Planning and Environmental Consultants

Appropriate Assessment Screening Report and Natura Impact Statement

Cahermurphy West Wind Farm, Co. Clare

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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 screening, and if required, Appropriate Assessment, of a proposed wind energy development of 8 no. turbines at Cahermurphy, Co. Clare, and a proposed grid connection to Moneypoint substation.

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, as amended). 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 (AA) of its implications for the Site in view of the Site's conservation objectives. A brief outline of the Appropriate Assessment process and the various stages associated with it (e.g. Screening for AA compared with undertaking a full AA) is provided in Section 1.4.1. The current project is not directly connected with, or necessary for, the management of any European Site. Consequently, the development has been subject to the Appropriate Assessment Screening process, as provided in Section 4 of this report.

This Appropriate Assessment Screening Report has been prepared in accordance with the 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) and Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2018) as well as the Department of the Environment's Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DoEHLG, 2010) and the Appropriate Assessment Screening for Development Management. Office of the Planning Regulator, Dublin 7, Ireland OPR (2021).

The Natura Impact Statement (NIS) in Section 5 of this report 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) and
- Appropriate Assessment Screening for Development Management. Office of the Planning Regulator, Dublin 7, Ireland OPR (2021).

1.2 References to Proposed Project

Section 1.1.1 of Ch. 1: Introduction, of the accompanying EIAR provides a definition of the various project references. This report uses the same references. These project references are defined below;

- Where the 'Proposed Project' is referred to, this relates to all the project components described in detail in Section 2.2 of this report i.e. Proposed Wind Farm and Proposed Grid Connection as detailed in below.
- Where 'the Site' is referred to, this relates to the primary study area for the NIS, as delineated by the EIAR Site Boundary in green as shown on Figure 2-1 below. The EIAR Site Boundary represents the primary area of study and not necessarily areas where proposed works will occur as part of the Proposed Project. The EIAR Site Boundary encompasses an area of approximately 637 hectares (ha).

- Where the 'Proposed Wind Farm' is referred to, this refers to turbines and associated foundations and hard-standing areas, meteorological mast, site entrance, junction accommodation works, access roads, accommodation works along the turbine delivery route (TDR Works), temporary construction compounds, temporary transition compound, 110kV electrical substation, underground cabling, borrow pits, site drainage, tree felling, biodiversity management and enhancement measures and all ancillary works. The Proposed Wind Farm site encompasses an area of approximately 375 hectares (ha). The permanent footprint of the Proposed Wind Farm measures approximately 15.55 ha, which represents approximately 4.1% of the Proposed Wind Farm site.
- Where 'Proposed Grid Connection' is referred to, this refers to the underground 110kV electrical cabling and all associated site development works connecting the Proposed Wind Farm to the existing Moneypoint 110kV electrical substation in the townlands of Carrowdotia South and Carrowdotia North, Co. Clare. The Proposed Grid Connection is shown in Figure 2-2.

This report assesses the same boundary as the accompanying EIAR i.e. the EIAR Site Boundary and takes into account the combined impacts of these individual elements of the Proposed Project.

1.3 Statement of Authority

This report was prepared by Stephanie Corkery (BSc., MSc.) and Pádraig Desmond (BSc.) and reviewed by Caroline Kelly (BSc., MSc., MCIEEM). Multidisciplinary walkover surveys were carried out in 2024 and 2025 and were led by MKO Ecologists Pádraig Desmond, Stephanie Corkery, Deepali Mooloo (BSc., MSc.), with assistance from Katie Leahy (BSc), Bridín Foster (BSc.), Caití Farren (BSc.), Clare Mifsud (BSc., MSc., PhD.) Marie Greaney (BSc., MSc.) and Noel Fahy (BSc.). This is to ensure that the impact assessment presented in this report, and the baseline information upon which it depends, is as up to date as possible, robust and accurate. All surveyors have relevant academic qualifications and are competent in undertaking habitat and ecological assessments.

Aquatic surveys were undertaken by Triturus Environmental Ltd. ecologists Ross Macklin (BSc., HDip GIS, Dip IPM, MCIEEM, IFM) and Bill Brazier (BSc., MIFM).

Deepali Mooloo

Deepali Mooloo is an Ecologist with MKO since joining the company in September 2023. Deepali holds a M.Sc. (Hons) in Applied Coastal and Marine Management where she specialised on spatial ecology, field skills and drone photogrammetry. Deepali's key strengths and expertise are in field ecology, including habitat/botanical assessments, protected fauna surveys, and winter bird surveys. She has also prepared Appropriate Assessment Screening reports and has been involved in preparing Ecological Impact Assessment Reports and Natura Impact Statement reports for a range of projects, including large scale renewable energy developments. She has experience in creating maps using QQIS and ArcGIS.

Stephanie Corkery

Stephanie is an Ecologist with MKO with three years of experience in professional ecological consultancy. Stephanie holds a BSc. in Ecology and Environmental Biology, an MSc. in Marine Biology, and a HDip in Sustainability in Enterprise, all from University College Cork. Since joining MKO as a graduate in March 2022, Stephanie has worked on a wide variety of projects including wind farms, large scale residential developments, and County Council projects. Stephanie's key strengths include organising and carrying out both terrestrial and marine mammal surveys, as well as general ecological walkover surveys and bat surveys. She is also experienced in GIS, acoustic data analysis for bat species, and in preparing Appropriate Assessment Screening Reports (AASR), Natura Impact Statements (NIS), Ecological Impact Assessments (EcIA), Biodiversity Chapters, and Bat Reports.

Stephanie is also a JNCC Certified Marine Mammal Observer and has completed the ACCOBAMS Course for Highly Qualified Marine Mammal Observers (MMO) and Passive Acoustic Monitoring operators (PAM).

Pádraig Desmond

Pádraig is a Project Ecologist with MKO with six years post graduate ecological experience, five years of which have been in ecological consultancy. Pádraig holds a BSc (Hons) in Ecology and Environmental Biology from University College Cork. Pádraig took up his position with MKO in December 2021, prior to which he worked as a Junior Ecologist with Envirico, and has been a Project Ecologist since 2023. Through these consultancy roles Pádraig has gained excellent experience in producing ecological reports such as Natura Impact Statements, Ecological Impact Assessments, Biodiversity chapters, Invasive Species Management Plans, and Constraints Reports for a wide range of projects including small private developments to housing developments and renewable energy projects such as solar and wind farms. Prior to the above roles, Pádraig worked as a field ecologist for the Department of Conservation in New Zealand, where he developed a strong field-based skill set. Pádraig's key strengths and areas of expertise are in terrestrial ecology, including vegetation surveys, habitat identification, invasive species surveys, mammal surveys, Appropriate Assessment and Ecological Impact Assessment. Pádraig is also skilled in GIS.

Ross Macklin

Ross Macklin BSc (Hons) Applied Ecology HDip GIS Dip IPM MCIEEM IFM is an environmental scientist specialising in freshwater and fisheries ecology. He studied a bachelor's degree in applied Ecology at UCC and later completed a higher diploma in Geographical Information Systems at UCC and a diploma in Integrated Pest Management at UCD. He is currently completing his PhD at UCC in fisheries ecology. Ross has an in-depth knowledge of all freshwater ecosystems and riparian corridors. He has undertaken river habitat, lake habitat, canal habitat and fisheries assessments in professional work for 20 years. His specialist freshwater experience lies in biological and physicochemical water quality analysis, fisheries ecology, riparian habitat assessments, habitat mapping, protected species, mammal surveys, geographical information systems, ecological design and invasive species. Ross has expert experience in identifying and assessing macrophyte plant, aquatic bryophytes, fish and macroinvertebrates from a variety of aquatic habitats. He routinely undertakes fisheries assessments, protected species surveys, invasive species surveys, river hydromorphology surveys, surface water management plans, CEMP, EcIA , EIAR and NIS reporting. He holds full national licences for freshwater pearl mussel (Margaritifera margaritifera), white-clawed crayfish (Austropotamobius pallipes) and amphibians inclusive of an open photography licence for numerous protected species. He has held over 300 section 14 licences for fisheries surveys spanning the breadth of Ireland.

Bill Brazier

Bill Brazier BSc (Hons)Applied Freshwater & Marine Biology, MIFM) is an aquatic, fisheries and mammalian ecologist with over 14 year's professional experience in Ireland. He is a senior ecologist at Triturus Environmental Ltd. and is completing a PhD in fish genetics at UCC. He has extensive experience in a wide range of ecological and environmental projects including EIAR, EcIA and AA/NIS reporting, as well as the areas of renewable energy developments, flood relief schemes, road schemes, invasive species management blueways/greenways,biodiversity projects and non-volant mammal monitoring. He specialises in aquatic ecology and fisheries ecology, inclusive of fisheries assessments,macrophytes, water quality, otter, freshwater pearl mussel, white-clawed crayfish and amphibians, holding full national licences for all of these species. Bill is one of Ireland's most experienced fisheries scientists having held over 250 section 14 authorisation licences for fisheries related work.

Caroline Kelly

Caroline is a Senior Ecologist with MKO with over ten years' experience in ecological consultancy and is a Full member of the Chartered Institute of Ecology and Environmental Management (CIEEM). Caroline holds a BSc in Environmental Biology from University College Dublin (UCD) and an MSc in Applied Ecological Assessment from University College Cork (UCC). In addition, Caroline has completed an Advanced Diploma in Planning and Environmental Law from Kings Inns Dublin. Prior to taking up her position with MKO in June 2025, Caroline worked as a Principal Ecologist with Scott Cawley Ltd. Caroline has strong generalist field ecology skills and has undertaken a range of ecological surveys including habitat, bird (both breeding and wintering), invasive species and protected fauna surveys. She has strong technical reporting skills and has extensive experience in a range of ecological assessments including Appropriate Assessment and Ecological Impact Assessment. She has undertaken ecological assessments and surveys on a variety of project types (e.g. linear infrastructure projects, industrial, commercial, residential, recreational, tourism and renewable energy developments).

1.4 Methodology

1.4.1 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]).

1.4.2 Desk Study

The desk study undertaken for this assessment included a thorough review of the available ecological data associated with European Sites surrounding the Proposed Project location. Sources of data consisted of the following:

- Review of NPWS Conservation Objectives supporting documents, site synopsis[2], standard data forms[3] and supporting documents for European Designated Sites,
- Review of online web-mappers: National Parks and Wildlife Service (NPWS), Environmental Protection Agency (EPA)[4],
- Review of the publicly available National Biodiversity Data Centre (NBDC) web-mapper[5],
- Review of NPWS Article 17 metadata and GIS database[6].
- Review of previous[7][8].

