renewal will take place when they become heavily used and worn. Provision will be made for brash mats along all off-road routes, to protect the soil from compaction and rutting. Where there is risk of severe erosion, extraction will be suspended during periods of high rainfall.
- Timber will be stacked in dry areas and outside a 50-metre buffer. Check dams will be emplaced on the downgradient side of timber storage/processing sites.
- Works will not be conducted during significant rainfall events in order to minimise entrainment of exposed sediment in surface water runoff.

- Branches, logs or debris will not be allowed to build up in aquatic zones. All such material will be removed when tree-felling operations have been completed.
- Refuelling or maintenance of machinery will not occur within 100 m of a watercourse. Mobile bowser, drip kits, qualified personnel will be used where refuelling is required.
- A permit to refuel system will be adopted.

The following items will be conducted in relation to drain inspection and maintenance during pre-felling inspections and after:

- Communication with tree felling operatives in advance to determine whether any areas have been reported where there is unusual water logging or bogging of machines (i.e., hot spot areas).
- Inspections of plant and machinery will be conducted prior to any works to assure all are in good condition.
- Inspection of drainage ditches and outfalls. During pre-felling inspections, the main drainage ditches will be identified. The pre-felling inspection will be conducted during rainfall events.
- Following tree felling, all main drains will be inspected to ensure that they are functioning.
- All accumulated silt will be removed from drains and culverts, and silt traps, and this removed material will be deposited away from watercourses to ensure that it will not be carried back into the trap or stream during subsequent rainfall.
- Surface water monitoring will be conducted as outlined in Appendix 6 (SWMP).

6.2.1.1.4 *Earthworks*

During the construction phase of the Proposed Project, vegetation clearings, drainage measure emplacement, road construction, turbine base/hardstanding construction, and cable trench excavation will require earthworks resulting in removal of vegetation cover and excavation of local subsoils and bedrock. The main risks to receptors will be from sediment mobilisation and transport to water courses and drainage from excavations containing sediment and discharges to drains or water courses.

Construction activities could result in the release of suspended solids and dissolved organic matter to local drainage features and could result in an increase in the suspended sediment load, resulting in increased turbidity and colour, which in turn could affect the water quality in downstream water courses, including the main surface water receptors – the Licky, Goish and Brickey Rivers.

Proposed Mitigation Measures

Mitigation by Avoidance: Works areas will be kept at least 50 m from water courses to the extent possible. The proposed setback distance/buffer will serve to avoid direct physical damage to watercourses, entry of suspended sediments from earthworks and drainage systems by ending drain discharges outside the buffer and allowing water to filter via percolation. The key areas of the Proposed Project footprint are all located outside of this buffer zone with the exception of some short sections of existing road upgrades and new roads, proposed watercourse crossings and existing watercourse crossings requiring upgrading.

There will be no stockpiling of excavated material within 50 m of any natural water courses or within 10 m of any drainage features on the Site. Due to the overland flow observed in the fields around T12 and the proximity of the area to the River Licky, there will be no local stockpiling of material around T12. This exclusion zone is outlined in Figure 6-1 below.

Risks and effects of earthworks are made greater during storm events. Hence, earthworks will not be conducted during significant storm events. The works programme for the entire construction stage of the development will take account of weather forecasts, notably predicted rainfall. Large excavations and movements of soil/subsoil or vegetation stripping will be scaled back or suspended if heavy rain is forecast. Threshold rainfall values will serve to guide decisions to suspend works, visually and/or judged from weather forecasting, by either of the following:

- High-intensity rainfall events, >10 mm/hr.
- Heavy frontal rainfall lasting most of the day, >25 mm in a 24-hour period.
- More than half the monthly average rainfall over 7 days.

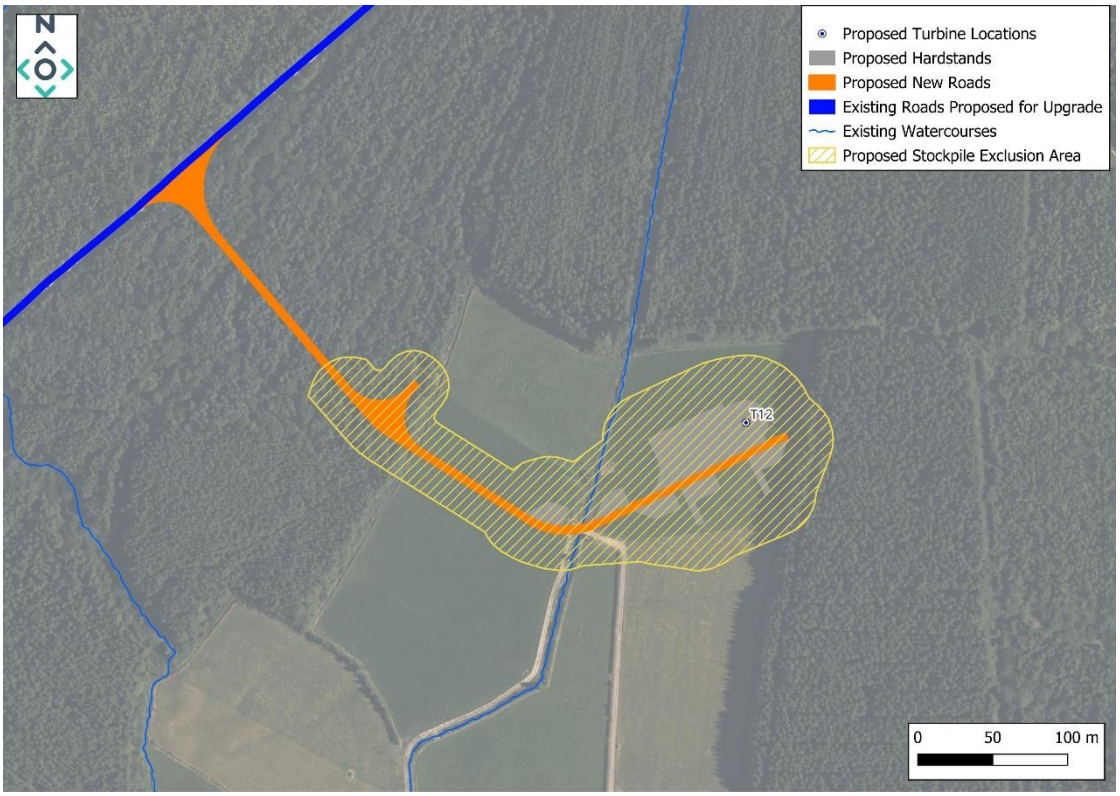


Figure 6-1 Stockpiling Exclusion Area

The ECoW is responsible for the checking and communication of weather forecasts. Prior to suspending works for climatic reasons, the following control measures will be completed:

- Open excavations will be secured.
- Temporary or emergency drainage will be provided to prevent back-up of surface runoff in work areas.
- Working for up to 12 hours after heavy rainfall events will be avoided to ensure drainage systems are not overloaded. Decisions are subject to visual inspection and judgement by ECoW. The intent and objective is to control erosion, avoid collapses of embankments, and limit the mobilisation and transport of sediments

Mitigation by Design: Key mitigation by design measures that will be implemented comprise source controls, in-line controls and treatment systems, as follows:

- Source control measures cover working areas, staging areas and stockpiles. Methods that will be employed are diversion drains, flume pipes, sandbags, oyster bags filled with gravel, and filter fabrics. Flexibility to adapt methods will be required based on location-specific conditions, as judged by supervising engineers from visual inspection.
- In-line controls involve settling of suspended sediments and particulate organic matter with the use of silt fences, sand or oyster bags, weirs, baffles, and check dams. Flow limiters and sump pumping systems may be employed where needs arise in order to maintain the hydraulic functioning of the existing drain system.
- Treatment systems involve sediment traps and temporary sumps/attenuation ponds.

- Working areas, staging areas and stockpiles will be covered. Diversion drains, flume pipes, sandbags, silt fences, and filter fabrics will be employed. Flexibility to adapt methods will be required based on location-specific conditions, as judged by the ECoW from visual inspection.
- In-line controls involve settling of suspended sediments and particulate organic matter with the use of silt fences and check dams. Flow limiters and sump pumping systems may be employed where needs arise in order to maintain the hydraulic functioning of the existing drain system.
- Treatment systems involve sediment traps and temporary sumps/attenuation ponds.
- If discharge water fails to be of a high quality during regular inspection, then a filtration treatment system will be used to filter discharge water before release to water courses. This applies for the entire construction phase. Particular care will be taken during any such application near receptor water bodies as certain chemical used for flocculation can affect the pH of watercourses. Manufacturers will be consulted prior to the potential use of filtration treatment systems, to ensure the application will not have negative effects on receptor water quality.
- For discharges near water courses, within the 50 m buffer, double silt fences will be employed. These will be inspected, maintained, and remain in place throughout the entire construction phase.
- Silt bags will be used where small to medium volumes of water need to be pumped from excavations. As water is pumped through the bag, the majority of the sediment is retained by the geotextile fabric allowing filtered water to pass through. Silt bags will be used with natural vegetation filters or sedimats. Sediment entrapment mats, consisting of coir or jute matting, will be placed at the silt bag location to provide further treatment of the outfall from the silt bag. Sedimats will be secured to the ground surface using stakes/pegs. Sedimats will extend the full width of the outfall to ensure all water passes through this additional treatment measure. Level spreaders will be designed for each outfall.

Stockpiles will be progressively covered or sealed with the excavator bucket during stockpiling, and covers will be secured once a stockpile has reached capacity. It is proposed that excavated spoil will be used for landscaping where required. The excess material will be used for backfilling the borrow pits and roadside linear berms within the Proposed Wind Farm site. Excavated 'clay pan' material will only be used for the backfilling of borrow pits. Construction works will be sequenced to ensure borrow pit(s) will be available for backfilling before 'clay pan' material is excavated.

The following recommendations and best practice guidelines for the placement of spoil within the proposed management areas will be adhered to during the construction of the Proposed Project:

- The landscaping areas will be developed in a phased approach, with the spoil being removed and temporarily stockpiled within a defined area while the borrow pits are being extracted. The stockpiled spoil will be deposited into the void borrow pit upon completion of extraction activities and the exercise will continue within the void until it cannot accommodate any further spoil.
- The placement of stockpiled spoil will be restricted to a maximum height of 1.0 m, subject to confirmation by the Geotechnical Engineer.
- Stockpiles will be compacted to reduce air voids and reduce the migration paths for infiltration by precipitation, and the surface of the placed spoil is shaped to allow efficient run-off of surface water where practical. This will ensure stability of the placed spoil and reduce the amount of potentially silt laden surface water runoff from these areas.
- Inspection of stockpiles, reinstated borrow pits, and landscaping areas will be made by the ECoW through regular monitoring of the works. The appointed contractor will review work practices at these areas when periods of heavy rainfall are expected so as to prevent excessive silt laden water runoff from being generated.
- An interceptor drain will be installed upslope of the filled borrow pit areas to divert any surface water away from these areas where necessary.
- Excavated material will be used to reinstate the proposed borrow pits once the required volume of stone has been extracted. Silt fences and double silt-fences will be emplaced down-

gradient of the back-filled borrow pits and will remain in place throughout the entire construction phase, or until reseeding has been established to a sufficient level.
- The surface of the deposited spoil will be profiled to a gradient and vegetated or allowed to vegetate naturally as indicated by the Project Ecologist.
- Daily inspections of installed drainage systems will be undertaken, especially after heavy rainfall, to check for damage and blockages, and ensure there is no escape or build-up of standing water in parts of the systems where it is not intended.
- Any excess build-up of silt levels at dams, the settlement pond, or any other drainage features that may decrease the effectiveness of the drainage feature, will be removed. Checks will be conducted on a daily basis.

Surface water quality monitoring: Monitoring will be performed as described in the Surface water management plan (Appendix 6).

6.2.1.1.5 *Watercourse Crossing Installation and Upgrades*

Culverting is necessary for the Proposed Project where drainage water has to cross proposed access roads, and also where existing road or stream crossings need upgrades. Based on the layout of the Proposed Project there will be approximately:

- 4 no. EPA mapped watercourse crossings within the Proposed Wind Farm site
- 2 no. EPA mapped watercourse crossings within the Proposed Grid Connection site.

The works require use of machinery and equipment which can result in physical disturbance of streambanks and streambeds, which can result in sediment mobilisation and both water quality and morphological effects.

Proposed Mitigation Measures / Impact Assessment: Direct in-stream works will not be required. All works will be conducted in accordance with IFI "*Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters*" (IFI, 2016). Related activity incorporates many of the same measures that are presented in the *Earthworks* section above. Additionally, the following measures will be implemented:

- All new stream crossings within the Proposed Wind Farm site will be bottomless-box culverts or clear-span crossings. Existing banks will remain undisturbed. Abutments will be constructed from precast units combined with in-situ foundations.
- All guidance / mitigation measures required by the OPW and/or the Inland Fisheries Ireland (IFI) is incorporated into the design of the proposed crossings;
- All drainage measures will be installed in advance of the works;
- Plant and equipment will not be permitted to track across the watercourse;
- Once the foundations have been completed at both sides of the watercourse, the pre-cast concrete box culvert will be installed using a crane and there will be no contact with the watercourse;
- Where a box culvert is installed in sections, the joint will be sealed to prevent granular material entering the watercourse;
- During near-stream construction works, double-row silt fences will be emplaced immediately downgradient of work areas for the duration of activity.
- In accordance with IFI (2016), any near-stream works will be undertaken from July to September inclusive, i.e., the relatively drier summer period. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses. Any deviation that may be temporarily necessary will be done in discussion with the IFI.
- All new stream crossings will require a Section 50 application (Arterial Drainage Act, 1945). The river/stream crossings will be designed in accordance with OPW guidelines/requirements on applying for a Section 50 consent.

Underground cabling routes within the Site (e.g., from turbines) will follow new or existing access roads, and cables will pass within the structure of the road and associated culverts.

6.2.1.1.6 Cable Works Installations

The underground electrical cabling works associated with the Proposed 110kV Underground Cabling Route will consist of the installation of ducts in an excavated trench to accommodate electrical cables to facilitate the undergrounding of the 1230 m section of the existing Dungarvan-Foxhole OHL.

Proposed Mitigation Measures / Impact Assessment: Cable trenches will be constructed in short, controlled sections, minimising the amount of ground disturbed at any one time. This minimises the potential for drainage runoff and silt or suspended solids to enter water courses. Each short section of trench is excavated, ducting installed and bedded, and backfilled with the appropriate materials, before work on the next section commences. In-stream works will be avoided in all cases. Detailed method statements will be prepared and implemented by contractors, which will incorporate measures to protect watercourses from potential discharges of sediment, drilling fluids, fuel spills.

- Excavated material is stored on the up-gradient side of the trench and is temporarily sealed/smoothed over, using the back of the excavator.
- Material stockpiles should be stored at least 15 m back from drains and watercourses on level ground with a silt fence inserted at the base to prevent runoff.
- Silt fences will be installed temporarily downgradient of the cable trench works area.
- Excess subsoil is removed from the cable trench works area immediately upon excavation, and in the case of the Proposed Project, will be transported to the borrow pits or used for landscaping and reinstatement elsewhere on-site or nearby, licenced waste facility.
- Trench supports will be installed, or the trench sides will be benched or battered back where appropriate, and any ingress of ground water will be removed from the trench using submersible pumps, fitted with appropriate silt filtration systems, to prevent contamination of any watercourse.
- Ground water and surface water accumulating in the base of trenches will not be pumped directly to roadside drains or watercourses unless it is clean and free from solids.

6.2.1.1.7 Hydraulic Effects of Drainage

The interceptor drains upslope of infrastructure components of the Proposed Project will capture greenfield runoff. Where excavations intercept shallow groundwater, seepage into the interceptor drains may also occur. The seepage is additional to intercepted runoff. The seepage water will be led away by the drains, in the same manner as the intercepted surface runoff.

The drains will be shallow (mostly <1 m deep) and the extent and volumes of seepage encountered will be location-specific. Impermeable or lower permeability soils/subsoils will contribute very small quantities of water. Most of the soils/subsoils are expected to be clayey, as the materials drained are glacial till. As such, the hydraulic effects of drainage will be small.

Greater volumes may occur locally if or where drains are deeper and/or the subsoil materials are more permeable. Still, the seepage volumes to be managed are considered to be a matter of routine for this type of infrastructure.

Technically, seepage into drains lowers groundwater in vicinity of the drains. The lowering is expected to extend only a few metres, perhaps tens of metres, away from the drains. There are no identified ecological features or habitats that are foreseen will be affected by such lowering.

The vast majority of interceptor drains will be constructed or rehabilitated in the subcatchment that drains to the Licky River.

Proposed Mitigation Measures / Impact Assessment: The Proposed Project footprint has been reduced to a minimum and interceptor drains will be shallow which serves to reduce the relative risk of drainage effects.

6.2.1.1.8 *Water Quality Effects of Drainage*

Drainage water can carry suspended sediments and organic matter, dissolved organic matter, nutrients, and any pollutants that may be transmitted by intercepted runoff. The pollutants can be of a natural origin or anthropogenic.

Sedimentation of the sensitive river receptors is identified as the main potential issue during construction of the Proposed Project. However, drainage will likely also continue to export fine organic matter, and dissolved organic carbon, from areas dominated by peaty soils and gleys in forested areas. Both fine sediments in suspension and dissolved organic matter can affect the pH and river water colour and clarity, which the freshwater pearl mussel is sensitive to. Sedimentation of suspended matter can also affect streambed substrate, which becomes a hydromorphology issue. All such items can affect aquatic habitat and biota, including the freshwater pearl mussel in the Licky River.

Proposed Mitigation Measures / Impact Assessment: Interceptor drains will be shallow which serves to reduce the relative drainage effects. A multitude of sediment-related mitigation measures are planned and will be implemented.

6.2.1.1.9 *Dewatering and Pumping from Open Excavations*

Excavations will be required for the Proposed Project. Open excavations below the groundwater table may induce seepage into the excavations, by intercepting shallow groundwater. Foundation works and borrow pits extend deeper than drains and may need to be temporarily pumped to keep excavations free of water.

Such water will enter directly from rainfall and via subsurface seepage. In the bedrock, groundwater may ingress from fractures and a 'transition zone' (if or where this is present at the contact between subsoils and bedrock). The quantities to be pumped are expected to be manageable given the generally low-permeability characteristics of bedrock groundwater flow system (as a 'poorly productive' bedrock aquifer type. Any pumping from excavations will only be necessary for short periods of time. For most components, the time frame is measured in days to weeks.

The pumping will lower groundwater levels locally. This could, taking a very precautionary approach, affect the flow of headwater tributaries, during the drier summer season especially. Discharges from sump pumping can affect the water quality of water courses, especially with regard to suspended sediments, but also any accidental pollutants that are entrained by the pumping.

Proposed Mitigation Measures / Impact Assessment: Pumping of water from excavations will be necessary, so localised and temporary groundwater lowering cannot be avoided if or where it is implemented. Quantities will be small given the generally low-permeability characteristics of both the till and the bedrock groundwater flow system. Additionally, excavations will remain relatively shallow and most turbine bases and proposed borrow pits are located in elevated areas near hilltops. Pumping and water management is a matter of routine for contractors familiar with this type of development and activity. No direct discharges to steams will be permitted, and this will be enforced by the ECoW. All pumped water must be led and pass through a suitably sized settling basin prior to diffuse discharge to ground or a drain away from the excavation location.

The pumped water, which contains suspended solids, will be collected in sumps, pumped out, and led to associated settling basins or ponds which will be established in the first stage of construction. The purpose is to facilitate the settling out of fine sediments prior to subsequent discharge. The water will be pumped and discharged periodically, on as-needed basis. It is not a continuous process, and quantities pumped will vary from location to location, and seasons. Best practice methods will be applied to

prevent accidental pollution of the water in open excavations as described in the next section. If or where required, additional specialist water treatment measures will be employed to ensure that no deterioration in downstream water quality occurs.

Other relevant measures are:

- Interceptor drains will be established around the perimeter of borrow pits. These drains will divert any surface water away from the borrow pits and hence prevent water from ponding and lodging during construction (and also when reinstated).
- Settling basins have been designed at the lower side/outfall location of the borrow pits.

No groundwater level impacts are predicted from the construction of the Proposed 110kV Underground Cabling Route due to the very shallow nature of the excavations (i.e. 0 – 1.3 m).

6.2.1.1.10 *Accidental Spills, Leaks or Other Releases*

Accidental spills or leaks of fuels, lubricants, hydraulic oils or chemicals, during construction of the Proposed Project have the potential to contaminate watercourses and groundwater. Refuelling, routine plant operation and maintenance, material storage, and temporary welfare facilities represent the principal potential sources of contamination.

Accidental spillage of chemical or fuels during refuelling of construction plant with petroleum hydrocarbons is a significant pollution risk to groundwater, surface water and associated ecosystems, and to terrestrial ecology. The accumulation of small spills of chemical and fuels during routine plant use can also be a pollution risk. Hydrocarbons have a high toxicity to humans, and all flora and fauna, including fish, and can be persistent in the environment. It is also a nutrient supply for adapted micro-organisms, which can rapidly deplete dissolved oxygen in waters, resulting in death of aquatic organisms.

Proposed Mitigation Measures / Impact Assessment: The prevention of, and responses to, accidental spills and leaks of fuel and other chemicals will be implemented as follows;

- The highest standards of site management will be maintained, with the utmost care and vigilance followed to prevent accidental contamination or unnecessary disturbance to the Site and surrounding environment during construction;
- An Emergency Response Plan for accidental spillages will be implemented. All construction staff will be familiar with the emergency procedures and the use of the relevant equipment;
- The ECoW will oversee the pollution prevention measures agreed for the Site to ensure that they are operating safely and effectively as well as having responsibility for the implementation of Emergency Procedures for spill control measures.
- Where possible, refuelling will occur at an off-site controlled fuelling station.
- On-site refuelling will be undertaken using an offsite fuel truck, with spill kits readily available for accidental leakages or spillages;
- Refuelling will be undertaken by designated, suitably trained personnel only;
- Refuelling of construction machinery will take place using drip trays at all times;
- All plant and machinery will be serviced before being mobilised on-site and will be regularly inspected and maintained to minimise the risk of leaks and spillages;
- Maintenance of construction vehicles or plant will, where practicable, be undertaken off-site;
- Spill response kits will be available at all active work areas, refuelling locations, concrete works and construction compounds, and personnel will be trained in their use;
- Fuels stored on-site will be minimised. Storage areas, where required, will be bunded appropriately for 110% of the fuel storage volume for the time period of construction and fitted with a storm drainage system and an appropriate oil interceptor;
- All waste tar material arising from the excavation of the Proposed 110kV Underground Cabling Routecabling trench and resurfacing of roads will be removed off-site and taken to a licenced waste facility;

- An emergency response plan for the construction phase to deal with accidental spillages will be in place.
- Hydrocarbon interceptors will be installed at the substations and construction compounds.

6.2.1.1.11 *Release of Cement-Based Products*

The use of cement-based products will be required for the Proposed Project. Entry of cement-based products into drains or surface water within the Site represents a risk to the aquatic environment at and downstream of the release.

Concrete and other cement-based products are alkaline and can be corrosive. They generate fine, highly alkaline silt (pH 11.5) that can physically damage fish. A pH range of $\geq 6 \leq 9$ is set in S.I. No. 293 of 1988 Quality of Salmonid Water Regulations, with artificial variations not in excess of ± 0.5 of a pH unit.

Washing out of concrete transport and placement machinery are the activities most likely to generate a risk of cement-based pollution. Releases of cement-based products are obvious when they happen and can be stopped. They also involve small volumes (individually). Risks are increased with repeated poor practice.

Entry of cement-based products into the Site drainage system, and hence to surface watercourses or directly into watercourses, represents a risk to the aquatic environment.

Proposed Mitigation Measures / Impact Assessment:

Mitigation by Avoidance:

- No batching of wet-cement products will occur on-site. Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place;
- Where possible, pre-cast elements for culvert and watercourse crossings will be used;
- No washing out of any plant used in concrete transport or concreting operations will be allowed on-site;
- Where concrete is delivered on-site, only the chute need be cleaned, using the smallest volume of water possible. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed. Chute cleaning water is to be directed to lined, cement washout ponds before being removed from the Site and discharged at a suitable licensed facility;
- The washout ponds will be covered when not in use to prevent rainwater collecting.
- Weather forecasting will be used to assist in planning large concrete pours, and large pours will be avoided where prolonged periods of heavy rain are forecast.; and,
- Ensure pour site is free of standing water and plastic covers will be ready in case of sudden rainfall event; and
- At proposed turbine foundations, sand blinding, DPM, and lean-mix blinding are used to vertically contain the concrete. While the concrete is contained laterally by temporary/permanent shuttering. The concrete cures within 72hrs.

Risks of pollution will be further reduced as follows:

- Concrete will not be transported around on-site in open trailers or dumpers to avoid spillage while in transport.
- Arrangements for concrete deliveries on-site will be discussed with suppliers before work starts, routes will be confirmed, and on-site washouts will be prohibited, and emergency procedures will be discussed.
- Clearly visible signage will be placed in prominent locations close to concrete pour areas specifically stating washout of concrete lorries is not permitted on-site.

- Excavations will be sufficiently dewatered before concreting begins, and dewatering will continue while concrete sets.
- Covers will be used on freshly placed concrete to avoid the surface washing away in heavy rain.
- Any potential, small surplus of concrete will be disposed of after completion of a pour in suitable locations away from any watercourse or sensitive habitats.

6.2.1.1.12 *Piling Works*

Piling foundations may be required at turbine locations where challenging ground conditions exist. Based on site investigation data, these locations may include T8 to T12, T14, and T21. The requirement for piling at these locations will be determined during post-consent ground investigations and design. An assessment of piling at these turbine locations has been included below.

The following potential scenarios arise in respect of potential piling works:

- Creation of preferential pathways, through lower permeability subsurface layers (such as silts and clays), to allow downward flow into the underlying bedrock aquifer. Subsequently increasing the vulnerability of the bedrock aquifer to potential contaminants;
- Creation of preferential pathways, through lower permeability subsurface layers (such as silts and clays), to allow upward migration of groundwater to the surface. Thus potentially altering surface or near-surface groundwater levels and hydrochemistry; and,
- Creation of an obstruction to local and regional groundwater flow within the underlying aquifer due to placement of pile clusters.

Proposed Mitigation Measures / Impact Assessment: The proposed mitigation measures designed for the protection of groundwater quality will be implemented at all construction work areas.

- Mitigation measures for sediment control are detailed in preceding sections.
- Mitigation measures for the control of hydrocarbons during construction works are detailed in Section 6.2.1.1.10
- Mitigation measures for the control of cement-based products during construction works are detailed in Section 6.2.1.1.11.

Strict quality assurance and quality control procedures will be followed for piling works. For bored piles, as the temporary steel casing is removed, a steel reinforcement cage will be added to the pile column, and concrete will be pumped to the toe of the pile using a tremie pipe. Vermiculite is used to create a plug between the concrete and the displaced water in the borehole. Therefore, the concrete seals the entire pile column and pushes the vermiculite plug to the surface as concrete is added. The temporary steel casing is removed carefully as the concreting works are being completed. This means that a direct long term pathway between the surface and the lower bedrock aquifer will not be sustained.

To ensure downward or upward flow of groundwater from the piling works does not occur, the concrete pumped to the bored pile will seal the pile annulus. As a result, the potential for the piling works to create pathways for downward or upwards groundwater flow is imperceptible.

The piles have a very small footprint and if required would account for a very small percentage of the overall footprint associated with the Proposed Project. The proposed piles would not penetrate any great distance into the underlying bedrock aquifer, as they will likely find sufficient resistance upon reaching the top of bedrock. The ability of a single cluster of piles, to alter or affect local or regional groundwater flow in the bedrock aquifer is imperceptible.

6.2.1.1.13 *Wastewater Management*

Wastewater management will be required for Proposed Project.

Release of effluent from domestic wastewater treatment systems has the potential to impact on groundwater and surface waters if site conditions are not suitable for an on-site percolation unit.

Proposed Mitigation Measures / Impact Assessment: Staff welfare facilities will be provided at the construction compounds within the Site. Sealed storage tanks will be used. These will be collected regularly and brought offsite for disposal by authorised means (permitted wastewater collector) to a wastewater treatment plant. It is not proposed to treat wastewater on-site.

- During the construction phase, a self-contained port-a-loo with an integrated waste holding tank will be used at each of the site construction compounds (and at the Proposed Grid Connection as required), maintained by the providing contractor, and removed off-site on completion of the construction works;
- Water supply for the site office and other sanitation will be brought to Site and removed after use from the Site to be discharged at a suitable off-site treatment location; and,
- No water or wastewater will be sourced on the Site, nor discharged to the Site.

6.2.1.1.14 *Potential for Residual Adverse Effect*

Once the above listed mitigation measures are implemented, there will be no potential for residual adverse effects on European sites due to habitat degradation as a result of water quality deterioration during construction of the Proposed Project.

6.2.1.2 Disturbance

A potential for indirect effect on the SCI species of the Dungarvan Harbour SPA, the Helvick Head to Ballyquin SPA, the Ballymacoda Bay SPA, Blackwater Estuary SPA and the Mid-Waterford Coast SPA, as listed in Section 6.1.1, in the form of ex-situ disturbance during the construction of the Proposed Project was identified. In addition, the potential for disturbance of otter associated with the Blackwater River (Cork/ Waterford) SAC using watercourses within the vicinity of the Proposed Project for commuting or foraging was also identified.

6.2.1.2.1 *Cormorant*

As cormorant was not recorded utilising habitats within the Proposed Wind Farm during the survey period, disturbance effects on the species are considered unlikely. All observations within the Proposed Wind Farm were of birds flying over, with no evidence of foraging, roosting or other habitat use within. Therefore, temporary disturbance associated with construction activities is not anticipated to result in the displacement of cormorant from habitats on which the species depends. The Helvick Head to Ballyquin SPA is located 5.8km from the Proposed Wind Farm, therefore construction disturbance will not affect birds within the SPA due to the separation distance.

Proposed Mitigation Measures:

Given that, after assessment, there is no potential for adverse effects due to disturbance anticipated there is no requirement for mitigation.

Residual adverse effects: There will be no potential for residual adverse effects on cormorant as a result of disturbance during the construction of the Proposed Project.

6.2.1.2.2 *Golden Plover*

Golden plover were observed on 308 occasions during the survey period. Golden Plover was regularly recorded using habitats within the Proposed Wind Farm site, with birds landing, foraging and roosting at several locations. Flocks of up to 350 birds were recorded using these areas. The species was also frequently recorded flying and circling over the Proposed Wind Farm site. Three regularly used landing area were identified outside the Proposed Wind Farm site. Larger flocks (up to 4,000 birds) were recorded at various sites in the wider surroundings of the Proposed Wind Farm site, including Dungarvan Harbour and Ballynaclash Quay.

Goodship and Furness (2022) advised a disturbance distance of 200-500m for golden plover during the winter season. Within the Proposed Wind Farm site, golden plover were recorded utilising habitats within 500m of large-scale construction works (turbines) on 67 occasions during the winter months, concentrated around GP-1, GP-2 and GP-3. The repeated use of these areas across multiple survey months and winter seasons indicates that they represent regularly used foraging and/or roosting areas, rather than locations used only occasionally or incidentally. Accordingly, construction activity in proximity to these areas has the potential to cause disturbance of golden plover from regularly used wintering habitat. However, this will be temporary in nature. No disturbance will occur to habitat within the Dungarvan Harbour SPA or Blackwater Estuary SPA. In addition, areas of suitable habitat are widespread in the wider environment, as supported by observations of golden plover during surveys outside the Proposed Wind Farm, including at GP-1, which is located outside the works area. As such, disturbance within the Proposed Wind Farm during construction will not result in the loss of a scarce resource for the local golden plover population. No significant effects of disturbance are anticipated.

Proposed Mitigation Measures:

Given that there is no potential for adverse effect via disturbance anticipated there is no requirement for mitigation.

Residual adverse effects: There will be no potential for residual adverse effects on golden plover as a result of disturbance during the construction of the Proposed Project.

6.2.1.2.3 *Black tailed godwit*

Black-tailed godwit was recorded 42 times during the survey period, with only three records within the Proposed Wind Farm site. All observations within the Proposed Wind Farm site involved birds in flight, with no evidence of birds landing, foraging, roosting or otherwise utilising habitats within. Flight records over the Proposed Wind Farm site were scattered and did not indicate a regularly used flight corridor. The Proposed Wind Farm site was considered to be of no ecological importance to this species.

Goodship and Furness (2022; also reviewed in NatureScot, 2022) found that disturbance may occur between 100 and 200m in both the breeding and winter season. As black-tailed godwit was not recorded utilising habitats within the Proposed Wind Farm site during the survey period, disturbance effects on the species are considered unlikely. All observations within the Proposed Wind Farm site were of birds flying over, with no evidence of foraging, roosting or other habitat use within. Therefore, temporary disturbance associated with construction activities is not anticipated to result in the displacement of black-tailed godwit from habitats on which the species depends. The Dungarvan Harbour SPA is located 1.9km from the Proposed Wind Farm site, therefore construction disturbance will not affect birds within the SPA due to the separation distance.