1.4.3 Scoping and Consultation

MKO undertook a scoping exercise during preparation of the accompanying EIAR, which included scoping requests to the following relevant stakeholders:

- An Taisce
- Bat Conservation Ireland
- BirdWatch Ireland
- Clare County Council – Planning Department
- Clare County Council –Environment Department
- Department of Agriculture, Food and the Marine
- Department of Communications, Climate Action and the Environment
- Department of Housing, Local Government and Heritage
- Inland Fisheries Ireland
- Irish Peatland Conservation Council
- Irish Red Grouse Association
- Irish Raptor Study Group
- Uisce Éireann
- Irish Wildlife Trust
- The Heritage Council

Just one response pertaining to the European Sites or the EU Habitats Directive was received, from the Department of Housing, Local Government and Heritage, which stated that full consideration to European Sites should be provided in the application, and that a Natura Impact Statement should be prepared.

[1] *IROPI - 'imperative reasons of overriding public interest', the test found in Article 6(4) of the Habitats Directive.*
[2] *SSCOs and site synopsis for European Sites https://www.npws.ie/protected-sites Accessed 30th of January 2026*
[3] *Standard data from for European Sites https://natura2000.eea.europa.eu/ExpertViewer/?v=latest Accessed 30th of January 2026*
[4] *Environmental Protection Agency (EPA) map viewer https://gis.epa.ie/EPAMaps/ Accessed 30th of January 2026*
[5] *https://maps.biodiversityireland.ie/map https://maps.biodiversityireland.ie/map Accessed 30th of January 2026*
[6] *NPWS Article 17 metadata and GIS database https://www.npws.ie/publications/article-17-reports Accessed 30th of January 2026*

[8] *Planning Application: 20658 https://www.eplanning.ie/ClareCC/AppFileRefDetails/20658/0 Accessed 19th of November 2025*

1.4.4 Ecological Survey Methodologies

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

A comprehensive survey of the biodiversity within the Site was undertaken to inform this assessment. The following sections fully describe the ecological surveys that have been undertaken and provide details of the methodologies and guidance followed. The surveys completed are summarised in Table 1-1 below and compliment the comprehensive ecological knowledge of the site collated by the developers during the preparation of the previous Cahermurphy 2 Wind Farm planning application submitted to Clare County Council in September 2020 and which is still awaiting planning determination.

Table 1-1 Surveys carried out in 2024, 2025, and 2026.

Survey Type	Dates
Multi-disciplinary walkover (incl. habitats)	• 16th July 2024 • 17th July 2024 • 18th July 2024
Multi-disciplinary walkover – Hen Harrier Offsetting & Enhancement Lands	• 14th January 2026 • 15th January 2026
Mammal surveys	• 11th April 2024 • 12th April 2024
Aquatic surveys (including otter)	• 16th July 2024 • 17th July 2024 • 18th July 2024 • 19th July 2024 • 1st August 2025
Multi-disciplinary walkover - Grid connection and TDR	• 9th October 2024 • 13th February 2025 • 10th December 2026
Bird Surveys	• See **Appendix 1**

1.4.4.1 Ecological Multidisciplinary Walkover Surveys

Multidisciplinary walkover surveys were undertaken within the Proposed Project site. Surveys were undertaken within the recognised optimum period for vegetation surveys/habitat mapping, i.e. April to September (Smith *et al.*, 2011). A comprehensive walkover of the entire Proposed Project site was completed with incidental records also incorporated from other dedicated species/habitat specific surveys.

The walkover surveys were designed to detect the presence, or likely presence, of a range of protected species. The survey included a search for mammal signs (bats, badger, red squirrel etc.) and areas of suitable habitat to support these species, potential features likely to be of significance to bats and additional habitat features for the full range of other protected species that are likely to occur in the vicinity of the Proposed Project (e.g. otter etc.). Bird species observed during the multi-disciplinary surveys were also recorded.

The multi-disciplinary walkover surveys comprehensively covered the entire study area and based on the survey findings, further detailed targeted surveys were carried out for features and locations of ecological significance. Other targeted surveys undertaken within the Proposed Project site are described in the following subsections.

1.4.4.2 Otter Survey

As part of the multidisciplinary walkover survey, a search for indications of otter was carried out within the Proposed Wind Farm site. This search was conducted in order to determine the presence or absence of otter within the Site. This involved a search for all potential indications of otter, as per NRA (2008) (spraint, tracks, couches, holts). The otter survey was conducted as per NRA (2009b) guidelines (Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes). Following the results of the multidisciplinary surveys, no requirement for further, more detailed surveys for otter was identified.

In addition, targeted otter surveys were carried out by Triturus Environmental along the Proposed Grid Connection route (see Section 2.8 of the Aquatic Baseline Report, **Appendix 2**).

1.4.4.3 Aquatic surveys

Dedicated aquatic baseline surveys were undertaken by Triturus Environmental and are detailed in the aquatic baseline report in **Appendix 2**. 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 Project within the following sub-catchments:

- Annageeragh_SC_010,
- KiltumperStream_SC_010,
- Doonbeg_SC_010,
- Wood_SC_010
- Cloon [Clare]_SC_010

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*), 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 survey site in context of the Proposed Wind Farm and ensured that any habitats and species of high conservation value would be detected. Full details of the methodology followed for the aquatic surveys as well as details of the locations of survey sites is provided in the Aquatic Baseline Report (**Appendix 2**).

1.4.4.4 Invasive species survey

During the multidisciplinary walkover surveys of the Proposed Project site, a search for non-native invasive species was undertaken. The survey focused on the identification of invasive species listed under the Third Schedule of the European Communities Regulations 2011 (S.I. 477 of 2015) and the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. No 374 of 2024). Where present, the extent and location of infestations was recorded, along with photographs.

1.4.4.5 Bird Surveys

Bird surveys were undertaken during the survey period April 2023 to March 2025, consisting of two breeding seasons (April – September) and two winter seasons (October – March).

Full details of all bird surveys undertaken within the Proposed Wind Farm site are provided in Ch. 7: Birds: Birds of the accompanying EIAR and those pertinent to this report are summarised below. Full details of the survey efforts are provided in **Appendix 1**. Results pertaining to this report and the SPA identified to be within the likely zone of influence of the Proposed Project are included in the sections below.

Based on the results of the desk study, consultation and reconnaissance site visits described in Sections 7.31 to 7.3.7 of Ch. 7: Birds: Birds, of the accompanying EIAR, the assemblage of bird species within the Wind Farm Site and the likely importance of the Wind Farm Site for these species were ascertained. Then, adopting a precautionary approach, a site-specific scope for ornithological surveys was devised. The data provided in the field surveys is robust and allows clear, precise and definitive conclusions to be made on the avian receptors identified within the Wind Farm Site.

The survey work that was undertaken between April 2023 and March 2025 forms the core dataset for the assessment of impacts on ornithology. In the absence of specific national bird survey guidelines, the ornithological surveys were designed and undertaken in full accordance with the guidance document 'Recommended bird survey methods to inform impact assessment of onshore wind farms' (SNH, 2017). The various ornithological surveys undertaken at the Wind Farm Site and hinterland are described in detail below.

1.4.4.5.1 *Methodology*

Vantage Point Surveys

Vantage point (VP) surveys were undertaken in accordance with NatureScot guidance (SNH, 2017) to monitor flight activity at the Wind Farm Site and within a 500m radius of the proposed turbines. Surveys were conducted from four fixed point VPs with comprehensive coverage of the proposed turbines. The VP 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 turbines were entirely covered.

Viewsheds were calculated using the Visibility Analysis plugin (Version 1.8) over a raster digital elevation model in QGIS (Version 3.28) using a notional layer suspended at 22m (as the minimum swept area was not known when surveys commenced), which is representative of the minimum height considered for the potential collision risk. The lowest swept height of 22m was used for the analysis with the understanding that the actual lowest swept of the candidate turbine would likely be similar to this. Note, that while the relevance of being able to view as much of the Wind Farm 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 VPs such that the airspace of the turbine rotor swept area is in view using the fewest possible number of VPs. The VP 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 22m 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 proposed turbine specifications were confirmed, the viewshed analysis was recalculated based on the (actual) minimum swept height of the turbines, 17m. The viewshed analysis results at 17m were not significantly different from the original viewsheds calculated at the initiation of the surveys.

Survey methodology followed SNH (2017). The surveyor collected data on bird observations and flight activity from the scanning arc of 180° to a 2km radius at the fixed vantage point locations for two 3-hour watches separated by a minimum 30-minute break (i.e., 6 hours total) per month. Surveys were conducted from April 2023 to March 2025 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 5-1)

Table 1-1 Vantage point survey watch duration

Survey Season and Number of VPs	Effort per VP
Breeding Season 2023 (4 VPs)	36 hours per VP
Winter Season 2023/2024 (4 VPs)	36 hours per VP

Breeding Season 2024 (4 VPs)	36 hours per VP
Winter Season 2024/2025 (4 VPs)	36 hours per VP

Flight activity of target species was mapped and recorded as per defined flight bands which were chosen in relation to the dimensions of potential turbine models for the site. Bands were split into 0-15m, 15-25m, 25-200m and >200m. Following a highly precautionary approach, all flight activity within height bands 15-25m and 25-200m is considered to be within the potential collision height with regard to the proposed turbine swept area. The actual proposed turbine dimension scenarios (180-185m) fall within these height bands (15-25m and 25-200m). Survey effort is presented in **Appendix 1**, including full details of dates, times and weather conditions for each survey.

Breeding Raptor Surveys

Breeding raptor surveys were undertaken within the Wind Farm Site and up to 5km from the proposed infrastructure to identify occupied territories and monitor their breeding success near or within the Wind Farm Site. Raptors include all harrier, falcon, buzzard, eagle, hawk, owl, kite and osprey species. The survey methodology followed Hardey *et al.* (2013). Raptor surveys were undertaken in the form of short vantage point watches. All raptor species observed were recorded and mapped and breeding status was assigned following BTO breeding status codes. Surveyors did not approach nest sites to avoid disturbance.

Surveys primarily targeted suitable hen harrier breeding habitat, and areas where known historic nests were located. Breeding raptor surveys were conducted on five days per month during the core breeding season between April and July (2023 & 2024). Each survey location was visited at least once per survey month. Survey effort is presented in **Appendix 1**, including full details of dates, times and weather conditions for each survey.

Winter Walkover Surveys

Winter walkover surveys were undertaken to record the presence of bird species within the Wind Farm Site and within a 500m radius of proposed infrastructure, including areas away from vantage point locations. The methodology follows that described in Bibby *et al.* (2000) and Gilbert *et al.* (1998), combined with Common Bird Census methods (British Trust for Ornithology, 2021). Transect routes were walked across different habitat complexes within the survey area where access was permitted. All target species were recorded and mapped. In addition, the presence of any non-target species was recorded to inform the evaluation of supporting habitat.

Winter walkover surveys were conducted in daylight hours over four visits between October and March (i.e. four visits in each winter; 2023/2024 & 2024/2025). Survey effort is presented in **Appendix 1**, including full details of dates, times and weather conditions for each survey.

Hen Harrier Roost Surveys

Hen harrier roost surveys were undertaken within the Wind Farm Site and within 2km of the proposed infrastructure. These surveys aimed to identify active winter hen harrier roosts near or within the Wind Farm Site. Survey methodology followed Gilbert *et al.* (1998) and O'Donoghue (2019). Roost watches of 2-3 hours were conducted at up to six hen harrier vantage point locations from dusk until it was too dark to see. During these surveys all hen harrier observations were recorded and mapped.

Surveys were undertaken once per month at up to four survey locations during the winter season between October and March inclusive (in winter 2023/2024 & 2024/2025). Survey locations varied throughout both winter seasons, in response to changes in hen harrier activity and/or the lack of observations at some survey locations. Survey effort is presented in **Appendix 1**, including full details of dates, times and weather conditions for each survey.

Proposed Grid Connection Route, Turbine Delivery route, and Hen Harrier Offsetting & Enhancement Lands

As part of the Multidisciplinary walkover surveys, protected bird species and behaviour, including those designated under Special Areas of Protection, were noted if recorded along/within/adjacent to the Proposed Grid Connection route, the Turbine Delivery route and Hen Harrier Offsetting & Enhancement Lands.

1.4.4.6 Other fauna

The Site is not located within or in close proximity to any European Sites designated for Annex II species and Annex I bird species. Whilst additional targeted surveys for other Annex II fauna and birds was carried out to inform Ch. 6: Biodiversity: Biodiversity, and Ch. 7: Birds: Ornithology of the accompanying EIAR, such as, hen harrier and Special Conservation Interest (SCI) birds, and bats, these were intended to provide a baseline for non-SAC/SPA populations and therefore, are not pertinent to this report.

1.5 Structure and Format of this document

The points below set out the structure and format of this report:

- **Section 1** provides an introduction, background information, methodology and statement of authority for the AASR and NIS.
- **Section 2** provides a full description of all elements of the Proposed Project.
- In **Section 3**, the characteristics of the receiving environment are fully described.
- In **Section 4**, a Stage 1 Appropriate Assessment Screening is undertaken to identify 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.
- **Section 5** provides a detailed consideration of the European sites located within the zone of influence of the Proposed Project and identifies the relevant qualifying features and how they may be affected in light of their conservation objectives.
- **Section 6** provides an assessment of the potential for adverse effects on the identified European Sites as a result of the Proposed Project and in the absence of mitigation. This section also prescribes mitigation to robustly block any identified pathways for impact for effect.
- **Section 7** provides an assessment of residual effects taking into consideration the proposed mitigation.
- In **Section 8**, the potential in-combination effects of the Proposed Project on European Sites, when considered in combination with other plans and projects, is assessed.
- A concluding statement is provided in **Section 9**.

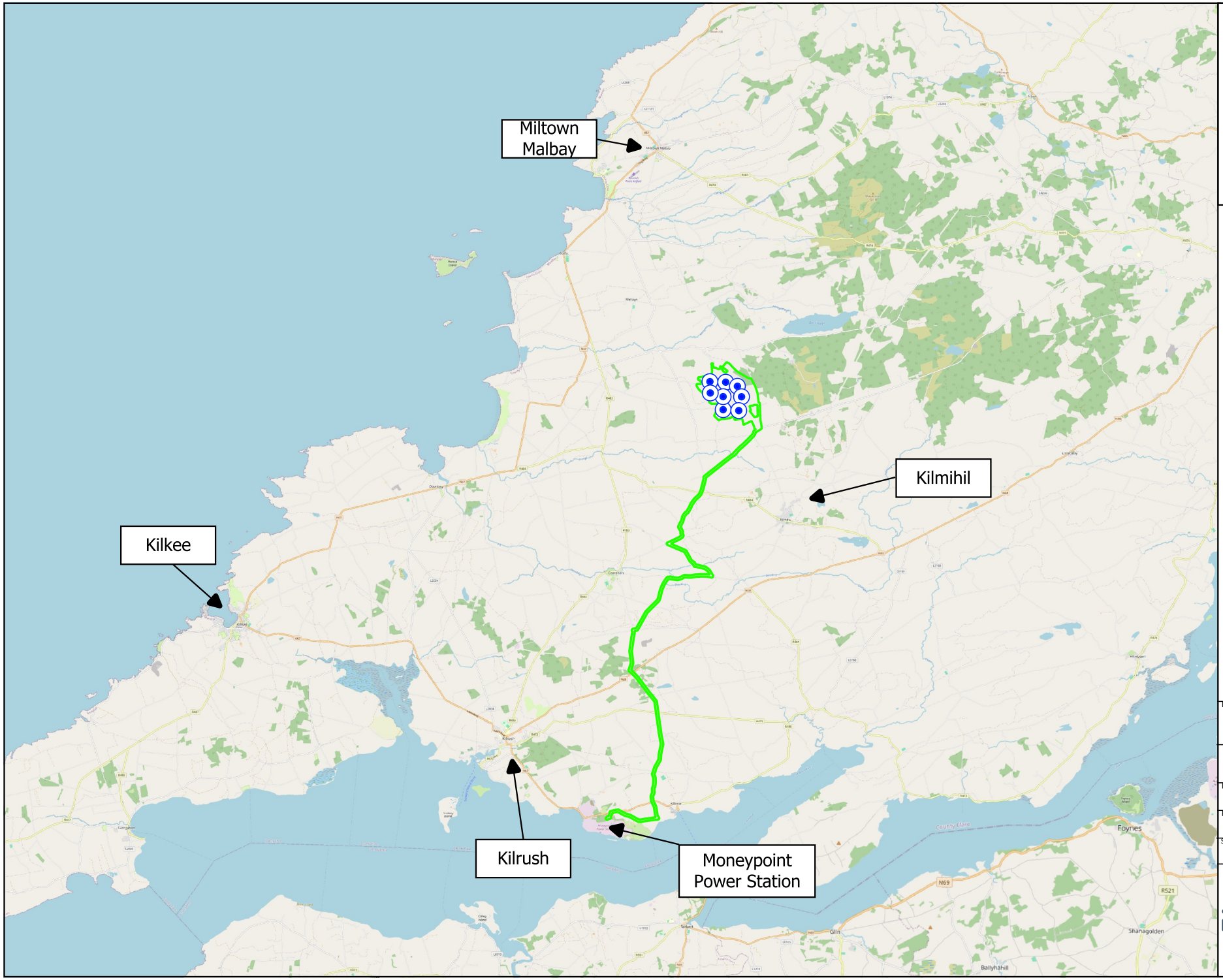
2. DESCRIPTION OF PROPOSED PROJECT

2.1 Site Location

The Proposed Wind Farm site is located approximately 4.3km northwest of Kilmihil, 4.3km southeast of Mullagh, and 4.7km northwest of Creegh, Co. Clare. The Grid Reference co-ordinates for the approximate centre of the site are E508533 N668982. The Proposed Wind Farm site is accessed via local roads from the R483 Regional Road, which travels north-south of the Site, the R484 Regional Road which travels east-west between Kilmihil and Creegh and the L-2048 local road, which travels in a northeast-southwest direction between Kilmaley and Creegh. The Site itself is served by a number of existing forestry tracks.

The Proposed Grid Connection route includes for underground 110kV electrical cabling from the proposed onsite 110kV electrical substation within the Proposed Wind Farm site to the Moneypoint 110kV electrical substation in the townlands of Carrowdotia South and Carrowdotia North, Co. Clare. The underground cable route measures approximately 25km in length, located within existing forestry tracks, private lands and predominantly within the public road corridor.

The site location is provided in Figure 2-1.



Map Legend

- EIAR Site Boundary
- Proposed Turbine Locations

Drawing Title
Site Location Context

Project Title
Cahermurphy West Wind Farm

Drawn By	Checked By
MC	EMC
Project No.	Drawing No.
230843	Figure 2-1
Scale	Date
1:200,000	08.01.2026