Proposed Mitigation Measures:

Given that there is no potential for adverse effect via disturbance anticipated there is no requirement for mitigation.

Residual adverse effects: There will be no potential for residual adverse effects on black-tailed godwit as a result of disturbance during the construction of the Proposed Project.

6.2.1.2.4 *Common gull*

Common gull was recorded using habitats within the Proposed Wind Farm site on one occasion, when two birds were recorded roosting in fields near Drumslig in January 2026. The species was also recorded flying within or over the Proposed Wind Farm site on three occasions.

Disturbance from construction of the Proposed Wind Farm site is unlikely to give rise to significant impacts given the low abundance and frequency of use of the Proposed Wind Farm site by common gull. The Proposed Wind Farm site does not represent an important area for common gull. Therefore, temporary disturbance associated with construction activities is not anticipated to result in the displacement of common gull from habitats on which the species depends. The Ballymacoda Bay SPA is located 12.9km from the Proposed Wind Farm site, therefore construction disturbance will not affect birds within the SPA due to the separation distance.

Proposed Mitigation Measures:

Given that there is no potential for adverse effect via disturbance anticipated there is no requirement for mitigation.

Residual adverse effects: There will be no potential for residual adverse effects on common gull as a result of disturbance during the construction of the Proposed Project.

6.2.1.2.5 *Herring gull*

Herring gull was recorded using habitats within the Proposed Wind Farm site on two occasions, including a flock of five birds foraging in agricultural grassland near Cloghraun and a flock of

approximately 200 birds roosting near Drumslig. The species was also frequently recorded flying, circling and soaring over the Proposed Wind Farm site.

Disturbance from construction of the Proposed Wind Farm is unlikely to give rise to significant impacts given that the species was only infrequently using the Proposed Wind Farm site. The Proposed Wind Farm site does not represent an important area for herring gull. Therefore, temporary disturbance associated with construction activities is not anticipated to result in the displacement of herring gull from habitats on which the species depends. Any minor alterations to the flight paths of local commuting birds is not likely to result in significant effects. The Helvick Head to Ballyquin SPA and Mid-Waterford Coast SPA is located 5.8km and 13km respectively from the Proposed Wind Farm site, therefore construction disturbance will not affect birds within the SPAs due to the separation distance.

Proposed Mitigation Measures:

Given that there is no potential for adverse effect via disturbance anticipated there is no requirement for mitigation.

Residual adverse effects: There will be no potential for residual adverse effects on herring gull as a result of disturbance during the construction of the Proposed Project.

6.2.1.2.6 *Lesser black-backed gull*

Lesser black-backed gull was recorded using habitats within the Proposed Wind Farm site on three occasions, with 1 to 24 birds recorded foraging. The species was also regularly recorded flying over the Proposed Wind Farm site.

Lesser black-backed gull is an SCI of Ballymacoda Bay SPA. The separation distance between the Proposed Wind Farm site and this SPA is 12.9km. Lesser black-backed gull is a wide-ranging forager, however suitable habitats for this species recorded within the Proposed Wind Farm site are common and widespread in the intervening landscape between the Proposed Wind Farm site and the SPA. In addition, due to the low abundance and frequency of occurrence, no significant effects of direct habitat loss are anticipated.

Proposed Mitigation Measures:

Given the low abundance and frequency of occurrence of this species, there is no requirement for mitigation.

Residual adverse effects: There will be no potential for residual adverse effects on lesser black-backed gull as a result of disturbance during the construction of the Proposed Project.

6.2.1.2.7 *Otter*

No signs of otter were recorded within any of the watercourses within the Site. No otter holts or resting places were recorded during the dedicated otter surveys undertaken. However, evidence of otter activity in the form of spraints and slides was recorded on watercourses downstream of the Proposed Project (see Section 3.2.2), therefore, otter are known to be active in the wider area. Both fresh and old otter spraint, as well as otter prints were identified in the vicinity of survey site WF 7 along the River Licky. Potential otter slides were also identified in the vicinity of survey site WF 9 along the River Licky (see Figure 1-1 for locations), with high-quality commuting and foraging habitat throughout each of the river. Both WF7 and WF9 are located downstream of the Proposed Wind Farm site within the Blackwater (Cork/Waterford) SAC. No otter holts or couches were identified in or within the vicinity of the Proposed Wind Farm site or in the vicinity of Proposed Grid Connection watercourse crossing sites at the time of survey.

Habitat Loss/Fragmentation, Disturbance, Mortality

Watercourse crossings within the Proposed Wind Farm site will be constructed using bottomless box culvert or clear-span watercourse crossing. For the Proposed Grid Connection, only minor underground cabling installation works are proposed within the public road and both existing EPA bridge crossings will be crossed with the cable via flatbed formation. Given the nature proposed works and the findings of the baseline surveys for otter, no significant habitat destruction, no loss of breeding or resting places and no direct mortality related impacts on this species are anticipated. Therefore, there is no potential for the Proposed Project to result in any habitat loss/ fragmentation, disturbance or mortality for otter.

In relation to disturbance, otter are predominantly crepuscular in nature and it is anticipated that construction activity associated with the Proposed Project will be predominantly confined to daytime hours, thus minimising potential disturbance related impacts to the species. Any disturbance impacts would be temporary in nature and not considered to have an adverse effect on the local otter population. However, precautionary mitigation is included below.

The potential for indirect effect to otter via habitat degradation (impacts on water quality) and reduced prey availability is assessed in Section 6.2.1.1 above.

Proposed Mitigation Measures:

The following mitigations will be in place with regard to construction works within the Site:

- A pre-commencement survey for otter will be undertaken within 150m upstream and downstream of the proposed new watercourse crossings and crossing upgrades that are required within the Site in advance of commencement of works.
- If a holt is found within 150m of construction areas, the works will be undertaken in line with TII (2006)[10] and if a potential for disturbance is identified, these works will not be undertaken until a derogation licence is obtained. The requirement for a pre-construction survey does not represent a lacuna in the survey assessment but is fully in line with industry best practice. The function of the survey will be to assess any changes in baseline conditions since the time of undertaking the baseline surveys.

Residual adverse effects: There will be no potential for residual adverse effects on otter as a result of disturbance during the construction of the Proposed Project.

6.2.1.3 Ex-Situ habitat loss

A potential for indirect effect on the SCI species of the Blackwater Estuary SPA, Dungarvan Harbour SPA, the Helvick Head to Ballyquin SPA, the Ballymacoda Bay SPA and the Mid-Waterford Coast SPA, as listed in Section 6.1.1, in the form of ex-situ habitat loss during the construction of the Proposed Project was identified.

6.2.1.3.1 *Cormorant*

Cormorant was recorded 57 times during the survey period, with only four records within the Proposed Wind Farm. All observations within the Proposed Wind Farm involved birds in flight, with no evidence of birds landing, foraging, roosting or otherwise utilising habitats within. Flight records over the

[10] *TII (2006). Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes. Dublin: National Roads Authority.*

Proposed Wind Farm were scattered and did not indicate a regularly used flight corridor. The Proposed Wind Farm was considered to be of no ecological importance to this species.

Cormorant are an SCI of Helvick Head to Ballyquin SPA. The separation distance between the Proposed Wind Farm and this SPA is 5.8km. The core cormorant foraging range is estimated to be 7.1km, therefore there is potential for birds to travel from the SPA to the Proposed Wind Farm. However, as cormorant was not observed utilising habitats within the Proposed Wind Farm during the survey period, no habitat loss effects on this species are anticipated as a result of the Proposed Wind Farm. All records relate to birds flying over the Proposed Wind Farm, with no evidence of foraging, roosting or other habitat use within the Proposed Wind Farm.

Proposed Mitigation Measures:

Given that, after assessment, there is no potential for adverse effects due to habitat loss anticipated there is no requirement for mitigation.

Residual adverse effects: There will be no potential for residual adverse effects on cormorant as a result of ex-situ habitat loss during the construction of the Proposed Project.

6.2.1.3.2 *Golden Plover*

Golden plover are an SCI of Dungarvan Harbour SPA and Blackwater Estuary SPA. The separation distance between the Proposed Wind Farm site and these SPAs is 1.9km and 4.5km respectively. As the winter golden plover foraging range is estimated to be up to 10-12km (Gillings and Fuller, 1999), the possibility that birds travel from the SPAs to these areas of the Proposed Wind Farm site cannot be excluded. To quantify the impact of direct habitat loss on the SPA population, the following assessment was conducted.

The CORINE land cover (2018) dataset was used to calculate the area of suitable golden plover habitat within 12km of Dungarvan Harbour and Blackwater Estuary SPAs, representing the maximum foraging range. These values were 43,745.412ha and 45987.581ha respectively. Next, the area of the Proposed Project footprint within suitable golden plover habitat was calculated. A total of 8.273ha of the Proposed Project footprint overlapping with the 12km buffer of both the Dungarvan Harbour SPA and the Blackwater SPA was suitable habitat. This corresponds to 0.019% of suitable habitat for golden plover within 12km of Dungarvan Harbour SPA and 0.018% of suitable habitat for golden plover within 12km of Blackwater Estuary SPA. The predicted impact of direct habitat loss on the Dungarvan Harbour SPA and Blackwater Estuary SPA population is negligible.

In terms of the regional population (birds that may not belong to the Dungarvan Harbour or Blackwater Estuary SPA population), significant areas of suitable foraging and roosting habitat, like grassland, will remain post-construction within the Proposed Wind Farm site and surrounding area. In addition, areas of suitable habitat are widespread in the wider environment, as supported by observations of golden plover during surveys outside the Proposed Wind Farm site. As such, habitat loss within the Proposed Wind Farm site will not result in the loss of a scarce resource for the local golden plover population. No adverse effects via direct habitat loss are anticipated.

Proposed Mitigation Measures:

Given that, after assessment, there is no potential for adverse effects due to habitat loss anticipated there is no requirement for mitigation.

Residual adverse effects: There will be no potential for residual adverse effects on golden plover as a result of ex-situ habitat loss during the construction of the Proposed Project.

6.2.1.3.3 *Black tailed godwit*

Black-tailed godwit are an SCI of Dungarvan Harbour SPA. The separation distance between the Proposed Wind Farm site and this SPA is 1.9km. The core black-tailed godwit foraging range is estimated to be 2km (based on the average of other ecologically similar species), therefore there is potential for birds to travel from the SPA to the Proposed Wind Farm site. However, as black-tailed godwit was not observed utilising habitats within the Proposed Wind Farm site during the survey period, no habitat loss effects on this species are anticipated as a result of the Proposed Project. All records relate to birds flying over the Proposed Wind Farm site, with no evidence of foraging, roosting or other habitat use within the Proposed Wind Farm. No significant effects of direct habitat loss are anticipated.

Proposed Mitigation Measures:

Given that, after assessment, there is no potential for adverse effects due to habitat loss anticipated there is no requirement for mitigation.

Residual adverse effects: There will be no potential for residual adverse effects on black-tailed godwit as a result of ex-situ habitat loss during the construction of the Proposed Project.

6.2.1.3.4 *Common gull*

Common gull is an SCI of Ballymacoda Bay SPA. The separation distance between the Proposed Wind Farm site and this SPA is 12.9km. Common gull is a wide-ranging species, however, suitable habitats for this species recorded within the Proposed Wind Farm site are common and widespread in the intervening landscape between the Proposed Wind Farm site and the SPA. In addition, due to the low frequency of habitat use within the Proposed Wind Farm site, and low abundance of birds, no significant effects of direct habitat loss are anticipated

Proposed Mitigation Measures:

Given that, after assessment, there is no potential for adverse effects due to habitat loss anticipated there is no requirement for mitigation.

Residual adverse effects: There will be no potential for residual adverse effects on common gull as a result of ex-situ habitat loss during the construction of the Proposed Project.

6.2.1.3.5 *Herring gull*

Herring gull are an SCI of Helvick Head to Ballyquin SPA and Mid-Waterford Coast SPA. The separation distance between the Proposed Wind Farm site and these SPAs is 5.8km and 13km respectively. The core herring gull foraging range is estimated to be 14.9km according to the conservation objectives (see Woodward *et al.*, 2019; Power *et al.,* 2021) therefore there is potential for birds to travel from the SPAs to the Proposed Wind Farm site. However, suitable habitats for this species recorded within the Proposed Wind Farm site are common are widespread in the intervening landscape between the Proposed Wind Farm site and the SPA. In addition, due to the low frequency of habitat use within the Proposed Wind Farm site, no significant effects of direct habitat loss are anticipated.

Proposed Mitigation Measures:

Given that, after assessment, there is no potential for adverse effects due to habitat loss anticipated there is no requirement for mitigation.

Residual adverse effects: There will be no potential for residual adverse effects on herring gull as a result of ex-situ habitat loss during the construction of the Proposed Project.

6.2.1.3.6 *Lesser black-backed gull*

Lesser black-backed gull are an SCI of Ballymacoda Bay SPA. The separation distance between the Proposed Wind Farm site and this SPA is 12.9km. Lesser black-backed gull is a wide-ranging forager, however suitable habitats for this species recorded within the Proposed Wind Farm site are common and widespread in the intervening landscape between the Proposed Wind Farm site and the SPA. In addition, due to the low abundance and frequency of occurrence, no significant effects of direct habitat loss are anticipated.

Proposed Mitigation Measures:

Given that, after assessment, there is no potential for adverse effects due to habitat loss anticipated there is no requirement for mitigation.

Residual adverse effects: There will be no potential for residual adverse effects on lesser black-backed gull as a result of ex-situ habitat loss during the construction of the Proposed Project.

6.2.2 Operation

6.2.2.1 Hydrological Impacts

A potential for indirect effect on the screened in aquatic QI species/habitats of the Blackwater River (Cork/Waterford) SAC, Dungarvan Harbour SPA and the Blackwater Estuary SPA in the form of water quality deterioration was identified. The potential for adverse effects on water quality, and therefore downstream receptors, during operation of the Proposed Project, is assessed below.

6.2.2.1.1 *Replacement of Natural Surfaces*

The Proposed Project will give rise to the replacement of natural greenfield surfaces with hardstanding areas and will increase runoff due to the replacement with lower permeability surfaces. This will impede downward percolation of rainwater locally, and increase the volumes captured in drains.

The replacement of natural surfaces (hardstand and crane pads for turbines, new and upgraded access tracks, and electrical substations) will generate 0.326 m3/s of runoff during a 6-hour duration, 10-year return period storm event.

This is a small increase in average runoff and results from a relatively small area of the overall Site being developed. Specifically, the permanent built infrastructure footprint is approximately 33.17 ha, representing 2.2% of the overall Site.

This water will be led via swales to settling basins/ponds, prior to discharge to ground, which is managed. As such, any risk of flooding downstream areas is minimal.

Proposed Mitigation Measures

Risk of a significant increase in water quantity within watercourses and, therefore, flooding is minimised by using an attenuated surface water drainage network.

Residual adverse effects: Once the above listed mitigation measures are implemented, there will be no potential for residual adverse effects on water quality/habitat degradation of European sites as a result of a reduction in permeable surfaces during the operational phase of the Proposed Project.

6.2.2.1.2 *Maintenance Works*

During the operational phase of the Proposed Project, routine activities will comprise periodic inspections and maintenance of the wind turbines, substations, meteorological mast, access roads, associated infrastructure and electrical equipment. These activities will primarily use the access-road network, and no significant excavation or ground disturbance will be required during normal operation.

Maintenance is a repeated activity which includes clearing and removal of vegetation and accumulated sediments within the drainage system, in addition to checks and repairs of hardstand damages and replacements necessary for electro-mechanical installations.

Overall, the risks of effects to receptor water bodies are much reduced compared to the construction phase, mainly because the scale works is less. Nevertheless, routine maintenance will be conducted ad accidental spills and leaks can occur, for example, oils used in transformers, substations and within each turbine, and storage of oils in tanks at the substations, could leak and affect both groundwater and water courses.

Proposed Mitigation Measures:

Maintenance works will be subject to mitigation measures as outlined for construction works in Section 6.2.1.1. Monitoring will include:

- Daily Visual Inspections
- Continuous Turbidity Monitoring
- Monthly Laboratory Analysis
- Field Monitoring

Monitoring measures are described in detail in Appendix 6 - SWMP.

Residual adverse effects: Once the above listed mitigation measures are implemented, there will be no potential for residual adverse effects on water quality/habitat degradation of European sites as a result of a reduction in permeable surfaces during the operational phase of the Proposed Project.