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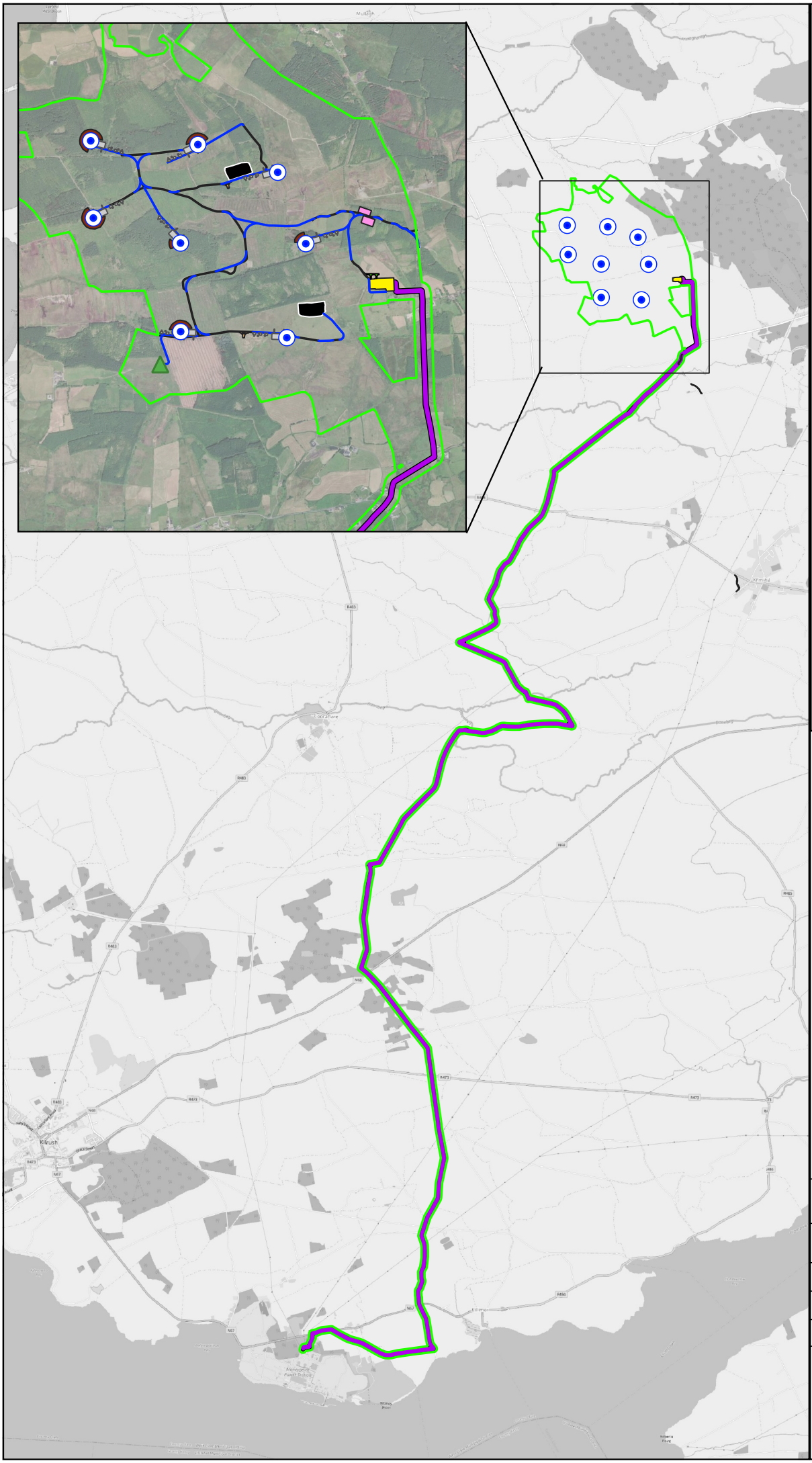
2.2 Development Components of the Proposed Wind Farm site

The Proposed Wind Farm will consist of the following:

i. *Construction of 8 no. wind turbines with a blade tip height range from 180m to 185m inclusive, a hub height range from 98.5m to 110.5m inclusive and a rotor diameter range from 149m to 163m inclusive with associated foundations, hard-standing and assembly areas.*
ii. *Construction of 1 no. permanent 110 kV electrical substation including 2 no. control buildings lightening protection, welfare facilities, car parking, and all associated electrical plant and apparatus, security fencing, external lighting, underground cabling, wastewater holding tank and all associated infrastructure, apparatus and landscaping;*
iii. *Underground electrical cabling (33kV) and communications cabling connecting the wind turbines to the proposed on-site 110kV electrical substation and associated ancillary works;*
iv. *Erection of 1 no. Meteorological Mast of 100m metres above existing ground level for the measuring of meteorological conditions, including a lightning rod which will extend above the mast ;*
v. *Construction of new permanent access roads and upgrade of existing roads to provide access within the site and to connect the wind turbines and associated infrastructure;*
vi. *Upgrade of 1 no. new existing agricultural access to the site, off the L6254 local road, to serve as the sole entrance to the wind farm during its operational phase and to facilitate the delivery of the construction materials and turbine components to site during the construction and operational phases (including the installation of security fencing and gates);*
vii. *Development of 2 no. borrow pits;*
viii. *Construction of 2 no. temporary construction compounds and associated ancillary infrastructure including temporary site offices, staff facilities and car-parking areas, all to be removed at end of construction phase;*
ix. *Temporary works at 3 no. locations along the R465 regional road associated with the facilitation of turbine component and abnormal load delivery to site. These works will primarily include the trimming of vegetation and strengthening of road verges;*
x. *Permanent and temporary Site Drainage;*
xi. *Operational Stage Site Signage;*
xii. *Ancillary forestry felling to facilitate construction and operation of the Proposed Project;*
xiii. *Biodiversity enhancement measures including the permanent removal of commercial forestry (deforestation) over an area of 56.3ha and restoration of farmland habitat to good quality hen harrier foraging habitat through diversifying the range and extent of habitats over an area of 67.4ha, and;*
xiv. *All related site works and ancillary development including landscaping considered necessary to facilitate the Proposed Project.*

This application is seeking a ten-year permission and 35 year operational life from the date of commissioning of the entire wind farm.

The full range of turbine options and dimensions of the Proposed Project have been assessed as part of this report. The layout of the Proposed Wind Farm is provided in Figure 2-2, with the Proposed Grid Connection route also shown. Detailed site layout drawings of the Proposed Project are included in **Appendix 3** of this report.


Map Legend
EIAR Site Boundary
Proposed Grid Connection
Proposed 110kV Substation
Proposed Turbine Location
Turbine Delivery Accommodation Road
Existing Roads to be Upgraded
Peat Placement Areas
Proposed Borrow Pits
Proposed Hardstands
Proposed Met Mast
Proposed New Roads
Proposed Temporary Construction Compounds
Proposed Turning Heads
Temporary Transformer Delivery Road
N
Microsoft product screen shots reprinted with permission from Microsoft Corporation
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Drawing Title
Proposed Project Layout
Project Title
Cahermurphy West Wind Farm
Drawn By
MC
Checked By
EMC
Project No.
230843
Drawing No.
Figure 2-2
Scale
1:80,000
Date
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2.3 Detail on Development Components of the Proposed Wind Farm site

The following sections will describe each of the development components within this planning application in further detail, in the following order:

1. *Wind Turbines*
2. *Access Roads*
3. *Onsite 110kV Electrical Substation and Control Building*
4. *Internal Site Cabling*
5. *Meteorological Mast*
6. *Proposed Wind Farm Site Entrance*
7. *Borrow Pits*
8. *Peat and Spoil Management Plan*
9. *Temporary Construction Compounds*
10. *Turbine Component and Abnormal Load Delivery Works*
11. *Ancillary Forestry Felling*
12. *Hen Harrier Enhancement Plan*
13. *Site Drainage Measures*

Detailed site layout drawings of the Proposed Project are included in **Appendix 3** of this report.

2.3.1 Wind Turbines

2.3.1.1 Turbine Locations

The proposed wind turbine layout has been optimised using industry standard wind farm design software to maximise the energy yield from the site, while maintaining sufficient distances between the proposed turbines to ensure turbulence and wake effects do not compromise turbine performance. The Grid Reference coordinates of the proposed turbine locations are listed in Table 2-1 below.

Table 2-1 Proposed Wind Turbine Locations and Elevations

Turbine No.	Irish Transverse Mercator Co-ordinates		Top of Foundation Elevation (m OD)
	Easting (m)	Northing (m)	
1	507772	669761	89.5m
2	508411	669739	100.5m
3	507788	669301	115m
4	508308	669151	112m
5	508887	669573	133m
6	509055	669148	122m
7	508309	668624	116.5m
8	508942	668587	113.5m

2.3.1.2 Turbine Type

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 Farm planning application includes a design flexibility opinion from the Commission to allow for a limited range of turbine dimensions under Section 37CD(1) of the PDA (case reference ABP-323567-25). The details consist of the following:

- Turbine Dimensions
  - Tip Height
  - Rotor Diameter
  - Hub Height

The proposed wind turbines to be installed on the Proposed Wind Farm site will have a ground-to-blade tip height, hub height and blade length within the following, limited, ranges:

- Tip Height – Maximum height 185 metres, Minimum height 180 metres
- Hub Height – Maximum height 110.5 metres, Minimum height 98.5 metres
- Blade Length: - Maximum length 81.5 metres, Minimum length 74.5 metres.

For the purposes of this report, various types and sizes of wind turbines, within the proposed ranges outlined above, have been selected and considered in the relevant sections of the report. This allows for a robust assessment of the proposed range of dimensions. Turbine design parameters have a bearing on the assessment of shadow flicker, noise, visual impact, traffic and transport and ecology (specifically birds).

It should also be noted that the assessment of the development footprint of the Proposed Project site, within this reoprt, is based on the potential footprint for all of the infrastructural elements. This precautionary approach is taken as the assessment of the maximum development footprint will, in the absence of mitigation measures, give rise to the greatest potential for significant effects. However, a range of turbine dimensions are assessed throughout where applicable.

2.3.1.3 Turbine Foundations

Each wind turbine is secured to a reinforced concrete foundation that is installed below the finished ground level. The turbine foundation transmits any load on the wind turbine into the ground. The foundation footprint, which measures 25m in diameter and 3.8m in depth at each proposed turbine location, is assessed in this report.

After the foundation level of each turbine has been formed using piling methods or on competent strata, the bottom section of the turbine tower “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.

2.3.1.4 Hard Standing Areas

Hard standing areas consisting of levelled and compacted hardcore will be installed around each turbine base. These will 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. The hardstands also allow for the offloading and storage of turbine components, and generally provide a safe, level working area around each turbine position. The hard-standing areas are extended to cover the turbine foundations, once completed, by placing crushed stone over the foundation. The turbine hardstand assessed in this report measure 35m x 98m.

A two-metre wide working area will be required around each hard standing area, with the sides of the excavated areas sloped sufficiently to ensure that slippage does not occur. Material excavated to create the working area will be stored locally at turbine hardstands for later reuse in backfilling the working area around the turbine foundation or transported immediately on excavation to one of the 2 no. borrow pits. The excavated material stored locally will be sealed using the back of the excavator bucket and surrounded by silt fences to ensure sediment-laden run-off does not occur. All peat placement areas will be upslope of founded roads/hardstands and will be inspected by the Project Geotechnical Engineer before material is temporarily stored in the area.

The proposed hard standing areas for each individual turbine are shown as part of the detailed layout drawings included in **Appendix 3** and measure 35m x 98m.

2.3.1.5 Power Output

It is anticipated the proposed wind turbine will have a rated electrical power output in the range of 6.3 to 7.2 megawatt (MW) depending on further wind data analysis and power output modelling. Therefore, the potential installed capacity of the proposed wind farm will range from a minimum of 50.4 MW up to a maximum 57.6 MW. Turbines of the exact same make, model and dimensions can also have different power outputs depending on the capacity of the electrical generator installed in the turbine nacelle.

Assuming a maximum installed capacity of 57.6 MW, the Proposed Project therefore has the potential to produce up to 176,602 MWh (megawatt hours) of electricity per year, based on the following calculation:

A x B x C = Megawatt Hours of electricity produced per year

where: A = ... The number of hours in a year: 8,760 hours

B = ... The capacity factor, which takes into account the intermittent nature of the wind, the availability of wind turbines and array losses etc. A capacity factor of 35%[9] is applied here

C = ... Rated output of the wind farm: 57.6 MW

The 176,602 MWh of electricity produced by the Proposed Project would be sufficient to supply 42,048 Irish households with electricity per year, based on the average Irish household using 4.2 MWh[10] of electricity.

For context, the 2022 Census of Ireland recorded a total of 46,441 occupied households in Co. Clare. Therefore, per annum, based on a capacity factor of 35%, the Proposed Project would therefore produce sufficient electricity for approximately 90.5% of all households in Co. Clare.

[9] *EirGrid, 2022 Enduring Connection Policy 2.2 Constraints Report for Solar and Wind* ECP-2-2-Solar-and-Wind-Constraints-Report-Area-D-v1.0.pdf (eirgridgroup.com)
The Proposed Project is located within the D wind region for Ireland with an associated 2020 capacity factor of 36%.
10 March 2017 CER (CRU) Review of Typical Consumption Figures Decision https://www.cru.ie/document_group/review-of-typical-consumption-figures-decision-paper/

If the installed capacity is the minimum proposed (50.4MW), the electricity produced by the Proposed Project would be sufficient to supply approximately 36,792 households

2.3.2 Access Roads

2.3.2.1 Road Construction Types

To provide access within the Proposed Wind Farm site and to connect the wind turbines and associated infrastructure existing 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 as stated in the Fehily Timoney & Company's (FTC) *Peat and Spoil Management Plan* in **Appendix 4** of this report:

1. *Buildability considerations.*
2. *Serviceability requirements for construction and wind turbine delivery and maintenance vehicles.*
3. *Minimise excavation arisings.*
4. *Requirement to minimise disruption to peat hydrology.*

The access roads on site will be constructed as excavate and replace (founded) type construction, which, given the ground conditions and type of terrain present, this is deemed the most appropriate construction approach. Floating road construction will also be undertaken on the Proposed Project.

The Proposed Wind Farm site makes use of the existing Wind Farm site road network insofar as possible. It is proposed to upgrade 4.5 kilometres of existing roads and tracks, and to construct 5.4 kilometres of new access road on the Proposed Wind Farm site. Areas such as wide junctions and proposed hardstands will also be used as passing bays throughout the construction phase of the proposed Wind Farm.

See the Peat & Spoil Management Plan (**Appendix 4**) for the Proposed Project for further detail on how peat and spoil will be managed during road construction. The general construction methodology for the above, is presented in the Peat & Spoil Management Plan in **Appendix 4**.

2.3.3 Onsite 110kV Electrical Substation and Control Buildings

It is proposed to construct one 110 kV electrical substation within the Proposed Wind Farm site. The proposed onsite 110kV electrical substation will have a control building, associated electrical plant and equipment, a wastewater holding tank and will be constructed in accordance with EirGrid substation specifications and requirements. The construction and electrical components of the electricity substation will be to EirGrid specifications[11]. Further details regarding the connection between the site substation itself and then on to the national electricity grid are provided in **Appendix 3**.

The footprint of the proposed onsite electrical substation compound measures 16,571 square metres, and will include 2 no. wind farm control buildings and the electrical substation components necessary to consolidate the electrical energy generated by each wind turbine, and export that electricity from the wind farm substation to the national grid. The onsite substation will be a permanent development under the ownership of the ESB/EirGrid. The layout and elevation of the onsite substation is provided in **Appendix 3**.

[11] *EirGrid Document XDS-GFS-00-001-R4 110/220/400kV Substation General Requirements (2019). Available at: https://cms.eirgrid.ie/sites/default/files/publications/6-110-220-400-kV-Substation-General-Requirements.pdf*

The substation compound will be surrounded by an approximately 2.6-metre-high steel palisade fence, and internal fences will also segregate different areas within the main substation.

2.3.3.1 Wind Farm Control Buildings

Two wind farm control buildings will be located within the substation compound. The EirGrid Control Buildings will be located towards the south of the substation compound and will measure 25 metres by 18 metres and 8.38 metres in height. The Independent Power Provider (IPP) Control Building located at the eastern edge of the substation compound will measure 10.6 metres by 20.15 metres and 6.92 metres in height. Layout and elevation drawings of the control buildings are included in **Appendix 3**.

The wind farm control buildings will include welfare facilities for the staff that will work on the Proposed Project during the operational phase of the project. Toilet facilities will be installed with a low-flush cistern and low-flow wash basin. Due to the specific nature of the Proposed Project there will be a very small water requirement for occasional toilet flushing and hand washing and therefore the water requirement of the Proposed Project does not necessitate a potable source. It is proposed to harvest rainwater from the roofs of the buildings, and if necessary, bottled water will be supplied for drinking.

It is proposed to manage wastewater from the staff welfare facilities in the control building by means of a sealed storage tank, with all wastewater being tankered off site by permitted waste collector to wastewater treatment plants. It is not proposed to treat wastewater on-site, and therefore the EPA's 2009 'Code of Practice: Wastewater Treatment and Disposal Systems Serving Single Houses (p.e. 10)' does not apply. Similarly, the EPA's 1999 manual on 'Treatment Systems for Small Communities, Business, Leisure Centres and Hotels' also does not apply, as it too deals with scenarios where it is proposed to treat wastewater on-site.

Such a proposal for managing the wastewater arising on site has become 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 Pleanalá 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. The wastewater storage tank alarm will be part of a continuous stream of data from the site's turbines, wind measurement devices and electrical 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 site.

2.3.4 Internal Site Cabling

Each turbine will be connected to the on-site electrical substation via an underground 33 kV (kilovolt) electrical cable. Fibre-optic cables will also connect each wind turbine to the wind farm control building in the onsite 110kV electrical substation compound. The electrical and fibre-optic cables running from the turbines to the onsite substation compound will be run in cable ducts approximately 1.3 metres below the ground surface, in the roadways. The route of the cable ducts will follow the access track from each turbine location to the proposed onsite 110kV electrical substation.

2.3.5 Meteorological Mast

One permanent meteorological mast is proposed as part of the Proposed Project. The meteorological mast will be equipped with wind monitoring equipment at various heights. The mast will be located at the southwest of the Proposed Wind Farm site (E508187 N668430). The mast will be a self-supporting slender structure 100 metres in height with a lightning mast on top. The mast will be constructed on a hard standing area measuring 14m by 21m and accommodate the crane that will be used to erect the mast. The meteorological mast and hardstanding areas will be located alongside both existing and proposed new roads.

2.3.6 Proposed Wind Farm Site Entrance

It is proposed to access the Proposed Wind Farm site via an upgrading of the existing site junction (including the installation of security fencing and gates) off the L-6254 local road to the east of the site. This entrance will be upgraded and widened to facilitate the delivery of the construction materials and turbine components. The site entrance was subject to Autotrack assessment to identify the turning area required. Appropriate sightlines will be established to the north and south of the proposed site entrance for the safe egress of traffic. The visibility splays at the main site entrance off the L-6254, will be provided and kept clear of obstruction during construction, operation and decommissioning phases. The proposed works will result in a permanent site access from the local road, which will also form the sole entrance to the Proposed Wind Farm site during the operational phase.

2.3.7 Borrow Pits

2.3.7.1 Description

It is proposed to develop 2 No. on-site borrow pits as part of the Proposed Project. It is proposed to obtain a majority of all rock and hardcore material that will be required during the construction of the Proposed Project from the on-site borrow pits. Usable rock may also be won from other infrastructure construction including the substation and the turbine base excavations. Some aggregate material due to a requirement for specific grade, quality or quantity may be sourced from suitable licenced quarries around the Site.

Borrow pit No. 1 located approximately 155 metres to the northeast of Turbine No. 8, measures approximately 12,715m^2 in area and is intended to supply hardcore materials for the construction of the turbines and site roads in the south of the site.

Borrow pit No. 2 located approximately 150 metres to the northwest of Turbine No. 5, measures approximately 11,450m^2 in area and is intended to supply hardcore materials for the construction of turbines in the north of the site and access roads thereto.

At certain turbine foundation and hardstand locations, depending on local ground conditions, the extraction of rock may be required in order to obtain a level construction area. Any rock obtained from a turbine location will be used to supply the hardcore materials requirement for that turbine's hardstand and access road.

Post-construction, the borrow pit areas will be permanently secured and a stock-proof fence will be erected around the borrow pit areas to prevent access to these areas. Appropriate health and safety signage will also be erected on this fencing and at locations around the fenced area.

2.3.8 Peat and Spoil Management Plan

The purpose of the Peat and Spoil Management Plan (**Appendix 4**) is to provide a management plan, with particular reference to peat stability for the construction phase of the Proposed Project. The report describes how peat and spoil, which will be excavated from infrastructure locations such as turbine bases, hardstands, borrow pits and roads, will be handled and placed/reinstated onsite. The report also provides construction details for the types of roads which will be put in place at the site and proposed peat and spoil placement/reinstatement areas which will be developed at the site. The full Peat and Spoil Management Plan, as produced by Fehily Timoney and Company (FT) is available in **Appendix 4**.

2.3.9 Temporary Construction Compounds

2 no. temporary construction compounds are proposed for the Proposed Wind Farm site to allow for storage and refuelling of plant and machinery within the Site. Construction compound 1 is the largest compound and measures approximately 73 metres by 45 metres and 3,280 m^2 in area. The second compound measures approximately 73 metres by 35 metres and 2,530 m^2 in area. Both construction compound 1 and 2 are located approximately 350m and 365m northeast of Turbine 6 respectively.

The construction compounds will consist of temporary site offices, staff facilities and car-parking areas for staff and visitors. Construction materials and turbine components will be brought directly to the proposed turbine locations following their delivery to the site. Temporary port-a-loo 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. The nearest licenced primary wastewater treatment plant is located in Kilmihil, approximately 5.6km South of the Proposed Project.