6.2.2.1.3 *Biodiversity Management and Enhancement Plan*

The Biodiversity Management and Enhancement Plan submitted with the planning application for the Proposed Project will serve to enhance biodiversity across the Site through the establishment of 3.6 ha of native woodland and the planting of 5.5 km of new hedgerow, including 1.2 km of riparian hedgerow planting. A core aim of the BMEP is to protect the water quality of the River Licky from surface-water runoff through targeted riparian planting and measures to prevent livestock poaching along tributaries within the Site. All riparian planting locations are located along tributaries of the Licky River, the closest management area to the Licky river is the proposed native woodland planting over 100m upstream of the Licky river. The area was chosen following the assessment of the EPA Pollution Impact Potential (PIP)[11] maps which shows the area as a high flow delivery path.

Riparian planting provides flood control, silt trapping and nutrient trapping and thereby enhances downstream water quality (Little et al. 2008).

The area proposed for riparian woodland planting was discussed with NPWS (as detailed in Section 1.3.1) and assessed during the ecological site surveys. The area supports wet grassland (GS4) that was classified as GL2D[12], a very common sward type of low-production farmland and a species poor community of relatively low conservation value (as detailed in Section 3.2.1.1.6) and does not correspond to the classification of poor fens or flushes which contribute to the aquatic food web through allochthonous matter (Atkinson et al. 2024). Freshwater pearl mussel is extremely vulnerable to environmental changes due to its complex life cycle and its sensitive habitat. Sedimentation settling in the habitat can deprive the young freshwater pearl mussels of oxygen and prevent juveniles for moving into the substratum. As filter-feeders, this species is also particularly sensitive to suspended solids in the waterbody due to pollution events or sedimentation. As salmonids form part of the life cycle of freshwater pearl mussel, changes in salmonid populations directly affect the freshwater pearl mussel population (Atkinson et al. 2024). The establishment of riparian planting and fencing along watercourses within the Proposed Wind Farm site will result in a reduction of sedimentation in the watercourses through livestock poaching. The establishment of open canopy native woodland in a riparian zone will also encourage the development of a species rich ground flora and provide a buffer zone to prevent nutrient run-off into the Licky River.

Freshwater pearl mussel generally occurs in oligotrophic waters, and eutrophication can have adverse impacts. The predominant land use within the catchment and the Proposed Wind Farm site is

[11] *https://www.catchments.ie/pollution-impact-potential-pip-maps/*
[12] https://biodiversityireland.ie/ivc-classification-explorer/gl2/gl2d/

agriculture and forestry which are listed as pressures for freshwater pearl mussel. In mineral soils, as found at the Proposed Wind Farm site, vegetated buffer strips and riparian woodland can curtail discharge of enriched surface water through absorption and uptake of nutrients (Atkinson et al. 2024).

Mitigation

Given that there is no potential for adverse effects anticipated there is no requirement for mitigation.

Residual adverse effects:

Following the impact assessment above for the Biodiversity Management and Enhancement Plan, there is no potential for residual adverse effect on European sites.

6.2.2.2 Displacement and Barrier Effect (SCI Bird Species)

A potential for indirect effect on the SCI species of the Blackwater Estuary SPA, Dungarvan Harbour SPA, the Helvick Head to Balyquin SPA, the Ballymacoda Bay SPA and the Mid-Waterford Coast SPA, as listed in Section 6.1.1, in the form of a displacement and barrier effect during the operation of the Proposed Project was identified.

6.2.2.2.1 *Cormorant*

As cormorant was not recorded utilising habitats within the Proposed Wind Farm during the survey period, displacement effects on the species are considered unlikely. All observations within the Proposed Wind Farm were of birds flying over, with no evidence of foraging, roosting or other habitat use within. Therefore, displacement associated with operating turbines is not anticipated to result in the displacement of cormorant from habitats on which the species depends. The Helvick Head to Ballyquin SPA is located 5.8km from the Proposed Wind Farm, therefore displacement will not affect birds within the SPA due to the separation distance.

Proposed Mitigation Measures:

Given that, after assessment, there is no potential for adverse effects due to displacement anticipated there is no requirement for mitigation.

Residual adverse effects: There will be no potential for residual adverse effects on cormorant as a result of displacement during the operation of the Proposed Project.

6.2.2.2.2 *Golden Plover*

Management and servicing of the Proposed Wind Farm site will not add significantly to the background levels of disturbance currently occurring in the area. A review of 22 studies suggests that golden plover will approach wind turbines to an average distance of 175m in the non-breeding season (Hötker et al., 2006), while Pearce-Higgins et al. (2009) found that this species exhibited reduced habitat usage within 200m of turbines. Additionally, a review of disturbance distance estimates by NatureScot (2022) recommended a minimum disturbance buffer of 200m during the non-breeding season. An average of these values is 187m.

As outlined above, golden plover is an SCI of Dungarvan Harbour SPA and Blackwater Estuary SPA, and there is potential for birds associated with the SPA population to travel to the Proposed Wind Farm site. To quantify the impact of indirect habitat loss as a result of displacement from operating turbines on the SPA population, the following assessment was conducted.

A 187m buffer was applied to all turbines to represent the displacement distance for golden plover. The area of suitable golden plover habitat within this buffer was calculated. All turbines overlapped the 12km buffer of Dungarvan Harbour SPA, totalling displacement from 95.248ha of suitable habitat. Although all turbines also overlapped the 12km buffer of Blackwater Estuary, not all of the 187m buffer overlapped, therefore the total displacement was from 94.542 of suitable habitat. Within 12km of Dungarvan Harbour SPA, golden plover are estimated to be displaced from 95.248ha of a total 43,745.412ha of suitable habitat (0.22%). Within 12km of Blackwater SPA, golden plover are estimated to be displaced from 94.542ha of a total 45987.581ha of suitable habitat (0.21%). The predicted impact of indirect habitat loss as a result of displacement from operating turbines on the Dungarvan Harbour SPA and Blackwater Estuary SPA populations is negligible.

In terms of the regional population, areas of suitable habitat are widespread in the wider environment, as supported by observations of golden plover during surveys outside the Proposed Wind Farm site, including at GP-1. As such, displacement from the Proposed Wind Farm site during operation will not result in the loss of a scarce resource for the local golden plover population. There is no evidence to suggest that the Proposed Wind Farm site lies on a migratory/regular commuting route for the species therefore barrier effect is not anticipated. No significant displacement and barrier effects are anticipated.

Proposed Mitigation Measures:

Given that, after assessment, there is no potential for adverse effects due to displacement and barrier effect anticipated there is no requirement for mitigation.

Residual adverse effects: There will be no potential for residual adverse effects on golden plover as a result of a displacement and barrier effect during the operational phase of the Proposed Project.

6.2.2.2.3 *Black tailed godwit*

Goodship and Furness (2022, also reviewed in NatureScot, 2022) found that disturbance may occur between 100 and 200m in both the breeding and winter season. As black-tailed godwit was not recorded utilising habitats within the Proposed Wind Farm during the survey period, displacement effects on the species are considered unlikely. All observations within the Proposed Wind Farm were of birds flying over, with no evidence of foraging, roosting or other habitat use within. Therefore, displacement associated with operating turbines is not anticipated to result in the displacement of black-tailed godwit from habitats on which the species depends. The Dungarvan Harbour SPA is located 1.9km from the Proposed Wind Farm, therefore displacement will not affect birds within the SPA due to the separation distance.

Proposed Mitigation Measures:

Given that, after assessment, there is no potential for adverse effects due to displacement and barrier effect anticipated there is no requirement for mitigation.

Residual adverse effects: There will be no potential for residual adverse effects on black-tailed godwit as a result of a displacement and barrier effect during the operational phase of the Proposed Project.

6.2.2.2.4 *Common gull*

Displacement distances of common gull due to the presence of turbines has not been reported in the literature. The low abundance and frequency of use of the Proposed Wind Farm site by common gull indicates that the Proposed Wind Farm site does not represent an important area for common gull. Therefore, displacement associated with operating turbines is not anticipated to result in the displacement of common gull from habitats on which the species depends. The Ballymacoda Bay SPA is located 12.9km from the Proposed Wind Farm site, therefore displacement will not affect birds within the SPA due to the separation distance. There is no evidence to suggest that the Proposed Wind Farm

site lies on a migratory/regular commuting route for the species given that flights across the Proposed Wind Farm appear random in nature, therefore barrier effect is not anticipated.

Proposed Mitigation Measures:

Given that, after assessment, there is no potential for adverse effects due to displacement and barrier effect anticipated there is no requirement for mitigation.

Residual adverse effects: There will be no potential for residual adverse effects on common gull as a result of a displacement and barrier effect during the operational phase of the Proposed Project.

6.2.2.2.5 *Herring gull*

Displacement distance of herring gull due to the presence of turbines has not been reported in the literature. Displacement from turbines is unlikely to give rise to significant impacts given that the species was only infrequently using the Proposed Wind Farm site indicating that it does not represent and important area for herring gull. The Helvick Head to Ballyquin SPA and Mid-Waterford Coast SPA is located 5.8km and 13km respectively from the Proposed Wind Farm site, therefore displacement will not affect birds within the SPA due to separation distance.

There is no evidence to suggest that the Proposed Wind Farm site lies on a migratory/regular commuting route for the species given that flights across the Proposed Wind Farm appear random in nature, therefore barrier effect is not anticipated. Any minor alterations to the flight paths of local commuting birds due to the presence of the Proposed Turbines is not likely to result in significant effects.

Proposed Mitigation Measures:

Given that, after assessment, there is no potential for adverse effects due to displacement and barrier effect anticipated there is no requirement for mitigation.

Residual adverse effects: There will be no potential for residual adverse effects on herring gull as a result of a displacement and barrier effect during the operational phase of the Proposed Project.

6.2.2.2.6 *Lesser black-backed gull*

Displacement distance of lesser black-backed gull due to the presence of turbines has not been reported in the literature. Displacement from turbines is unlikely to give rise to significant impacts given that the species was only infrequently using the Proposed Wind Farm site indicating that it does not represent and important area for lesser black-backed gull. The Ballymacoda Bay SPA is located 12.9km from the Proposed Wind Farm site, therefore displacement will not affect birds within the SPA due to separation distance.

There is no evidence to suggest that the Proposed Wind Farm site lies on a migratory/regular commuting route for the species given that flights across the Proposed Wind Farm site appear random in nature, therefore barrier effect is not anticipated. Any minor alterations to the flight paths of local commuting birds due to the presence of the Proposed Turbines is not likely to result in significant effects.

Proposed Mitigation Measures:

Given that, after assessment, there is no potential for adverse effects due to displacement and barrier effect anticipated there is no requirement for mitigation.

Residual adverse effects: There will be no potential for residual adverse effects on lesser black-backed gull as a result of a displacement and barrier effect during the operational phase of the Proposed Project.

6.2.3 Decommissioning

The Proposed Turbines are expected to have a lifespan of approximately 35 years. Following the end of their useful life, the equipment may be replaced with a new technology, subject to planning permission being obtained, or the Proposed Turbines will be decommissioned fully.

Upon decommissioning of the Proposed Turbines, the meteorological mast and the telecommunications relay mast will be disassembled in reverse order to how they were erected. The Proposed Turbines will be disassembled with a similar model of crane that was used for their erection. All above ground turbine and mast components would be separated and removed off-site for recycling. Turbine and mast foundations would remain underground and would be covered with earth and allowed to revegetate. Leaving the foundations in-situ is considered a more environmentally prudent option, as to remove that volume of reinforced concrete from the ground could result in significant temporary environment nuisances such as noise, dust and/or vibration. Site roadways will be used during the operational phase by farm machinery and will provide a useful means of extracting the commercial forestry crop which exists on at the Site and therefore will be retained post decommissioning to facilitate these activities.

The 33kV underground electrical cabling connecting the Proposed Turbines to the Proposed 110kV Substation will be removed from the cable ducts. The cabling will be pulled from the cable ducts using a mechanical winch which will extract the cable and re-roll it on to a cable drum. This will be undertaken at the original cable jointing pits which will be excavated using a mechanical excavator and will be fully re-instated once the cables are removed. The cable ducting will be left in-situ as it is considered the most environmentally prudent option, avoiding unnecessary excavation and soil disturbance. The cable materials will be transferred to a suitable recycling or recovery facility.

The Proposed 110kV Substation and associated Proposed 110kV Underground Cabling Route along with the Proposed 220kV Loop-in Substation and associated 220kV underground electrical cabling and 220kV end masts, will remain in place as they will form part of the National Grid under the ownership and control of the ESBN and EirGrid.

A Decommissioning Plan has been prepared (Appendix 7). The Decommissioning Plan will be updated prior to the end of the operational period in line with decommissioning methodologies that may exist at the time and will agree with the competent authority at that time. The potential for effects during the decommissioning phase of the Proposed Wind Farm has been fully assessed in this NIS.

As noted in the Scottish Natural Heritage report (SNH) Research and Guidance on Restoration and Decommissioning of Onshore Wind Farms (SNH, 2013) reinstatement proposals for a wind farm are made approximately 30 years in advance, so within the lifespan of the Proposed Wind Farm, technological advances and preferred approaches to reinstatement are likely to change. According to the SNH guidance, it is therefore:

"best practice not to limit options too far in advance of actual decommissioning but to maintain informed flexibility until close to the end-of-life of the wind farm".

The same mitigation to prevent adverse effects as a result of water quality deterioration resulting in impacts to associated aquatic fauna and disturbance effects to fauna during construction will be applicable to the decommissioning phase. It can be concluded that following the implementation of mitigation, there is no potential for the decommissioning of the Proposed Project to result in residual adverse effect to any European site.

7. ASSESSMENT OF RESIDUAL ADVERSE EFFECTS

The potential for residual adverse effects on each of the individual relevant Qualifying Features of the Screened In European Sites following the implementation of mitigation, is assessed in this section of the report.

Based on the above, in view of best scientific knowledge, on the basis of objective information, there is no potential for adverse effect on the identified QIs/SCIs and their associated targets and attributes, or on any European Site Potential pathways for effect have been robustly blocked through measures to avoid impacts and the incorporation of best practice/mitigation measures into the project design.

Taking cognisance of measures to avoid impacts and best practice/mitigation measures incorporated into the project design which are considered in the preceding section, the Proposed Project will not have an adverse effect on the integrity of any European Site.

The Proposed Project will not prevent the QIs/SCIs of European Sites from achieving/maintaining favourable conservation status in the future as defined in Article 1 of the EU Habitats Directive.

A definition of Favourable Conservation Status for habitats is provided below:

'conservation status of a natural habitat means the sum of the influences acting on a natural habitat and its typical species that may affect its long-term natural distribution, structure and functions as well as the long-term survival of its typical species within the territory referred to in Article 2; The conservation status of a natural habitat will be taken as 'favourable' when:

- Its natural range and areas it covers within that range are stable or increasing, and
- The specific structures and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- The conservation status of its typical species is favourable (as defined below).

A definition of Favourable Conservation Status for species is as follows:

'conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within the territory referred to in Article 2; The conservation status will be taken as 'favourable' when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.'

Based on the above, it can be concluded in view of best scientific knowledge, on the basis of objective information that the Proposed Project will not adversely affect the Qualifying Interests/Special Conservation Interests associated with any European Site.

8. ASSESSMENT OF CUMULATIVE EFFECTS

A search and review in relation to plans and projects that may have the potential to result in cumulative and/or in-combination impacts on European Sites was conducted. This assessment focuses on the potential for cumulative in-combination effects on the European Sites where potential for adverse effects was identified in Section 5 of this report. This included a review of online Planning Registers, development plans and other available information and served to identify past and future plans and projects, their activities and their predicted environmental effects.

A list of the plans and projects considered as part of the cumulative effects assessment is provided in Appendix 4.

8.1 Other Plans

The following Development Plans have been reviewed and taken into consideration as part of this assessment:

- Waterford City & County Development Plan 2022–2028
- 4th National Biodiversity Action Plan 2023-2027
- Regional Spatial and Economic Strategy for the Southern Region (2020-2032)

The review focused on policies and objectives that relate to European sites as shown in Table 8-1.