2.3.10 Turbine Component and Abnormal Load Delivery

It is proposed that large wind turbine components will be delivered to the Proposed Wind Farm site from Shannon Foynes Port, via the N69 National Secondary Road. A summary of the turbine delivery route (102km in length) is as follows:

- From the access road serving Shannon Foynes Port the route turns south onto the N69 National Secondary Road at the existing priority junction.
- From this point the route heads east on N69 for approximately 33.5km.
- The route then turns left at the Dock Road West Roundabout to head north onto the N18/M18 for approximately 30km.
- From here the route takes and exit off the M18 onto the N85 National Road and heads west for 3.8km towards the Rocky Road Roundabout where it then turns off onto the N68 heading northwest for approximately 260m, taking the first exit south on the Kilrush Roundabout .
- The route continues northeast on the N68 for approximately 23.1km passing through the village of Lissycasey before taking the right turn at the N68/R484 junction.
- From this point the route travels along the R484 for 4.7km into the village of Kilmihil, where the vehicle will perform a reverse manoeuvre through a temporary access road across two agricultural fields, into the townland of Kilmihil, onto the L-2074 local road.
- The route then heads north on the L-2074 through Kilmihil before merging onto the L-2082, travelling along the L-2082 for approximately 4km and passing through an agricultural field in the townland of Castlepark.
- The route then passes through an agricultural field north of Scoil Mhichíl in the townland of Cahermurphy, onto the L-2048, where it travels for approximately 290m before turning left onto the L-6254 for approximately 1.2km before reaching the site entrance.

The Turbine Delivery Route will run from Foynes Port to the Proposed Wind Farm site entrance off the L-6254. All deliveries of abnormally sized loads will be made using An Garda Síochána escorts and local transient traffic management measures put in place by the haulage company.

The delivery route for general construction traffic including site staff and heavy goods vehicles (HGVs) delivering general construction materials to the site may vary depending on the location of the suppliers used for concrete and other materials required to construct the Proposed Project. Based on the location of suppliers in the vicinity of the Proposed Project it is intended that Construction traffic will utilise the Turbine Delivery Route insofar as possible.

2.3.11 Ancillary Forestry Felling

2.3.11.1 Tree Felling

A proportion of the Proposed Wind Farm site is occupied by existing commercial forestry. As part of the Proposed Project, tree felling will be required within and around the development footprint to allow the construction of turbine bases, bat buffers, access roads, and the other ancillary infrastructure.

It should be noted that forestry on the Proposed Wind Farm site was originally planted as a commercial crop and will be felled in the future should the Proposed Project proceed or not.

A total of 21 hectares of commercial forestry is to be permanently removed and approximately 0.79 hectares temporarily felled to facilitate the temporary construction compounds and subsequently replanted within the footprint of the Proposed Wind Farm site following the completion of the construction phase, and 56.3 hectares to be permanently felled as part of the Hen Harrier Enhancement Plan. Approximately 41.5 hectares of forestry will be replanted and in line with the Forestry Act 2014, the Forestry Regulations 2017 (SI 191/2017) and as per the Forest Service's policy on granting felling licenses for wind farm developments.

The tree felling activities required as part of the Proposed Project will be the subject of a Felling Licence application to the Forest Service, in accordance with the Forestry Act 2014, 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 wind farm be submitted with the felling licence applications; therefore, the felling licenses cannot be applied for until such time as planning permission is obtained for the Proposed Project.

2.3.11.2 Replanting

Detailed consideration of the approach to afforestation requirements associated with the Proposed Project is attached in Appendix 2-3 of the accompanying EIAR. It should be noted that the clearfelling of trees in the State requires a felling licence, as discussed above. The associated afforestation of alternative lands equivalent in area to those lands being permanently clearfelled is also subject to licensing ('afforestation licensing'). The Forest Service of the Department of Agriculture, Food & the Marine is Ireland's national forest authority and is responsible for all forest licensing. In light of the foregoing and for the purposes of this project, the developer commits that the location of any replanting (alternative afforestation) associated with the project will be greater than 10km from the Proposed Wind Farm site and outside any potential hydrological pathways of connectivity i.e., outside the catchment within which the Proposed Project is located. Areas of forestry proposed to be permanently clearfelled for this Wind Farm are located in upland, marginal land locations.

Some of these areas are of low forest productivity due to the nature of the environment and will be replaced by alternative afforestation which will be of higher forest productivity, corresponding to the latest afforestation guidelines, thus providing increased carbon sequestration.

On this basis, it is reasonable to conclude that there will be no more than imperceptible indirect, or in-combination effects associated with the replanting. In addition, the developer commits to not commencing the project until both felling and afforestation licences are in place and this ensures the afforested lands are identified, assessed and licensed appropriately by the relevant consenting authority.

2.3.12 Hen Harrier Enhancement Plan

2.3.12.1 Hen Harrier Enhancement Areas

Based on the precautionary assumption that hen harrier will avoid all areas within 250 metres of a turbine and having calculated the amount of foraging habitat available on an annual basis (taking into account standard forestry management practices for forested areas), the estimated quantum of habitat from which hen harrier will be displaced is c.62 hectares. It is proposed to mitigate the impact of the Proposed Project on foraging hen harrier through enhancement of the surrounding lands. A total of 123.7ha of enhancement lands is being proposed for the benefit of hen harrier which will result in a net gain of suitable foraging and breeding habitat of c.60ha being provided by the Proposed Project. It is proposed to enhance habitats such as heath/bog, forestry, scrub and grassland through the permanent removal of non-native commercial forestry plantations planted on underlying peatland habitat, retention and reinstatement of beneficial landscape features (e.g. scrub and hedgerows), through rush management, and through the management of grazing timing and intensity. The presence of breeding and foraging hen harrier adjacent to these lands, as well as the habitats present within the enhancement and adjoining lands were factors which were used to identify these areas as habitats suitable for enhancement.

2.3.12.2 Management Methodology – Hen Harrier Enhancement Areas

Management prescriptions to be implemented by the Applicant at areas subject to forestry removal will include:

- Permanent forestry removal (c. 56.3ha)
- Erect livestock-proof fencing to prevent overgrazing.
- Approximately 26 No. plots of 0.2ha patches of scrub planted
- Self-seeded conifers hand-pulled/cut to ground level every five years.
- Eradication of invasive species within the enhancement lands.

Management prescriptions to be implemented by the Applicant at areas subject to farmland management will include:

- Implementation of a rotational grazing regime
- Establishing linear strips of wildlife cover via sowing/planting of wildlife seed crops
- Planting of scrub and hedgerow
- Rush management
- Cessation of fertiliser application

2.3.13 Site Drainage Measures

The protection of the watercourses within and surrounding the site, and downstream catchments that they feed is of utmost importance in considering the most appropriate drainage proposals for the site of the Proposed Project. The Proposed Project's drainage design has therefore been proposed specifically with the intention of having no significant negative effect on the water quality of the site and its associated rivers and lakes, and consequently no significant effect on downstream catchments and ecological ecosystems.

No routes of any natural drainage features will be altered as part of the Proposed Project and turbine locations and associated new roadways were originally selected to avoid natural watercourses, and existing roads are to be used wherever possible. There will be no direct discharges to any natural watercourses, with all drainage waters being dispersed as overland flows. All discharges from the proposed works areas will be made over vegetation filters at an appropriate distance from natural watercourses. The distance will vary between 5-20m depending on local slope, the nature of local soil

deposits and also the type of vegetation present. Buffer zones around the existing natural drainage features have been used to inform the layout of the Proposed Project.

2.3.13.1 Existing Drainage Features

The routes of any natural drainage features will not be altered as part of the Proposed Project. Turbine locations have been selected to avoid natural watercourses. It is proposed that 1 no. new stream crossings and 1 no. existing stream crossing upgrade will be required to facilitate the Proposed Wind Farm. There will be no direct discharges to natural watercourses. All discharges from the proposed works areas or from interceptor drains will be made over vegetated ground at an appropriate distance from natural watercourse and lakes.

Minimum buffer zones of 50m around the existing natural drainage features have informed the layout of the Proposed Wind Farm and are indicated on the drainage design drawings in **Appendix 6**. Where artificial drains are currently in place in the vicinity of proposed works areas, these drains may have to be diverted around the proposed works areas to minimise the amount of water in the vicinity of works areas. Where it may not be possible to divert artificial drains around proposed work areas, the drains will be blocked to ensure sediment laden water from the works areas has no direct route to other watercourses. Where drains have to be blocked, the blocking will only take place after an alternative drainage system to handle the same water has been put in place. Existing artificial drains in the vicinity of existing site roads will be maintained in their present location where possible. If it is expected that these artificial drains will receive drainage water from works areas, check dams will be added (as specified below) to control flows and sediment loads in these existing artificial drains. If road widening or improvement works are necessary along the existing roads, where possible, the works will take place on the opposite side of the road to the drain.

2.3.13.2 Construction Drainage Design

Drainage water from any works areas on the Proposed Wind Farm site will not be directed to any natural watercourses within the site. Two distinct methods will be employed to manage drainage water within the site. The first method involves keeping clean water clean by avoiding disturbance to natural drainage features, minimising any works in or around artificial drainage features, and diverting clean surface water flow around excavations and construction areas. The second method involves collecting any drainage waters from works areas within the site that might carry silt or sediment, to allow attenuation and settlement prior to controlled diffuse release. Proposed Grid Connection drainage measures are discussed below.

The drainage design is intended to maximise erosion control, which is more effective than having to control sediment during high rainfall. Such a system also requires less maintenance. The area of exposed ground will be minimised. The drainage measures will prevent runoff from entering the works areas of the site from adjacent ground, to minimise the volume of sediment-laden water that has to be managed. Sediment laden run-off from any construction area will be isolated from natural clean run-off.

The proposed site drainage drawings are provided in **Appendix 6** for more information.

2.4 Development Components of the Grid Connection

The planning application for the Proposed Project under Section 182A of the Planning and Development Act 2000, as amended, comprises the connection to the national electricity grid from the proposed onsite 110kV electrical substation at the eastern end of the Proposed Wind Farm site (as part of the Proposed Wind Farm site planning application under Section 37E of the Planning and Development Act 2000, as amended) to the existing Moneypoint 110kV substation via underground

110kV electrical cabling, measuring approximately 25 km in total, located within the public road corridor and agricultural land for the entirety of the route.

The following sections will describe each of the development components within this planning application in further detail, in the following order:

- Grid Connection Cabling
- Grid Connection Site Drainage

2.4.1 Grid Connection Cabling

A connection between the Proposed Wind Farm site and the national electricity grid will be necessary to export electricity from the proposed wind farm.

It is proposed to construct a 110kV substation at the eastern end of the Proposed Wind Farm site and to connect from here to the existing Moneypoint 110kV substation via underground 110kV electrical cabling, measuring approximately 25 km in total, utilising public local road networks and private agricultural lands. The Proposed Grid Connection route is briefly described below.

2.4.1.1 Proposed Grid Connection route

The underground cable route initially begins at Moneypoint 110 kV Substation in the townland of Carrowdotia South, Co. Clare. The route begins by exiting the existing ESB Moneypoint 110kV GIS substation along its northern boundary. The proposed cable will route north within consented private lands and converges onto the N67 national roadway travelling within the curtilage of this public road before it converges onto the L-6154. The Proposed Grid Connection takes a left turn before converging onto the L-2054 local roadway. It then travels in a northern direction. The route merges onto the L-2050 local roadway, before it takes a right turn onto the L-6132 and subsequently onto the L-6130. The route then takes a right turn traversing along the L-6118. The Proposed Grid Connection continues east within the L-6118 local roadway before it takes a left turn in a western direction traversing along the L-2044. The route continues northwest along the L-2044 before it takes a right turn along the L-2074. The route continues north along the L-6182 before meeting the R-484 regional road within the townland of Leitrim.

The Proposed Grid Connection routes across the R-484 Regional roadway onto the L-6194. The route carries right in a northeastern direction onto the L-6186 local roadway. From here the route continues northeast along the L-6186 before reaching the L-2082 local road within the townland of Cahermurphy. The proposed route crosses the L-2082 before entering the private lands. The route continues north before entering onto the L-2048. The route traverses this local roadway before taking a left turn in a northern direction onto the L-6254 local roadway. From there, the route travels north before taking a left turn in a western direction into the Site. The proposed 110kV UGC routes along an access track for approx. 215m before reaching Cahermurphy West Substation.

The Proposed Grid Connection Route will feature 36 no. Joint Bays, 6 no. Bridge Crossings and 18 no. Culvert Crossings. Horizontal Directional Drilling will be required at 12 locations. This underground Grid Connection route is illustrated in Figure 2-2 above. 24km of the Proposed Grid Connection will be located within public roads, 0.84km in private lands and 0.16km within roads located within the Proposed Wind Farm site.

2.4.1.2 Construction Methodology - Grid Connection Cable Trench from onsite substation to the National Grid

The proposed Grid Connection works will require a road opening licence from Clare County Council. A Traffic Management Plan (TMP) will be agreed with the local authority prior to the commencement of the development. The TMP will outline the location of traffic management signage, together with the location of any necessary road closures and the routing of appropriate diversions. Where diversions are required, these will be agreed with the local authority in advance of the works commencing.

The underground 110kV grid connection ducting will consist of 1 No. trench, the trench will contain 3 No. 160mm diameter HDPE power ducts, 2 No. 125mm diameter HDPE communications ducts and 1 no. 125mm diameter earth continuity duct to be installed in an excavated trench, typically 825mm wide by 1315mm deep, with variations on this design to adapt to service crossings and watercourse crossings, etc. The communications duct will accommodate a fibre cable to allow communications between the Cahermurphy 110kV substation and Moneypoint 110kV GIS substation. The inclusion of 1 No. earth continuity conductor duct will also be required. The ducts will be installed, the trench reinstated in accordance with landowner/ Clare County Council specification. Once all are satisfied, then the electrical cabling/fibre cable is pulled through the installed ducts in approximately 750/850m sections. Construction method statements and templates will be implemented to ensure that the underground HV ducting is installed in accordance with the correct requirements, materials, and specifications of ESBN and EirGrid.

The Grid Connection route utilises public local road networks (24,068m), Wind Farm Site Roads (160m), and private lands (787m). The following methodology will be followed during the trenching works:

- The Contractor, and their appointed Site Manager, will prepare a targeted Method Statement concisely outlining the construction methodology and incorporating all mitigation and control measures included within the planning application and accompanying reports and as required by planning conditions where relevant;
- All existing underground services shall be identified on site prior to the commencement of construction works;
- At watercourse crossings, the contractor will be required to adhere to the environmental control measures detailed in the CEMP (see **Appendix 5**);
- Where the cable route intersects with culverts, the culvert will remain in place (where possible) and the ducting will be installed either above or below the culvert to provide minimum separation distances in accordance with ESB and Uisce Éireann specifications[12];
- Traffic management measures will be implemented as described in the Traffic Management chapter of the accompanying EIAR.
- Excavated material will be temporarily stockpiled onsite for re-use during reinstatement. Stockpiles will be restricted to less than 2m in height. Stockpiles will be located a minimum of 15m from surface water features and all stockpiling locations will be subject to approval by the Site Manager and Project Ecological Clerk of Works (ECoW);

[12] *ESB Document PE424-F7001-R00-001-001 HV Cables – General Construction Methodology (2012). Available at: http://eirgridlaoiskilkenny.ie/media/pdf/21%20The%20Final%20Planning%20Application%20(Jan%202013)/Vol%203B%20Environmental%20Supplemantal%20Documents/Supplementary%20Environmental%20Documents/4%20Underground%20Cables%20Construction%20Methodology.pdf*
Uisce Éireann Document IW-CDS-5050-03 Code of Practice for Water Infrastructure (2020). Available at: https://www.water.ie/docs/connections/faqs/Water-Code-of-Practice.pdf
EirGrid Documents CDS-GFS-00-001-R1 110kV, 220kV and 400kV Underground Cable Functional Specification (2021). Available at: https://www.eirgrid.ie/site-files/library/EirGrid/110kV-Underground-Cable-Functional-Specification-General-Requirements.pdf

- Excavated material will be employed to backfill the trench and any surplus material will be transported off site and disposed at a fully authorised soil recovery site;
- The excavated trench will be dewatered if required, from a sump installed within the low section of the opened trench. Where dewatering is required, dirty water will be fully and appropriately attenuated, through silt bags, before being discharged to vegetation or surface water drainage feature;
- Where required, grass will be reinstated by either seeding or by replacing with grass turves;
- No more than a 100m section of trench will be opened at any one time. The second 100m will only be excavated once the majority of reinstatement has been completed on the first;
- The excavation, installation and reinstatement process will take on average of 1 no. day to complete a 100m section;
- Where the ducting is being installed in a roadway, temporary reinstatement may be provided to allow larger sections of road to be permanently reinstated together.

For the trenching and ducting works, the following step by step methodology will apply:

- Grade, smooth and trim trench floor when the required 1315mm depth and 825mm width have been obtained.
- Place bedding layer of Cement Bound Granular Mixture B (CBGM B) material in accordance with the specification and compact it so that the compacted thickness is as per the drawings.
- Lay the bottom row of ducts in trefoil formation as detailed on the design drawings. Use spacers as appropriate to establish horizontal duct spacing. Fit a secure cap / bung to the end of each duct run to prevent the ingress of dirt or water.
- Carefully surround and cover ducts with CBGM B in accordance with the design drawings and specifications and thoroughly compact without damaging ducts.
- Place cable protection strips on compacted CBGM B directly over the ducts.
- Lay the top row of ducts onto the freshly compacted CBGM B including the cable protection strips above the bottom row of ducts. Place a secure cap at the end of each duct to prevent the ingress of dirt or water.
- Carefully surround and cover ducts with CBGM B material in accordance with the drawings and thoroughly compact without damaging ducts.
- Place red cable protection strip on top of compacted CBGM B over each set of ducts as shown on the drawings.
- Place and thoroughly compact CBGM B material or Clause 804 backfill or soil backfill as specified and place warning tape at the depth shown on the drawings.
- For concrete and asphalt/bitmac road sections, carry out immediate permanent reinstatement in accordance with the specification and to the approval of the local authority and/or private landowners, unless otherwise agreed with local authorities.
- Clean and test the ducts in accordance with the specification by pulling through a brush and mandrel. Install 12 mm polypropylene draw rope in each duct and seal all ducts using robust duct end seals fitted with rope attachment eyes in preparation for cable installation at a later date. All the works should be witnessed by ESBN Clerk of Works (ECoW) as required.

The proposed on-site 110kV electrical substation will be connected to the existing 110kV Moneypoint electrical substation via underground 110kV electrical cabling which will be constructed to EirGrid specifications[13], guided by the methodology outlined above.

[13] *https://www.eirgrid.ie/site-files/library/EirGrid/110kV-Underground-Cable-Functional-Specification-General-Requirements.pdf*

Plate 2-1 Typical Cable Trench View

2.4.1.2.1 Existing Underground Services

Any underground services encountered along the grid cable routes will be surveyed for level and the ducting will pass over the service provided adequate cover is available. A minimum clearance of 300 mm will be required between the bottom of the ducts and the service in question. If the clearance cannot be achieved the ducting will pass under the service and again 300 mm clearance between the top of the communications duct and bottom of the service will be achieved. In deeper excavations an additional layer of marker tape will be installed between the communications duct and top level yellow marker tape. If the required separation distances cannot be achieved then a number of alternative options are available such as using steel plates laid across the width of the trench and using 35N concrete surrounding the ESB ducts where adjacent services are within 600mm, with marker tape on the side of the trench. Back fill around any utility services will be with dead sand/pea shingle.

2.4.1.2.2 Marker Posts

Surface cable markers will be placed along the route where cable depth is unavoidably shallow, due to constraints such as existing services, to indicate the precise location of the UGC. These markers will be metallic plates in accordance with ESBN and EirGrid standards.

Marker posts will be used on non-roadway routes to delineate the cable route and joint bay positions. Corrosion proof aluminium triangular danger sign, with 700mm base, and with centred lightning symbol, on engineering grade fluorescent yellow background shall be installed in adequately sized concrete foundations. Marker post shall also be placed in the event that burial depth is not to standard. Siting of marker posts to be dictated by ESBN as part of the detailed design process.

2.4.1.2.3 Joint Bays

Joints Bays are to be installed approximately every 650m - 850m along the UGC route to facilitate the jointing of 2 No. lengths of 110kV UGC. Joint Bays are 6m x 2.5m x 2.05m pre-cast concrete structures installed below finished ground level. Joint Bays will be located in the non-wheel bearing strip of roadways, however given the narrow profile of local roads this may not always be possible.

Where possible, joint bays will be located in areas where there is a natural widening/wide grass margin on the road in order to accommodate easier construction, cable installation and create less traffic

congestion. During construction the joint bay locations will be completely fenced off, and once they have been constructed, they will be backfilled until cables are being installed.

In association with joint bays, Communication Chambers will be installed at every joint slab location to facilitate communication links. Earth Sheath Link Chambers are also be installed at every joint bay along the cable route. Earth Sheath Links are used for earthing and bonding cable sheaths of underground power cables, so that the circulating currents and induced voltages are eliminated or reduced. Earth Sheath Link Chambers and Communication Chambers are located in close proximity to joint bays. Earth Sheath Link Chambers and Communication Chambers will be pre-cast concrete structures with an access cover at finished surface level.