Table 8-1 Assessment of Plans

Plans	Key Policies/Issues/Objectives Directly Related To European Sites, Biodiversity and Sustainable Development In The Zone of Influence	Assessment of potential for cumulative effects with the Plan
Waterford City & County Development Plan 2022–2028 [13]	**ENV 01:** Through implementation of the Development Plan we will cumulatively contribute towards – in combination with other users and bodies – the achievement of the objectives of the regulatory framework for environmental protection and management, including compliance with EU Directives - including the Habitats Directive (92/43/EEC, as amended), the Water Framework Directive(2000/60/EC), the Birds Directive (2009/147/EC), the Environmental Impact Assessment Directive (2011/92/EU, as amended by 2014/52/EC) and the Strategic Environmental Assessment Directive (2001/42/EC) – and relevant transposing Regulations.	The Development plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to European sites. The overall aim of the policies and objectives set out in the County Development Plan in relation to biodiversity aim to protect and enhance biodiversity within the county. No potential for negative cumulative impacts was identified when considered in conjunction with the Proposed Project. No developments or projects identified within the Development Plan were found to occur in the wider area surrounding the Proposed Project.
	BD 01: We will protect and conserve all sites designated or proposed for designation as sites of nature conservation value (Natura 2000 Network, Ramsar Sites, NHAs, pNHAs, Sites of Local Biodiversity Interest, Geological Heritage Sites, TPOs) and protect ecological corridors and networks that connect areas of high conservation value such as woodlands, hedgerows, earth banks and wetlands. We will contribute towards the protection and enhancement of biodiversity and ecological connectivity, including woodlands, trees, hedgerows, semi-natural grasslands, rivers, streams, natural springs, wetlands, the coastline, geological and geo-morphological systems, other landscape features, natural lighting conditions, and associated wildlife where these form part of the ecological network and/or may be considered as ecological corridors or stepping stones in the context of Article 10 of the Habitats Directive.	
	BD 02: In support of the All-Ireland Pollinator Plan we will seek to maintain and enhance Waterford's biodiversity in favourable conservation condition so that environmental resilience and net gain in biodiversity enhancement and creation are achieved during implementation of this plan.	

[13] *https://consult.waterfordcouncil.ie/en/consultation/waterford-city-county-development-plan-2022-%E2%80%93-2028*

	BD 03: All proposed developments will be considered in terms of compliance with the standards and legal requirements of the following where they apply; • Appropriate Assessment of Plans and Projects in Ireland-Guidance for Planning Authorities Department of Housing, Local Government and Heritage (2021). • TII Guidelines on Ecological Impact Assessment (2009) • All-Ireland Pollinator Plan (2021) • Planning for Watercourses in the Urban Environment (2020) • Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites.	
	BD 04: Appropriate Assessment All projects and plans arising from this Plan will be screened for the need to undertake Appropriate Assessment under Article 6 of the Habitats Directive. A plan or project will only be authorised after the competent authority has ascertained, based on scientific evidence, Screening for Appropriate Assessment, and subsequent Appropriate Assessment where necessary, that: 1. The plan or project will not give rise to significant direct, indirect or secondary effects on the conservation objectives of any European site (either individually or in combination with other plans or projects); or 2. The plan or project will have significant adverse effects on the integrity of any European site (that does not host a priority natural habitat type/and or a priority species) but there are no alternative solutions and the plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature. In this case, it will be a requirement to follow procedures set out in legislation and agree and undertake all compensatory measures necessary to ensure the protection of the overall coherence of Natura 2000; or 3. The plan or project will have an adverse effect on the integrity of any European site (that hosts a natural habitat type and/or a priority species) but there are no alternative solutions and the plan or project must nevertheless be carried out for imperative reasons for overriding public interest, restricted to reasons of human health or public safety, to beneficial consequences of primary	

	importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest. In this case, it will be a requirement to follow procedures set out in legislation and agree and undertake all compensatory measures necessary o ensure the protection of the overall coherence of Natura 2000.	
	BD 05: Protection of European Sites Projects giving rise to adverse effects on the integrity of European sites (cumulatively, directly or indirectly) arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall not be permitted except as provided for in Article 6(4) of the Habitats Directive, viz. There must be a) no alternative solution available, b) imperative reasons of overriding public interest for the project to proceed; and c) Adequate compensatory measures in place.	
	BD 06: Management Plans Article 6(1) of the Habitats Directive requires that Member States establish the necessary conservation measures for European sites involving, if need be, appropriate management plans specifically designed for the sites or integrated into other Development Plans. The Local Authority support the preparation and implementation of management plans for the conservation of Natura 2000 sites, pNHAs and Sites of Local Biodiversity as per appropriate.	
	BD 07: We will protect plant and animal species and habitats which have been identified by the EU Habitats Directive (1997), EU Bird Directive (1979), Wildlife Act (1976) and Wildlife (Amendment) Act 2000 and the Flora Protection Order (2015) and ensure development does not impact adversely on wildlife species or the integrity and habitat value of the site.	

	BD 08: We will assess all proposed developments at each level of the Development Planning process from City & County Development Plan, Local Area Plan to project level to determine potential for significant effects on the conservation objectives and /or adverse impact on the integrity of the Natura 2000 network and ensure that the requirements of Articles 6(3) and 6(4) of the Habitats Directive are fully satisfied.	
	BD 09: We will ensure a sufficient level of information is provided in development applications to enable a fully informed assessment of impacts on biodiversity to be made. Ecological impact assessments submitted in support of development proposals shall be carried out by appropriately qualified professionals and ecological survey work carried out at optimal survey time to ensure accurate collation of ecological data.	
4th National Biodiversity Action Plan 2023-2030	Irelands 4th National Biodiversity Action Plan 2023-2030 (Department of Housing, Local Government and Heritage, 2024) (the "**NBAP**"). The NBAP strives for a "whole of government, whole of society" approach to the governance and conservation of biodiversity. It demonstrates Ireland's continuing commitment to meeting and acting on its obligations to protect Ireland's biodiversity for the benefit of future generations and will implement this through a number of key targets, actions and objectives. The Wildlife (Amendment) Act 2023 introduced a new public sector duty on biodiversity. The legislation provides that every public body, as listed in the Act, is obliged to have regard to the objectives and targets in the NBAP. The NBAP sets out five key objectives as follows.	The objectives set out in the NBAP aim to protect and enhance and promote biodiversity, nature restoration in Ireland and also contribute to international biodiversity initiative. Mitigation and measures as outlined in the NIS will prevent the potential for residual adverse effect on European sites. The Proposed Project will not contravene the proposed outcomes of the NBAP.
	Objective 1: Adopt a Whole-of Government, Whole of-Society Approach to Biodiversity. Proposed actions include capacity and resource reviews across Government; determining responsibilities for the expanding biodiversity agenda providing support for communities, citizen scientists and business; and mechanisms for the governance and review of this National Biodiversity Action Plan.	

	Objective 2: Meet Urgent Conservation and Restoration Needs. Supporting actions will build on existing conservation measures. Efforts to tackle Invasive Alien Species will be elevated. The protected area network will be expanded to include the Marine Protected Areas. The ambition of the EU Biodiversity Strategy will be considered as part of an evolving work programme across Government.	
	Objective 3: Secure Nature's Contribution to People. Actions highlight the relationship between nature and people in Ireland. These include recognising the tangible and intangible values of biodiversity, promoting nature's importance to our culture and heritage and recognising how biodiversity supports our society and our economy.	
	Objective 4: Enhance the Evidence Base for Action on Biodiversity. This objective focuses on biodiversity research needs, as well as the development and strengthening of long-term monitoring programmes that will underpin and strengthen future decision-making. Action will also focus on collaboration to advance ecosystem accounting that will contribute towards natural capital accounts.	
	Objective 5: Strengthen Ireland's Contribution to International Biodiversity Initiatives. Collaboration with other countries and across the island of Ireland will play a key role in the realisation of this Objective. Ireland will strengthen its contribution to international biodiversity initiatives and international governance processes, such as the United Nations Convention on Biological Diversity.	
Regional Spatial and Economic Strategy for the	**RPO 1.b.** The RSES seeks to protect, manage, and through enhanced ecological connectivity, improve the coherence of the Natura 2000 Network in the Southern Region.	The Regional Spatial and Economic Strategy for the Southern Region was comprehensively reviewed, with particular reference to Policies and Objectives that relate to the Natura 2000 network and other natural heritage interests. No potential for cumulative

Southern Region (2020-2032)	**RPO 5. Population Growth and Environmental Criteria Increased population growth should be planned with regard to environmental criteria, including:** • **Assimilative capacity of the receiving environment;** • **Proximity of Natura 2000 sites and potential for adverse effects on these sites, and their conservation objectives;** • **Areas with flood potential.**	effects when considered in conjunction with the Proposed Project were identified.
	RPO 117 Flood Risk Management and Biodiversity It is an objective to avail of opportunities to enhance biodiversity and amenity and to ensure the protection of environmentally sensitive sites and habitats, including where flood risk management measures are planned. Plans and projects that have the potential to negatively impact on Natura 2000 sites are subject to the requirements of the Habitats Directive	
	RPO 124 Green Infrastructure a. It is an objective to promote the concept of connecting corridors for the movement of wildlife and encourage the retention and creation of features of biodiversity value, ecological corridors and networks that connect areas of high conservation value such as woodlands, hedgerows, earth banks, watercourses and wetlands. The RSES recognises the necessity of protecting such corridors and the necessity to encourage the management of features of the landscape that support the Natura 2000 network; b. Green infrastructure will be integrated into the preparation of statutory land-use plans in the Region, which will include identifying Green infrastructure and strengthening this network; c. All Development Plans and Local Area Plans shall protect, enhance, provide and manage Green infrastructure in an integrated and coherent manner addressing the themes of biodiversity protection, water management and climate action; and should also have regard to the required	

	targets in relation to the conservation of European sites, other nature conservation sites, ecological networks, and protected species;	

8.2 Other Projects

Assessment material for this in-combination impact assessment was compiled on the relevant developments within the cumulative study area of the Proposed Project. The material was gathered through a search of relevant online Planning Registers, reviews of relevant documents, planning application details and planning drawings, and served to identify past and future projects, their activities and their environmental impacts. All relevant projects were considered in relation to the potential for in-combination effects. All relevant data was reviewed (e.g. individual EISs/EIARs, Appropriate Assessment Screening reports, Natura Impact Statements, layouts, drawings etc.) for all relevant projects where available. The residual construction, operational and decommissioning impacts of the Proposed Project are considered cumulatively with other plans and projects. Particular focus has been placed on those plans and projects that are within the cumulative study area and that could potentially result in impacts on SCI bird species and aquatic dependent QI habitats and species.

The cumulative study area for SCI bird species is referred to as the 'Ornithology Cumulative Study Area' throughout this assessment. The Ornithology Cumulative Study Area (Figure 8-1) considered other wind farms located within the foraging ranges of the SCI species that could potentially occur at the Proposed Wind Farm site. These species were golden plover, black-tailed godwit, cormorant and breeding herring gull. The distances used for each SPA were: 12km from the Dungarvan Harbour SPA based on the foraging range of golden plover, 14.9km from the Helvick Head to Ballyquinn SPA based on the foraging range of herring gull, and 12km from the Blackwater Estuary SPA based on the foraging range of golden plover. This list does not include wintering gull species lesser black-backed gull and common gull as these have extensive foraging ranges.

The cumulative study area for aquatic dependent QI habitats and species is referred to as the 'hydrological study area' and includes the Goish and Colligan subcatchments for large infrastructural developments such as wind farms, energy and public transport developments and River Sub Basins for all smaller proposed, permitted or existing plans or projects (i.e. private and commercial type developments).

8.2.1 Other Projects within the Hydrological Study Area

The Proposed Project was considered in combination with other plans and projects that could result in cumulative impacts on the identified receptor water bodies and downstream European sites. The plans and projects considered were those listed in Appendix 4. There are existing forestry operations within the Site and wind farm developments within the 'Goish_SC_010' subcatchment. The wind farm developments are:

- Woodhouse wind farm (8 no. turbines) – an existing wind farm.
- Knocknamona wind farm (8 no. turbines) – consented wind farm.

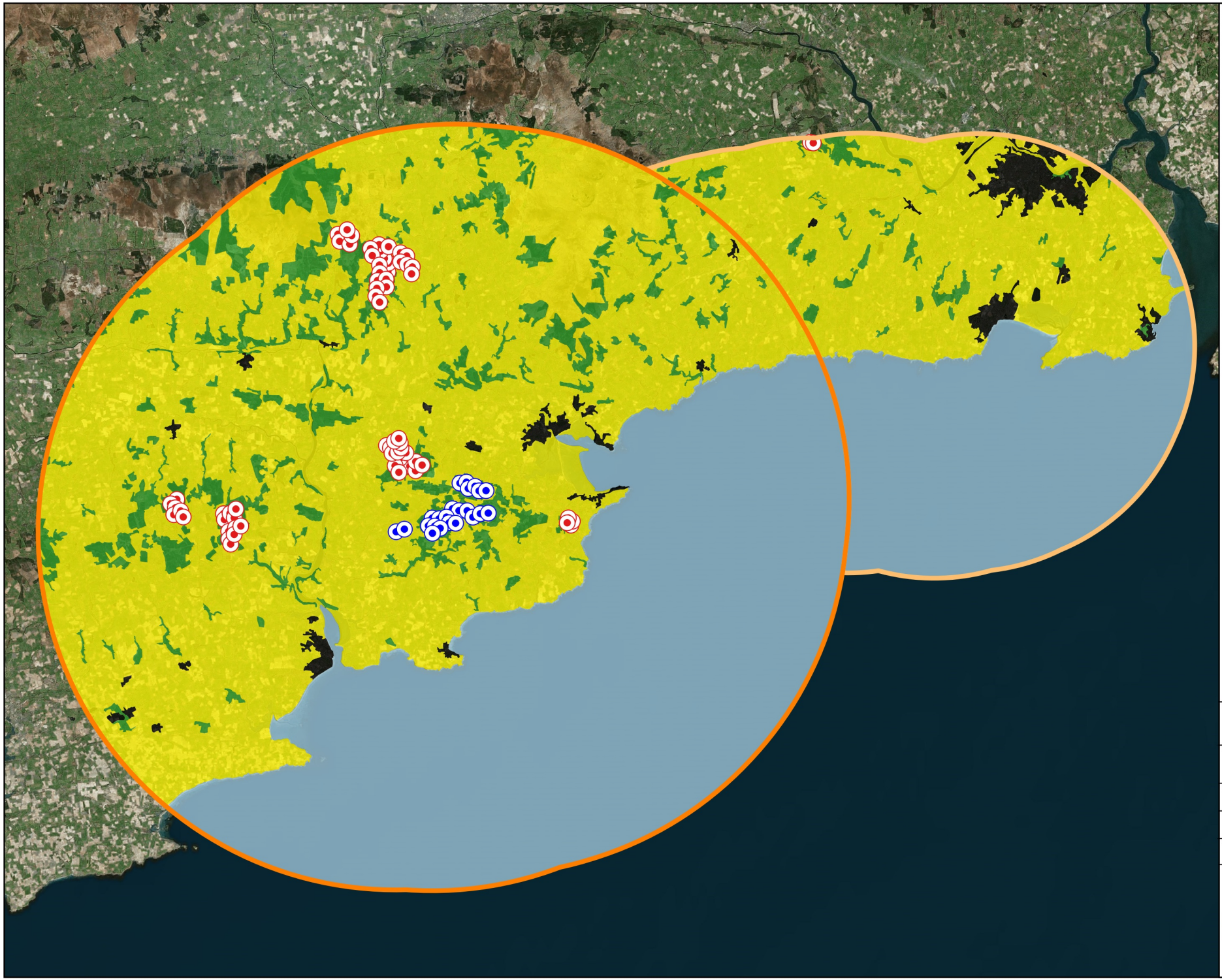
Woodhouse wind farm has been constructed and is operational. The Knocknamona wind farm has been consented, is currently going through the statutory appeal period, and is likely to be constructed before the Proposed Project. As such, it is expected to be operational before the Proposed Project, thus without overlap in respective construction periods. Subsequently, there will be no in combination effects from water quality and quantity perspectives during the construction phase of the Proposed Project.

Runoff from the Woodhouse and Knocknamona wind farms are being directed to the Goish River via drains and tributaries close to Broken Br. (ITM 615053.12, 589249.99). Drainage from the western 220kV electrical substation infrastructure of the Proposed Project, including its access road, will also be directed to Goish River. The greenfield runoff from the subcatchment of the related infrastructure will be drained and discharged at one specific location, approximately 2.8 km downstream of Broken Br.,

but the total quantity of runoff is not materially increased. Hence, no further flood risk to the Goish River is projected.

With regard to existing forestry operations, these are subject to best management practices and licence conditions. Future forestry operations have the potential to influence water quality and biological conditions of local streams, as a result of sediment mobilisation and transport, and re-sedimentation, and from fertiliser and pesticide applications. Effects can be both direct and indirect. The integration of the drainage management systems and the addition of both check dams and settlement ponds, along with diffuse discharges at greenfield runoff rates, will serve to reduce or mitigate risks of water quality effects.

With the implementation of mitigation measures and best practice methods on the part of both the Proposed Project and forestry operators, risks of effects are reduced, and potential cumulative effects can be monitored, managed and mitigated. As such, no potential for adverse cumulative effect has been identified to aquatic QI habitats and species of downstream European sites.



Drawing Title
Ornithology Cumulative Study Area

Project Title
Slievegrine Renewable Energy Development, Co. Waterford

Drawn By	Checked By
LDV	SD
Project No.	Drawing No.
240740	Figure 8-1
Scale	Date
1:350,000	08/10/2026

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8.2.2 Assessment of Potential Cumulative Effects on SCI Bird Species

In relation to the assessment of potential cumulative effects on SCI bird species, as per NatureScot (2025a), cumulative effects arising from two or more developments may be:

- Additive a multiple independent additive model;
- Antagonistic the sum of impacts is less that in a multiple independent additive model;
- Synergistic the cumulative impact is greater than the sum of the multiple individual effects.

During the assessment of cumulative effects on SCI bird species, cumulative habitat loss, disturbance, displacement and collision risk associated with operational turbines were assessed. No significant cumulative effects are predicted to result from disturbance during the construction phase, given that these are short-term impacts that are unlikely to overlap temporally with other similar activities. For this reason, construction phase effects are not likely to result in significant impacts and are not considered further in the cumulative assessment.

A 25km distance from the Proposed Turbines was considered sufficient for a cumulative effects assessment of bird species, based on this being approximately the average size of a county in Ireland and because it exceeds the core foraging range for most terrestrial bird species. This allowed for the key suitable habitats for SCI species at a regional scale to be included.

In addition to this 25km search area, the cumulative assessment considered other wind farms located within the relevant foraging ranges of SCI species around the nearby SPAs. Proposed and operational wind farms located within the foraging ranges of the relevant SCIs of nearby SPAs that could potentially occur at the Proposed Wind Farm site were identified and considered. The material was gathered through a search of relevant online Planning Registers, reviews of relevant EIS/EIAR, NIS or other ecological reports. These are then considered for in-combination or cumulative effects with the Proposed Project.

Wind farm projects within the Ornithological Cumulative Study Area of the Proposed Wind Farm are provided in Table 8-2, including details of their planning status, number of turbines and distance from the Proposed Wind Farm. A request was made to Waterford City and County Council Planning Department and Cork County Council Planning and Development Department for information on ornithological monitoring at those wind farms that are operational (Ballycurreen Wind Farm and Woodhouse Wind Farm), as well as the operator of the Woodhouse Wind Farm. Each wind farm is discussed individually in the following sections.

Table 8-2 Wind farm projects within the Ornithological Cumulative Study Area of the Proposed Project

County	Wind Farm	Planning Status	Number of Turbines	Separation Distance (turbine to turbine)
Waterford	Knocknamona Wind Farm	Permitted	8	c. 2.97km
	Moanbrack Wind Farm	Proposed	2	c. 5.64km
	Ballycurreen Wind Farm	Existing	2	c. 5.92km
	Woodhouse Wind Farm	Existing	8	c. 4.87km
	Scart Mountain Wind Farm	Proposed	15	c. 14.04km

	Dyrick Hill Wind Farm	Proposed	12	c. 15.23km
	Bealough Wind Farm	Existing	2	c. 33.07km
Waterford & Cork	Lyrenacarriga Wind Farm	Permitted	17	c. 11.02km

Knocknamona Wind Farm

The Knocknamona Windfarm 2026 Environmental Impact Assessment Report was reviewed. The site lies within a predominantly commercial forestry and agricultural landscape, with conifer plantation forming the dominant habitat. Bird surveys recorded a range of raptors, waders and waterbirds, including kestrel, buzzard, white-tailed eagle, sparrowhawk, peregrine falcon, merlin, golden plover, woodcock, snipe, curlew, lapwing, whooper swan, common gull, herring gull and brent goose.

Potential effects on birds included permanent or temporary loss or fragmentation of suitable habitat, disturbance and displacement and collision mortality. Collision risk modelling predicted low levels of mortality for golden plover. Following mitigation and monitoring, residual collision effects were assessed as not significant to neutral, and the overall effect on biodiversity was assessed as not significant.

The Blackwater Estuary SPA and Dungarvan Harbour SPA were identified with potential for indirect effects from the wind farm. Potential effects related principally to habitat loss or reduction, deterioration in water quality, the spread of invasive species and reductions in prey availability arising from construction-related sediment or contaminants entering downstream watercourses. Following implementation of the proposed mitigation and monitoring measures, the residual effect was assessed as neutral.

Moanbrack Wind Farm

The Moanbrack Wind Farm Screening for Environmental Impact Assessment and the NIS were reviewed. The site is predominantly characterised by improved agricultural grassland and conifer plantation, with hedgerows and small areas of wet grassland also present. A number of SCI bird species was recorded, including golden plover, herring gull, black-tailed godwit, common gull, and lesser black-backed gull.

Potential effects on birds included direct habitat loss during construction, disturbance and displacement, and collision mortality during operation. The assessment concluded that habitat loss would generally be negligible, as the habitats affected were largely improved agricultural grassland and conifer plantation, Disturbance and displacement effects were generally assessed as low or very low, with suitable alternative habitat available in the surrounding area. Collision risk modelling was undertaken for species recorded flying for more than 200 seconds within the Collision Risk Zone. Predicted collision risk was zero for many species, while modelling identified low predicted annual collision rates for common gull, and lesser black-backed gull, with the resulting effects assessed as negligible or very low.

Helvick Head to Ballyquin SPA, approximately 0.5km from the site, was considered in relation to peregrine, cormorant, herring gull and chough, while Dungarvan Harbour SPA, approximately 2.5km away, was considered in relation to golden plover. Mid-Waterford Coast SPA, approximately 10 km from the site, was also considered in relation to peregrine, cormorant, herring gull and chough. Potential effects on these SPAs included disturbance, displacement and collision risk arising from birds using areas outside the designated sites, with the relevant assessments undertaken through the Natura Impact Statement. The NIS concluded that, with the implementation of the specified mitigation

measures, the site would not adversely affect the integrity of the relevant European sites, either alone or in combination with other plans or projects.

Ballycurreen Wind Farm

The Ballycurreen Wind Farm Environmental Report was reviewed. The site was considered to be of low ecological value at a local level. A range of common bird species typical of farmland and associated habitats was recorded, with no species of high conservation concern identified.

Potential effects on birds included disturbance during construction and operation, loss of breeding or feeding habitat, and collision mortality. Given the low value of the improved agricultural grassland for birds, habitat loss was considered unlikely to significantly affect bird populations, a low collision risk was estimated for chough and peregrine falcon and the overall effect on birds was assessed as insignificant.

Helvick Head to Ballyquin SPA lies approximately 570m from the existing turbines. Surveys recorded no chough feeding within the wind farm site, while peregrine falcon was considered likely only to occasionally overfly the site. Collision risk for both species was considered very low and no significant effects on the SPA were predicted. Dungarvan Harbour SPA, approximately 2km from the site, was also considered. Its qualifying wintering waterbirds were considered unlikely to use or regularly cross the wind farm site, and no significant effect on the integrity or conservation objectives of the SPA was predicted.

Woodhouse Wind Farm

The Woodhouse Wind Farm Environmental Impact Statement was reviewed. bird species of high conservation importance were recorded or considered likely to occur within the site. Potential effects on birds were identified as habitat loss, disturbance and displacement associated with turbines, and collision mortality. The loss of the small areas of improved grassland and hedgerow was not considered significant. Some displacement of birds from areas around turbines was considered possible but was not expected to significantly affect local populations. Collision risk was considered low, with any casualties unlikely to result in population-level effects.

Dungarvan Harbour SPA, approximately 10km east of the site, was identified as the nearest important wetland for birds. The assessment found no evidence that the site was located on a regularly used migration route or route used by wintering waterfowl. Dungarvan Harbour SPA was considered sufficiently distant that no direct or indirect effects on these designated sites were predicted. Overall, impacts on birds were assessed as not significant.

Lyrenacarriga Wind Farm

The Lyrenacarriga Wind Farm EIAR was reviewed. The site is dominated by commercial conifer plantation, with areas of improved agricultural grassland and other open habitats. A range of bird species of conservation interest was recorded, including golden plover, hen harrier, peregrine, woodcock, lesser black-backed gull, buzzard, sparrowhawk, kestrel and common snipe.

Potential effects on birds included direct habitat loss, disturbance and displacement during construction and operation, and collision mortality. Given that much of the proposed infrastructure would be located within commercial forestry, habitat loss and displacement effects were generally considered limited, although localised effects were identified for species such as woodcock and snipe. Collision risk modelling predicted low or negligible collision effects for golden plover, hen harrier, peregrine, lesser black-backed gull, buzzard, sparrowhawk, kestrel and snipe. Following mitigation, no residual effect greater than low significance under the Percival (2003) criteria or slight under the EPA (2022) criteria was identified, and significant residual effects on ornithological receptors were not anticipated.

Blackwater Estuary SPA, approximately 3.5km from the site, was considered due to potential hydrological connectivity and the occurrence of golden plover associated with the wider area. Potential effects included collision risk and disturbance/displacement of golden plover outside the SPA, together with potential indirect effects on supporting wetland habitat. Ballymacoda Bay SPA, approximately 10.7km from the site, was also considered in relation to golden plover, black-headed gull and lesser black-backed gull, while Blackwater Callows SPA, approximately 9.9km away, was screened out as no significant pathway for effects was identified.

Scart Mountain Wind Farm

The Scart Mountain Wind Farm Natura Impact Statement was reviewed. The proposed development comprises 15 wind turbines located within a predominantly upland landscape on the southeastern side of the Knockmealdown Mountains. Species of conservation interest recorded included hen harrier, golden plover, merlin, peregrine falcon, whooper swan, lapwing, curlew, black-throated diver, cormorant, black-headed gull, herring gull, lesser black-backed gull and great black-backed gull. A wintering population of golden plover was recorded in the vicinity of the site.

Potential effects on birds included collision risk, together with disturbance and displacement associated with the construction and operation of the wind farm. The assessment concluded that most of the additional bird species recorded were infrequent and were not observed flying within the potential collision height of the proposed turbines. Occasional records of peregrine falcon and merlin were noted, although no evidence of breeding peregrine was identified within the 2km survey buffer and no nesting merlin were recorded within the proposed wind farm site or 500m buffer. The assessment concluded that the hen harrier and golden plover recorded during the surveys were not associated with populations designated within nearby SPAs. In particular, the golden plover recorded around the site were considered likely to be associated with the Lower Blackwater River wintering population, approximately 5.7km to the south-west, rather than the Dungarvan Harbour SPA population.

Dungarvan Harbour SPA, approximately 13km from the proposed project, and Blackwater Estuary SPA, approximately 16km away, were considered in relation to their wintering bird populations. The assessment concluded that there was no potential for collision risk or disturbance/displacement to their qualifying bird species because the proposed project does not contain suitable foraging or roosting habitat for these species and is outside their core foraging ranges. However, both SPAs were considered to have a potential hydrological pathway through downstream watercourses, with potential indirect effects on bird populations through deterioration in water quality and consequent effects on food resources.

Dyrick Hill Wind Farm

The Dyrick Hill Wind Farm EIAR was reviewed. The site is located within a landscape comprising farmland, forestry and upland heath, with the wider wind farm site dominated by improved agricultural grassland, wet grassland, dry acid grassland, conifer plantation, heath/grassland/bracken mosaic and dry heath. A range of bird species of conservation interest was recorded, including golden plover, hen harrier, merlin, peregrine, red kite, kestrel, lapwing, snipe, redwing, stock dove, swift, herring gull, lesser black-backed gull, meadow pipit and skylark. Golden plover, hen harrier, merlin, peregrine and red kite were assessed as very high sensitivity/international importance, while other species were assessed as high, medium or low sensitivity. Golden plover was particularly notable; with large wintering flocks recorded within the site and a core foraging and roosting area identified at Broemountain.

Potential effects on birds included direct habitat loss, disturbance and displacement during construction and operation, collision mortality and barrier effects. Habitat loss was generally considered limited in the context of the wider availability of suitable habitats, although effects were identified for species associated with woodland, open upland and wetland habitats. Greater potential effects were identified for golden plover due to the presence of its core wintering and foraging area within the site, while

kestrel was also recorded frequently and considered likely to breed in the vicinity. Collision risk modelling was undertaken for 16 target species. Predicted collision rates were highest for golden plover, buzzard and kestrel, while collision risk for most other species was low or negligible. Following mitigation, the EIAR concluded that the proposed development would result in an imperceptible to slight reversible residual effect on birds at the local level, with the residual effect for golden plover also assessed as imperceptible to slight in the local context, although a moderate residual habitat-loss effect was identified locally and reduced to slight at county level.

Blackwater Callows SPA, approximately 11.4km from the site, and Dungarvan Harbour SPA, approximately 11.8km away, were considered in relation to their qualifying wintering bird populations. Blackwater Estuary SPA, approximately 19.7km away, and Mid-Waterford Coast SPA and Helvick Head to Ballyquin SPA, approximately 19.0km and 20.4km away respectively, were also considered in the ornithological assessment. Dungarvan Harbour SPA was particularly relevant to the assessment of golden plover, with the EIAR undertaking a landscape-scale assessment of potentially suitable habitat surrounding the SPA. Cumulative effects were also considered in relation to other wind farm developments, with cumulative collision risk generally assessed as negligible, except for golden plover, for which a long-term slight cumulative effect was identified; cumulative effects on kestrel remained long-term imperceptible.

Bealough Wind Farm

The Bealough Wind Farm, which comprises two turbines, was reviewed. No planning files nor impact assessment were available. Bealough Wind Farm is located within agricultural grassland. This wind farm is over 33km from the Proposed Wind Farm, however, it is approximately 14.5km from Mid-Waterford SPA, therefore is included in the cumulative impact assessment for herring gull, which is an SCI of this SPA.

8.2.2.2 Landscape Level Cumulative Assessment – SCI Species

A Geographic Information Systems (GIS) mapping exercise was undertaken that aimed to quantify the amount of land within the wider landscape (i.e., the continuous habitat in which the Proposed Wind Farm lies) that is likely to be significantly impacted by the presence of turbines. Impacts were predicted to be restricted to the area within 500m from the Proposed Turbines. This distance was chosen as Pearce-Higgins et al. (2009) identified significant avoidance of turbines between 250m and 500m for a range of species. It therefore follows that significant effects are unlikely at distances greater than 500m.

The GIS exercise provided the following results. The CORINE land cover data[14] was used to determine the land uses within the cumulative study area. These data were simplified into four main land cover types: open habitat (agricultural, peatland, etc.), forestry (conifer plantation, woodland, etc.), urban and industrial (mineral extraction) and open marine habitat.

The total cumulative study area is 245,231ha. Of this area, 1,798ha is urban or industrial and therefore of limited value to KORs and has been omitted from the Ornithology Cumulative Study Area for this assessment. In addition, 89,822ha comprise of open marine habitat. As the cumulative impact assessment related to terrestrial wind energy developments, these open marine habitats are not directly affected by terrestrial turbines and are not considered relevant, so they have been excluded from the assessment. Therefore, the Ornithology Cumulative Study Area for this assessment is 153,611ha, of which 2,969ha (1.93% of the Ornithology Cumulative Study Area) is within 500m of a turbine (excluding the Proposed Turbines). The 500m radius of the Proposed Turbines comprises 1,161ha (0.76% of the Ornithology Cumulative Study Area). The two main land uses in the Proposed Wind Farm site are forestry habitat (678ha; including commercial and transitional 'natural' woodland) and open habitat (483ha; including agricultural land). Below is the breakdown of these main land uses.

- The total area of open habitat is 132,530ha (86.3% of the Ornithology Cumulative Study Area);
    - Open habitat greater than 500m from turbines (excluding the Proposed turbine layout) is 131,076ha (or 98.9% of the open habitat).
    - Open habitat greater than 500m from turbines (including the Proposed Turbine layout) is 130,593ha (or 98.5% of the open habitat).
- The total area of forestry habitat is 21,081ha (13.7% of the Ornithology Cumulative Study Area);
    - Forestry habitat greater than 500m from turbines (excluding the Proposed Turbine layout) is 19,566ha (or 92.8% of the forestry habitat).
    - Forestry habitat greater than 500m from turbines (including the Proposed Turbine layout) is 18,887ha (or 89.6% of the forestry habitat).
- The total area, excluding urban, industrial land and open marine habitats, within 500m of turbines (including the Proposed Turbine layout) is 4,130ha (2.69% of the Ornithology Cumulative Study Area);
    - 1,937ha is within open habitat (46.9% of the Ornithology Cumulative Study Area within 500m of turbines); and

[14] https://land.copernicus.eu/en/products/corine-land-cover

- 2,193ha is within forestry habitat (53.1% of the Ornithology Cumulative Study Area within 500m of turbines).

Having undertaken the above analysis of the available area within the Ornithology Cumulative Study Area the following is of note:

- The substantial majority of the Ornithology Cumulative Study Area comprises open habitat, which accounts for approximately 86% of the total area, with forestry habitat accounting for the remaining approximately 14%.
- Of the habitat occurring within 500m of existing and proposed turbines, approximately 47% comprises open habitat and 53% comprises forestry habitat.
- The density of turbines within the Ornithology Cumulative Study Area is low at the regional scale. Approximately 98.5% of open habitat and 89.6% of forestry habitat remains more than 500m from any turbine, including the Proposed Turbines.
- In total, approximately 2.69% of the Ornithology Cumulative Study Area occurs within 500m of existing and proposed turbines. The area within 500m from the Proposed Turbines alone represents approximately 0.76% of the Ornithology Cumulative Study Area.

As open habitat makes up the vast majority of the total 153,611ha within the Ornithology Cumulative Study Area, it is reasonable to conclude that the relative quality/suitability of these habitats is likely to have the greatest (positive or negative) influence on the local ornithological community. While several of the species encountered within the Proposed Wind Farm are in decline at a national level, it is not possible to conclusively attribute the decline to any one industry; likely, the national hierarchy of threats/pressures as per Article 12 reporting holds true locally also. That is; forestry practice (including forest planting on open ground and forestry management) and factors associated with agricultural intensification are of high importance for a lot of species. Impacts associated with wind farms (renewable abiotic energy use) are likely of medium importance locally. As outlined in a recent NPWS report (Burke *et al.,* 2025) '*existing onshore windfarms have been considered a low-level pressure to Irish waterbirds [including golden plover] … future expansion may increase the threat to particular species and waterbird communities at particular sites*.' Please see the following species-specific impact assessment for a detailed discussion of cumulative effects.

8.2.2.3 Cumulative Collision Risk Assessment

The table below outlines the cumulative collision risk for each of the screened in SCI species. It should be noted that the cumulative collision risk presented below represents the currently quantifiable collision risk based on the information available at the time of assessment and should not be regarded as a finite or fixed value. A number of additional permitted and proposed wind farm developments occur within the Ornithology Cumulative Study Area and, should these projects become operational, they may contribute additional collision risk where relevant species occur, and flight activity overlaps with turbine rotor-swept areas.

Where sufficient information was available, a best-estimate collision risk was calculated and is presented in the table below. This was derived using collision-risk information from the nearest wind farm occurring within similar habitat and the same ecological landscape as a proxy. No quantitative collision-risk value was assigned '–' and is presented in Table 8-3. There are two wind farms which did not include collision risk models within their EIS. The Ballycurreen Wind Farm assessment was based principally on breeding bird surveys undertaken in May and June 2009 and considered collision risk qualitatively, with particular consideration given to chough and peregrine falcon; no species-specific collision estimate was calculated for other species. Similarly, the Woodhouse Wind Farm assessment was informed by an ecological survey undertaken in early June 2004 and considered collision mortality qualitatively, and no species-specific collision risk was calculated. For these wind farms a best estimate was calculated and presented in the table below. A request was made to Waterford City and County Council Planning Department and Cork County Council Planning and Development Department for information on ornithological monitoring but none were received. This best estimate was calculated by using the collision risk analysis from the nearest wind farm within similar habitat and in the same ecological landscape as a proxy when sufficient information allowed, because bird flight activity is likely to be very similar between these areas. At Ballycurreen Wind Farm, peregrine falcon collision risk was only assessed qualitatively so the Proposed Project was used as a proxy for Ballycurreen Wind Farm (5.92km separation distance) by estimating a proportion collision risk based on the number of turbines. For example, as the Proposed Project estimated 0.081 collisions per year for peregrine falcon across 23 turbines, the collision risk was therefore estimated to be 0.007 collisions per year for the 2 turbines within Ballycurreen Wind Farm. Similarly, Moanbrack Wind Farm was used as a proxy for golden plover, common gull, herring gull, and lesser black-backed gull for the Ballycurreen Wind Farm (300m separation distance). The Proposed Project was used as a proxy for the Woodhouse Wind Farm (4.87km separation distance). Finally, Dyrick Hill Wind Farm was as a proxy for Bealough Wind Farm (29.5km separation distance but closest wind farm available with similar habitats). Moanbrack Wind Farm, Scart Mountain Wind Farm and Dyrick Hill Wind Farm are proposed developments for which the consenting outcome remains uncertain.

Table 8-3 Cumulative Collision Risk Totals

	Proposed Project	Ballycurreen Wind Farm	Woodhouse Wind Farm	Bealough Wind Farm	Knocknamona Wind Farm	Lyrenacarriga Wind Farm	Moanbrack Wind Farm	Dyrick Hill Wind Farm	Scart Mountain Wind Farm	Cumulative annual collision risk
Golden plover	3.634	*3.9*[15]	*1.264*[16]	-	3.6 (3.3 – 3.9)	Wintering: 3.29	3.9	6.21	1.69	**27.488**
Black-tailed godwit	0.869	-	*0.302261*[5]	-	-	-	-	-	-	**1.171261**
Common gull	0.008804	*0.1*[4]	*0.003062*[5]	-	-	-	0.1	-	-	**0.211866**
Cormorant	0.131	-	*0.045565*[5]	-	-	-	-	-	-	**0.176565**
Herring gull	Breeding: 1.117	*0.6*[4]	*0.388522*[5]	*0.008333*[17]	-	-	0.6	0.05	-	**2.763855**
Lesser black-backed gull	0.259	*0.06*[4]	*0.090087*[5]	-	-	Wintering: 5.4	0.06	0.22	-	**6.089087**

[15] *Proxy figure calculated using the Moanbrack Wind Farm collision risk figure*
[16] *Proxy figure calculated using the Proposed Project collision risk figure*
[17] *Proxy figure calculated using the Dyrick Hill Wind Farm collision risk figure*

8.2.2.4 Golden plover

At a national level, the main threats and pressures for wintering golden plover listed in Article 12 reporting are: hunting; temperature change due to climate change; wind, wave and tidal power; sports, tourism and leisure activities; and modification to flooding regimes. All of these threats and pressures are of medium importance. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative habitat review

The Proposed Wind Farm contains agricultural grassland habitats that are suitable for foraging and roosting golden plover. Ballycurreen, Dyrick Hill, Knocknamona, Lyrenacarriga, Moanbrack and Woodhouse wind farms are located, within or partially within agricultural habitats. Scart Mountain wind farm is partially located within bog habitats. Both of these habitats are suitable for golden plover. However, these habitats (agricultural grassland and bog habitats) are not a scarce resource in the area. Agricultural grassland in particular (which is favoured by golden plover) is abundant locally and is one of the most abundant habitat types within the Ornithology Cumulative Study Area (and at a national level). This abundance limits the potential for significant habitat loss effects to result on an individual project basis or cumulatively. No significant residual (habitat loss) effects are predicted to result from the Proposed Project.

Landscape-level analysis

The results of the landscape-level analysis provide the following information: excluding the Proposed Wind Farm, there are 131,076ha of potentially suitable golden plover habitat (open habitat, including agricultural land) greater than 500m from a turbine in the Ornithology Cumulative Study Area. In the same Ornithology Cumulative Study Area, there are 18,887ha of forestry greater than 500m from a cumulative wind farm turbine and Proposed Turbines. This species is an open habitat species that does not use forestry, therefore there is 131,076ha of available suitable habitat. Within the Proposed Wind Farm, there is 1,161ha within 500m from the Proposed Turbines, 483ha of which is suitable open habitat (agricultural land and open peatland) which is within 500m of a turbine. The total available habitat for this species within 500m from the Proposed Turbines, but greater than 500m from other turbines, is therefore 483ha, which represents a 0.37% loss of the remaining habitat greater than 500m from a turbine (131,076ha) within the Ornithology Cumulative Study Area. This is not a significant (direct/indirect) contribution to the cumulative loss of habitat for this species. Furthermore, the remaining 130,593ha continues to constitute a significant amount of suitable habitat for this species. It should be noted that golden plover are predicted to be displaced by 187m from operating turbines rather than the 500m displacement discussed within the landscape level assessment, and therefore, the displacement effect on golden plover is likely to be less than that outlined here.

Cumulative impacts of other developments

With regard to the cumulative impact of other large-scale developments relating to the key threats and pressures on golden plover, the identified developments within the Ornithology Cumulative Study Area comprise two solar energy developments and two residential/mixed-use developments. Although the solar developments will result in land-use change, given the availability of alternative suitable habitat within the wider cumulative assessment area, significant cumulative effects associated with habitat loss or displacement are not anticipated. Similarly, given the nature and scale of the residential and mixed-use developments, significant cumulative effects arising from increased human activity, disturbance or recreational pressure are not anticipated. Therefore, significant cumulative effects are not anticipated.

Cumulative collision risk

As outlined in Table 8-3, the currently quantifiable cumulative collision risk for golden plover is 23.854 birds per year across the other wind farms within the Ornithology Cumulative Study Area, excluding the Proposed Project.. It should be noted that collision risk was estimated for some wind farms. Therefore, this value represents a best estimate component rather than a finite cumulative total. Given the estimated regional population of golden plover is 6,668 birds and the annual mortality of adult golden plover has been calculated at 27% per year (Sandercock, 2003), the loss of 23.854 birds per year would result in an increase in the annual mortality of the regional population of approximately 1.32%.

If the 3.634 potential collisions per year associated with the Proposed Wind Farm are included, the currently quantifiable cumulative collision risk increases to 27.484 birds per year, resulting in an increase in the annual mortality of the regional population of approximately 1.53%. The Proposed Wind Farm therefore results in an additional increase in background annual mortality of approximately 0.20%, which represents a negligible contribution under the Percival criteria. The Proposed Wind Farm is therefore not predicted to significantly increase the baseline cumulative collision risk for golden plover.

Cumulative summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision risk effects is considered to be limited. Furthermore, where assessments were available, no significant residual effects of habitat loss, displacement or collision risk were reported for the other wind farms. Taking into consideration the above reported effects and the predicted effects associated with the Proposed Project, cumulative effects on golden plover are considered to be influenced primarily by the broader effects of commercial forestry and agricultural practices on habitat availability and quality, rather than by the relatively limited contribution associated with the Proposed Project. No significant residual additive, antagonistic or synergistic cumulative effects have been identified with regard to habitat loss, displacement/barrier effects or collision risk.

No potential for adverse cumulative effects is predicted.

8.2.2.5 Black-tailed godwit

At a national level, the main threats and pressures for wintering black-tailed godwit listed in Article 12 reporting are: sports, tourism and other leisure activities; other impacts from marine aquaculture, including infrastructure; wind, wave and tidal power, including infrastructure; modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defences or coastal protection works and infrastructures); and sea-level and wave exposure changes due to climate change. All of these threats and pressures are of medium importance. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative habitat review

Black-tailed godwit were not observed using habitats within the Proposed Wind Farm. Birds were irregularly observed travelling over the Proposed Wind Farm. No significant cumulative habitat loss effects are predicted given that this species prefers coastal habitats that are not within 500m of any turbine within the Ornithology Cumulative Study Area for roosting and/or foraging.

Landscape-level analysis

The results of the landscape-level analysis provide the following information: excluding the Proposed Wind Farm, there are 131,076ha of potentially suitable black-tailed godwit habitat (open habitat) greater than 500m from a turbine in the Ornithology Cumulative Study Area. In the same Ornithology

Cumulative Study Area, there are 18,887ha of forestry greater than 500m from a cumulative wind farm turbine and Proposed Turbines. This species is an open habitat species that does not use forestry, therefore there is 131,076ha of available suitable habitat. Within the Proposed Wind Farm, there is 1,161ha within 500m from the Proposed Turbines, 483ha of which is suitable open habitat (agricultural land and open peatland) which is within 500m of a turbine. The total available habitat for this species within 500m from the Proposed Turbines, but greater than 500m from other turbines, is therefore 483ha, which represents a 0.37% loss of the remaining habitat greater than 500m from a turbine (131,076ha) within the Ornithology Cumulative Study Area. This is not a significant (direct/indirect) contribution to the cumulative loss of habitat for this species. Furthermore, the remaining 130,593ha continues to constitute a significant amount of suitable habitat for this species.

Cumulative impacts of other developments

With regard to the cumulative impact of other large-scale developments relating to the key threats and pressures on black-tailed godwit, the identified developments within the Ornithology Cumulative Study Area comprise two solar energy developments and two residential/mixed-use developments. Although the solar developments will result in land-use change, significant cumulative effects associated with the loss or degradation of suitable black-tailed godwit habitat are not anticipated given their distance from the Proposed Wind Farm. Similarly, given the nature and scale of the residential and mixed-use developments, significant cumulative effects arising from increased human activity, disturbance or recreational pressure are not anticipated. Therefore, adverse cumulative effects are not anticipated.

Cumulative collision risk

As outlined in Table 7-13, the currently quantifiable cumulative collision risk for black-tailed godwit is 0.30226 bird per year across the other wind farms within the Ornithology Cumulative Study Area, excluding the Proposed Wind Farm. It should be noted that collision risk was estimated for several wind farms and therefore this value represents a best estimate rather than finite cumulative total.

If the 0.869 potential collisions per year associated with the Proposed Wind Farm are included, the currently quantifiable cumulative collision risk is 1.17126 birds per year. This represents a low level of collision mortality and no significant cumulative collision risk effects are anticipated. The Proposed Wind Farm is therefore not predicted to significantly increase the baseline cumulative collision risk for black-tailed godwit.

Cumulative summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision risk effects is considered to be limited. Furthermore, where assessments were available, no significant residual effects of habitat loss, displacement or collision risk were reported for the other wind farms. Taking into consideration the above reported effects and the predicted effects associated with the Proposed Project, cumulative effects on black-tailed godwit are considered to be influenced primarily by the broader pressures affecting the species and its supporting habitats, rather than by the relatively limited contribution associated with the Proposed Project. No significant residual additive, antagonistic or synergistic cumulative effects have been identified with regard to habitat loss, displacement/barrier effects or collision risk. No significant impacts on black-tailed godwit are anticipated at the county, national or international scale.

No potential for adverse cumulative effects is predicted.

8.2.2.6 Common gull

At a national level, the main threats and pressures for common gull listed in Article 12 reporting are: intensive grazing or overgrazing by livestock; other invasive alien species; problematic native species;

and wind, wave and tidal power, including infrastructure. All of these threats and pressures are of medium importance. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative habitat review

The Proposed Wind Farm contains agricultural grassland habitats that are suitable for foraging and roosting common gull. Ballycurreen, Dyrick Hill, Knocknamona, Lyrenacarriga, Moanbrack and Woodhouse wind farms are located, within or partially within agricultural habitats. However, this habitat is not a scarce resource in the area. It is abundant locally and is one of the most abundant habitat types within the Ornithology Cumulative Study Area (and at a national level). This abundance limits the potential for significant habitat loss effects to result on an individual project basis or cumulatively. No significant residual (habitat loss) effects are predicted to result from the Proposed Wind Farm.

Landscape-level analysis

The results of the landscape-level analysis provide the following information: excluding the Proposed Wind Farm, there are 131,076ha of potentially suitable common gull habitat (open habitat, including agricultural land) greater than 500m from a turbine in the Ornithology Cumulative Study Area. In the same Ornithology Cumulative Study Area, there are 18,887ha of forestry greater than 500m from a cumulative wind farm turbine and Proposed Turbines. This species is an open habitat species that does not use forestry, therefore there is 131,076ha of available suitable habitat. Within the Proposed Wind Farm, there is 1,161ha within 500m from the Proposed Turbines, 483ha of which is suitable open habitat (agricultural land and open peatland) which is within 500m of a turbine. The total available habitat for this species within 500m from the Proposed Turbines, but greater than 500m from other turbines, is therefore 483ha, which represents a 0.37% loss of the remaining habitat greater than 500m from a turbine (131,076ha) within the Ornithology Cumulative Study Area. This is not a significant (direct/indirect) contribution to the cumulative loss of habitat for this species. Furthermore, the remaining 130,593ha continues to constitute a significant amount of suitable habitat for this species.

Cumulative impacts of other developments

With regard to the cumulative impact of other large-scale developments relating to the key threats and pressures on common gull, the identified developments within the Ornithology Cumulative Study Area comprise two solar energy developments and two residential/mixed-use developments. Although the solar developments will result in land-use change, significant cumulative effects associated with the loss or degradation of suitable common gull habitat are not anticipated given their distance from the Proposed Wind Farm. Similarly, given the nature and scale of the residential and mixed-use developments, significant cumulative effects arising from increased human activity, disturbance or recreational pressure are not anticipated. Therefore, significant cumulative effects are not anticipated.

Cumulative collision risk

As outlined in Table 7-13, the currently quantifiable cumulative collision risk for common gull is 0.203062 birds per year from the other wind farms within the Ornithology Cumulative Study Area, excluding the Proposed Wind Farm. It should be noted that collision risk was estimated for several wind farms and therefore the value presented represent a best estimate rather than a finite cumulative total.

If the 0.008804 potential collisions per year associated with the Proposed Wind Farm are included, the currently quantifiable cumulative collision risk is 0.211866 birds per year. This represents a low level of additional collision mortality and no significant cumulative collision risk effects are anticipated. The

Proposed Wind Farm is therefore not predicted to significantly increase the baseline cumulative collision risk for common gull.

Cumulative summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision risk effects is considered to be limited. Furthermore, where assessments were available, no significant residual effects of habitat loss, displacement or collision risk were reported for the other wind farms. Taking into consideration the above reported effects and the predicted effects associated with the Proposed Project, cumulative effects on common gull are considered to be influenced primarily by the broader effects of agricultural practices and other pressures on habitat availability and quality, rather than by the relatively limited contribution associated with the Proposed Project. No significant residual additive, antagonistic or synergistic cumulative effects have been identified with regard to habitat loss, displacement/barrier effects or collision risk.

No potential for adverse cumulative effects is predicted.

8.2.2.7 Cormorant

At a national level, the main threats and pressures for breeding cormorant listed in Article 12 reporting are: wind, wave and tidal power, including infrastructure; bycatch and incidental killing (due to fishing and hunting activities) which are of high importance; and sports, tourism and leisure activities; illegal shooting/ killing; mixed source marine water pollution (marine and coastal); desynchronisation of biological/ ecological processes due to climate change; and decline or extinction of related species (e.g. food source/ prey, predator/ parasite, symbiote, etc. due to climate change. All of these threats and pressures are of medium importance. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative habitat review

Cormorant were not observed using habitats within the Proposed Wind Farm site. Birds were irregularly observed travelling over the Proposed Wind Farm site. No significant cumulative habitat loss effects are predicted given that this species does not use habitats within 500m of any turbine within the Ornithology Cumulative Study Area for roosting and/or foraging.

Landscape-level analysis

The results of the landscape-level analysis provide the following information: excluding the Proposed Wind Farm, there are 131,076ha of potentially suitable cormorant habitat (open habitat) greater than 500m from a turbine in the Ornithology Cumulative Study Area. In the same Ornithology Cumulative Study Area, there are 18,887ha of forestry greater than 500m from a cumulative wind farm turbine and Proposed Turbines. This species is an open habitat species that does not use forestry, therefore there is 131,076ha of available suitable habitat. Within the Proposed Wind Farm site, there is 1,161ha within 500m from the Proposed Turbines, 483ha of which is suitable open habitat (agricultural land and open peatland) which is within 500m of a turbine. The total available habitat for this species within 500m from the Proposed Turbines, but greater than 500m from other turbines, is therefore 483ha, which represents a 0.37% loss of the remaining habitat greater than 500m from a turbine (131,076ha) within the Ornithology Cumulative Study Area. This is not a significant (direct/indirect) contribution to the cumulative loss of habitat for this species. Furthermore, the remaining 130,593ha continues to constitute a significant amount of suitable habitat for this species.

Cumulative impacts of other developments

With regard to the cumulative impact of other large-scale developments relating to the key threats and pressures on cormorant, the identified developments within the Ornithology Cumulative Study Area comprise two solar energy developments and two residential/mixed-use developments. Although the solar developments will result in land-use change, significant cumulative effects associated with the loss or degradation of suitable cormorant habitat are not anticipated given their distance from the Proposed Wind Farm. Similarly, given the nature and scale of the residential and mixed-use developments, significant cumulative effects arising from increased human activity, disturbance or recreational pressure are not anticipated. Therefore, significant cumulative effects are not anticipated.

Cumulative collision risk

As outlined in Table 7-13, the currently quantifiable cumulative collision risk for cormorant is 0.045565 birds per year across the other wind farms within the Ornithology Cumulative Study Area, excluding the Proposed Wind Farm. It should be noted that collision risk was estimated for several wind farms and therefore the value presented represents a best estimate rather than a finite cumulative total.

If the 0.131 potential collisions per year associated with the Proposed Wind Farm are included, the currently quantifiable cumulative collision risk is 0.176565 birds per year. This represents a low level of additional collision mortality and no significant cumulative collision risk effects are anticipated. The Proposed Wind Farm is therefore not predicted to significantly increase the baseline cumulative collision risk for cormorant.

Cumulative summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision risk effects is considered to be limited. Furthermore, where assessments were available, no significant residual effects of habitat loss, displacement or collision risk were reported for the other wind farms. Taking into consideration the above reported effects and the predicted effects associated with the Proposed Project, cumulative effects on cormorant are considered to be influenced primarily by the broader pressures affecting the species and its supporting habitats, rather than by the relatively limited contribution associated with the Proposed Project. No significant residual additive, antagonistic or synergistic cumulative effects have been identified with regard to habitat loss, displacement/barrier effects or collision risk. No significant impacts on cormorant are anticipated at the county, national or international scale.

No potential for adverse cumulative effects is predicted.

8.2.2.8 Herring gull

At a national level, the main threats and pressures for wintering herring gull listed in Article 12 reporting are: wind, wave and tidal power, including infrastructure, residential or recreational activities and structures generating marine macro- and micro- particulate pollution (e.g. plastic bags, Styrofoam), industrial or commercial activities and structures generating marine macro- and micro- particulate pollution (e.g. plastic bags, Styrofoam) and other invasive alien species. Wind, wave and tidal power are listed as of high importance while the remainder are listed as of medium importance. The main threats and pressures for breeding herring gull listed in Article 12 reporting are: wind, wave and tidal power, including infrastructure which are of high importance; and residential or recreational activities and structures generating marine macro- and micro-particulate pollution; industrial or commercial activities and structures generating marine macro- and micro-particulate pollution; and other invasive alien species which are of medium importance. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative habitat review

The Proposed Wind Farm contains agricultural grassland habitats that are suitable for foraging and roosting herring gull. Ballycurreen, Dyrick Hill, Knocknamona, Lyrenacarriga, Moanbrack and Woodhouse wind farms are located, within or partially within agricultural habitats. However, this habitat is not a scarce resource in the area. It is abundant locally and is one of the most abundant habitat types within the Ornithology Cumulative Study Area (and at a national level). This abundance limits the potential for significant habitat loss effects to result on an individual project basis or cumulatively. No significant residual (habitat loss) effects are predicted to result from the Proposed Wind Farm.

Landscape-level analysis

For the purposes of the landscape-level cumulative assessment for herring gull, the Ornithology Cumulative Study Area was extended to include the area within 14.9km of the Mid-Waterford Coast SPA, representing the identified foraging range of herring gull and allowing Bealough Wind Farm to be included in the assessment. This extension comprises 77,774ha, of which 3,317ha is urban or industrial land and therefore considered of limited value to herring gull. A further 35,208ha comprises open marine habitat and, as the cumulative assessment relates to terrestrial wind energy developments, has also been excluded. The resulting extension is therefore 39,248ha, comprising 36,895ha of open habitat and 2,353ha of forestry habitat. Of this additional area, 88ha (0.22%) is located within 500m of a turbine, comprising 43ha of open habitat and 45ha of forestry habitat.

When combined with the original Ornithology Cumulative Study Area, the species-specific herring gull Ornithology Cumulative Study Area comprises 192,859ha. The principal terrestrial habitats within this area are distributed as follows:

- The total area of open habitat is 169,425ha (87.8% of the herring gull Ornithology Cumulative Study Area).
    - Open habitat located more than 500m from turbines, excluding the Proposed Turbine layout, comprises 167,928ha (99.1% of the open habitat).
    - Open habitat located more than 500m from turbines, including the Proposed Turbine layout, comprises 167,445ha (98.8% of the open habitat).
- The total area of forestry habitat is 23,434ha (12.2% of the herring gull Ornithology Cumulative Study Area).
    - Forestry habitat located more than 500m from turbines, excluding the Proposed Turbine layout, comprises 21,874ha (93.3% of the forestry habitat).
    - Forestry habitat located more than 500m from turbines, including the Proposed Turbine layout, comprises 21,196ha (90.4% of the forestry habitat).

The total area within 500m of turbines, including the Proposed Turbine layout, is 4,218ha (2.19% of the herring gull Ornithology Cumulative Study Area). Of this:

- 1,980ha comprises open habitat (46.9% of the area within 500m of turbines); and
- 2,238ha comprises forestry habitat (53.1% of the area within 500m of turbines).

The results of the landscape-level analysis provide the following information: excluding the Proposed Wind Farm, there are 167,928ha of potentially suitable herring gull habitat (open habitat, including agricultural land) greater than 500m from a turbine in the herring gull Ornithology Cumulative Study

Area. In the same herring gull Ornithology Cumulative Study Area, there are 21,196ha of forestry greater than 500m from cumulative wind farm turbines and the Proposed Turbines. This species is an open habitat species that does not use forestry; therefore, there are 167,928ha of available suitable habitat. Within the Proposed Wind Farm, there are 1,161ha within 500m of the Proposed Turbines, 483ha of which is suitable open habitat (agricultural land and open peatland) within 500m of a turbine. The total available habitat for this species within 500m of the Proposed Turbines, but greater than 500m from other turbines, is therefore 483ha, which represents a 0.29% loss of the remaining habitat greater than 500m from a turbine (167,928ha) within the herring gull Ornithology Cumulative Study Area. This is not a significant (direct/indirect) contribution to the cumulative loss of habitat for this species. Furthermore, the remaining 167,445ha continues to constitute a significant amount of suitable habitat for this species.

Cumulative impacts of other developments

With regard to the cumulative impact of other large-scale developments relating to the key threats and pressures on herring gull, the identified developments within the Ornithology Cumulative Study Area comprise two solar energy developments and two residential/mixed-use developments. Although the solar developments will result in land-use change, significant cumulative effects associated with the loss or degradation of suitable herring gull habitat are not anticipated given their distance from the Proposed Wind Farm. Similarly, given the nature and scale of the residential and mixed-use developments, significant cumulative effects arising from increased human activity, disturbance or recreational pressure are not anticipated. Therefore, significant cumulative effects are not anticipated.

Cumulative collision risk

As outlined in Table 7-13, the currently quantifiable cumulative collision risk for herring gull is 1.647 birds per year across the other wind farms within the Ornithology Cumulative Study Area, excluding the Proposed Wind Farm. It should be noted that collision risk was estimated for several wind farms and therefore the value presented represents a best estimate rather than a finite cumulative total.

If the 1.117 potential collisions per year associated with the Proposed Wind Farm during the breeding season are included, the currently quantifiable cumulative collision risk increases to 2.764 birds per year. This represents a low level of additional collision mortality and no significant cumulative collision risk effects are anticipated. The Proposed Wind Farm is therefore not predicted to significantly increase the baseline cumulative collision risk for herring gull.

Cumulative summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision risk effects is considered to be limited. Furthermore, where assessments were available, no significant residual effects of habitat loss, displacement or collision risk were reported for the other wind farms. Taking into consideration the above reported effects and the predicted effects associated with the Proposed Project, cumulative effects on herring gull are considered to be influenced primarily by the broader pressures affecting the species and its supporting habitats, rather than by the relatively limited contribution associated with the Proposed Project. No significant residual additive, antagonistic or synergistic cumulative effects have been identified with regard to habitat loss, displacement/barrier effects or collision risk. No significant impacts on herring gull are anticipated at the county, national or international scale.

No potential for adverse cumulative effects is predicted.

8.2.2.9 Lesser black-backed gull

At a national level, wind, wave and tidal power are listed as the key pressure to wintering lesser black-backed gull, which is of medium importance. There are no key threats listed for this species. The plans and projects which relate to these threats and pressures have been considered within this cumulative assessment.

Cumulative habitat review

The Proposed Wind Farm contains agricultural grassland habitats that are suitable for foraging and roosting lesser black-backed gull. Ballycurreen, Dyrick Hill, Knocknamona, Lyrenacarriga, Moanbrack and Woodhouse wind farms are located, within or partially within agricultural habitats. However, this habitat is not a scarce resource in the area. It is abundant locally and is one of the most abundant habitat types within the Ornithology Cumulative Study Area (and at a national level). This abundance limits the potential for significant habitat loss effects to result on an individual project basis or cumulatively. No significant residual (habitat loss) effects are predicted to result from the Proposed Wind Farm.

Landscape-level analysis

The results of the landscape-level analysis provide the following information: excluding the Proposed Wind Farm, there are 131,076ha of potentially suitable lesser black-backed gull habitat (open habitat, including agricultural land) greater than 500m from a turbine in the Ornithology Cumulative Study Area. In the same Ornithology Cumulative Study Area, there are 18,887ha of forestry greater than 500m from a cumulative wind farm turbine and Proposed Turbines. This species is an open habitat species that does not use forestry, therefore there is 131,076ha of available suitable habitat. Within the Proposed Wind Farm, there is 1,161ha within 500m of them from the Proposed Turbines, 483ha of which is suitable open habitat (agricultural land and open peatland) which is within 500m of a turbine. The total available habitat for this species within 500m of them from the Proposed Turbines, but greater than 500m from other turbines, is therefore 483ha, which represents a 0.37% loss of the remaining habitat greater than 500m from a turbine (131,076ha) within the Ornithology Cumulative Study Area. This is not a significant (direct/indirect) contribution to the cumulative loss of habitat for this species. Furthermore, the remaining 130,593ha continues to constitute a significant amount of suitable habitat for this species.

Cumulative impacts of other developments

With regard to the cumulative impact of other large-scale developments relating to the key threats and pressures on lesser black-backed gull, the identified developments within the Ornithology Cumulative Study Area comprise two solar energy developments and two residential/mixed-use developments. Although the solar developments will result in land-use change, significant cumulative effects associated with the loss or degradation of suitable lesser black-backed gull habitat are not anticipated given their distance from the Proposed Wind Farm. Similarly, given the nature and scale of the residential and mixed-use developments, significant cumulative effects arising from increased human activity, disturbance or recreational pressure are not anticipated. Therefore, significant cumulative effects are not anticipated.

Cumulative collision risk

As outlined in Table 7-13, the currently quantifiable cumulative collision risk for lesser black-backed gull is 5.830087 birds per year across the other wind farms within the Ornithology Cumulative Study Area, excluding the Proposed Wind Farm, . It should be noted that collision risk was estimated for several wind farms and therefore the value presented represents a best estimate rather than a finite cumulative total.

If the 0.259 potential collisions per year associated with the Proposed Wind Farm are included, the currently quantifiable cumulative collision risk increases to 6.089087 birds per year. The Proposed Wind Farm therefore contributes an additional 0.259 birds per year, equivalent to an increase of approximately 4.44% over the currently quantifiable baseline collision risk. This represents a small additional contribution, and the Proposed Wind Farm is not predicted to significantly increase the baseline cumulative collision risk for lesser black-backed gull.

Cumulative summary

Therefore, in this landscape, the contribution of the Proposed Project to cumulative habitat loss, disturbance/displacement and collision risk effects is considered to be limited. Furthermore, where assessments were available, no significant residual effects of habitat loss, displacement or collision risk were reported for the other wind farms. Taking into consideration the above reported effects and the predicted effects associated with the Proposed Project, cumulative effects on lesser black-backed gull are considered to be influenced primarily by the broader pressures affecting the species and its supporting habitats, rather than by the relatively limited contribution associated with the Proposed Project. No significant residual additive, antagonistic or synergistic cumulative effects have been identified with regard to habitat loss, displacement/barrier effects or collision risk. No significant impacts on lesser black-backed gull are anticipated at the county, national or international scale.

No potential for adverse cumulative effects is predicted.

8.3 Conclusion of Assessment of Cumulative Effects

Following the detailed assessment provided in the preceding sections, it is concluded that, the Proposed Project will not result in any residual adverse effects on any of the European Sites, their integrity or their conservation objectives when considered on its own.

In the review of the projects that was undertaken, no connection, that could potentially result in additional or cumulative impacts was identified. Neither was any potential for different (new) impacts resulting from the combination of the various projects and plans in association with the Proposed Project.

Taking into consideration the reported residual impacts from other plans and projects in the area and the predicted impacts with the current proposal, no residual cumulative impacts have been identified with regard to any European site.

9. CONCLUDING STATEMENT

This NIS has provided an assessment of all potential direct or indirect adverse effects on European Sites. It has also assessed the potential for in-combination effects on European site with other plans and projects.

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

Therefore, it can be objectively concluded that the Proposed Project, individually or in-combination with other plans or projects, will not adversely affect the integrity of any European Site.

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