2.4.1.2.4 *Major Watercourse Crossings*

The cable route will involve 6 No. bridge crossings, of which 5 no. will be horizontal directional drilling (HDD) crossings and will not interact with the existing bridge structure. As there is insufficient cover and depth in the bridge to cross with the bridge deck at these 5 locations, HDD will be required.

The underground cable will encounter 18 no. water culverts along the route, of which 2 no. Culverts are proposed to be replaced with an adequately sized HDPE Twin Wall pipe. Existing culverts will be crossed using open trenching with either an undercrossing or overcrossing. A confirmatory site survey of all culverts has been completed as part of this phase of the project prior to planning to confirm the crossing methods. The locations of the bridges and culverts are shown on the site layout drawings included in **Appendix 3**.

Inland Fisheries Ireland have published guidelines relating to construction works along water bodies entitled "*Requirements for the Protection of Fisheries Habitats during Construction and Development Works at River Sites (Eastern Regional Fisheries Board, 2004)*", and these guidelines will be adhered to during the construction of the Proposed Project.

2.4.2 Grid Connection Site Drainage

Please refer to Section 2.4.1.2 above for details on trenching and drainage methodology.

3. CHARACTERISTICS OF THE RECEIVING ENVIRONMENT

3.1 Hydrology

3.1.1 Regional and Local Hydrology and Hydrogeology

Based on WFD/EPA regional catchment mapping, the Proposed Wind Farm is located in the Mal Bay catchment, while the Proposed Grid Connection exists within the Mal Bay catchment and the Shannon Estuary North catchment located further to the south.

The Proposed Hen Harrier Offsetting & Enhancement Lands and the Turbine Delivery Route (TDR) are located within the Mal Bay catchment.

A regional hydrology map is shown as Figure 3-1.

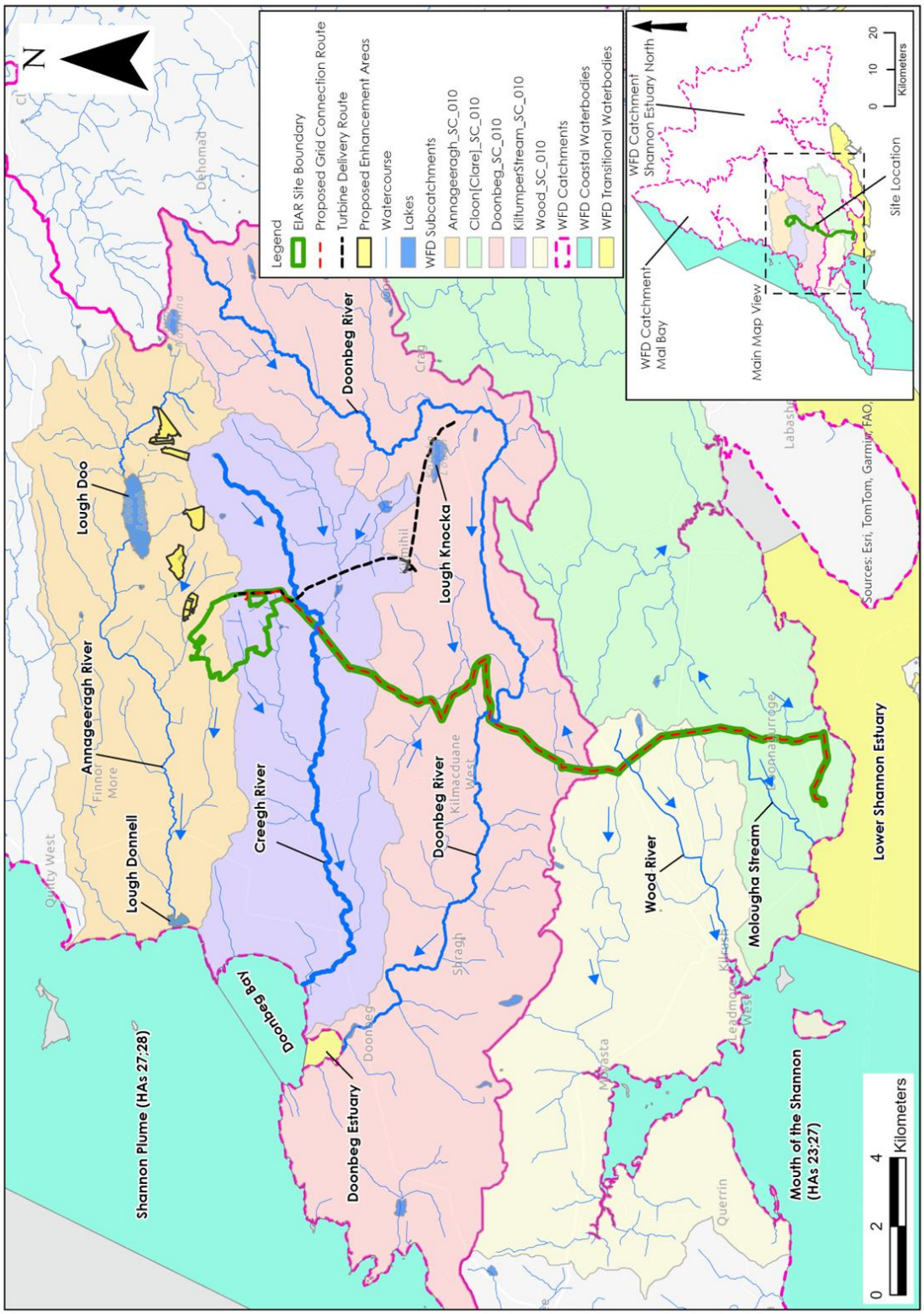
On a more local scale the northern portion of the Proposed Wind Farm (including 2 no. proposed turbine locations; T1 and T2) is located within the Annageeragh River sub-catchment (Annageeragh_SC_010) while the southern portion of the Proposed Wind Farm (including 6 no. proposed turbines; T3 to T8 and the proposed Substation) is located within the Creegh River sub-catchment (Kiltumperstream_SC_010).

The Annageeragh River originates from Doo Lough which is located approximately 2.6km to the northeast of the Proposed Wind Farm. There is no Proposed Wind Farm infrastructure within the Doo Lough catchment apart from the proposed Hen Harrier Offsetting & Enhancement Lands which are located to the south of Doo Lough and drain to the north towards the lough.

On leaving the proposed 110kV substation at the Proposed Wind Farm, the Proposed Grid Connection cable passes through the Creegh River catchment (6.2km distance), the Doonbeg River catchment (10.2km distance), the Wood River catchment (4.4km distance) and the Crompaun River catchment (5.4km distance).

Temporary works areas associated with the TDR are located in the Creegh River catchment and Doonbeg River catchment.

Figure 3-1 Regional hydrology map of the Proposed Project site.



3.2 Results of Baseline Ecological Surveys

A total of 17 habitats were recorded within or adjacent the proposed Wind Farm site. The Grid Connection component of the Proposed Project is confined to public roads which are delineated by treelines, hedgerows, grassy verges, and private infrastructure. Table 3-1 contains the habitats noted within the site of the Proposed Project.

Table 3-1 Habitats recorded within and adjacent to the Proposed Project

Habitat Name	Fossitt Code
Conifer plantation	WD4
Recently felled woodland	WS5
Wet heath (peatland mosaic)	HH3
Cutover bog (peatland mosaic)	PB4
Lowland blanket bog (peatland mosaic)	PB3
Wet grassland	GS4
Scrub	WS1
Mixed broadleaved woodland	WD1
Spoil and bare ground	ED2
Recolonising bare ground	ED3
Eroding/upland rivers	FW1
Drainage ditches	FW4i
Buildings and artificial surfaces	BL3
Dry meadows and grassy verges	GS2
Hedgerows	WL1
Treelines	WL2
Stonewalls and other stonework	BL1
Mixed broadleaved/conifer woodland	WD2
Improved agricultural grassland	GA1
Earth banks	BL2
Dense bracken	HD1
Acid oligotrophic lake	FL2
Wet willow alder ash woodland	WN6

3.2.1 Habitats within the Proposed Wind Farm Site

3.2.1.1 Conifer plantation (WD4) & Recently felled woodland (WS5)

The Proposed Wind Farm site is dominated by conifer forestry. This includes Conifer plantation (WD4) of various ages, including clear-felled areas, semi-mature and mature stands, and immature pre-thicket areas of both first and second rotation. Sitka spruce (*Picea sitchensis*) is the dominant species, with lodgepole pine (*Pinus contorta*) and larch (*Larix* sp.) also present in smaller quantities at a number of locations. Stands of mature conifer trees are interspersed with immature stands, typically comprised of Sitka spruce. At some locations small areas of willow (*Salix* spp.) Scrub (WS5) and birch (*Betula* sp.) woodland are present as small pockets within the Conifer plantation (WD4). These areas were not of sufficient size to warrant individual mapping within the provided habitat map, as per Smith et al. (2011) guidance (requires minimum size of 400m^2). Where forestry has been recently felled, these areas were best classified as Recently felled woodland (WS5).

The ground layer of the majority of mature Conifer plantation (WD4) in the Proposed Wind Farm site is typically species poor, with vegetation comprising predominantly of bryophytes such as *Thuidium tamariscinum* and *Kinbergia praelonga*. Other occasional species include honeysuckle (*Lonicera periclymenum*) and bracken (*Peridium aquilinum*). Much of the Conifer plantation (WD4) within the

Site has been planted on peatland and therefore the field layer of immature plantation comprises peatland species including ling heather (*Calluna vulgaris*), purple moor grass (*Molinia caerulea*) and bilberry (*Vaccinium myrtillus*) as well as other species including Yorkshire fog (*Holcus lanatus*), sweet vernal grass (*Anthoxanthum odoratum*), common bent (*Agrostis capillaris*), soft rush (*Juncus effusus*) and tormentil (*Potentilla erecta*).

Vegetation of clear-felled areas typically comprised of rosebay willowherb (*Chamaenerion angustifolium*), Yorkshire fog, soft rush (*Juncus effusus*), cross-leaved heath (*Erica tetralix*), common sorrel (*Rumex acetosa*) and foxglove (*Digitalis purpurea*).

Much of the Proposed Wind Farm infrastructure is located within Conifer plantation (WD4) or Recently felled woodland (WS5) habitat including Turbines 1, 3, 4, 6, and 7, new access roads, and one of the proposed borrow pits.

Examples of Conifer plantation (WD4) throughout the site are provided in Plate 3-1, Plate 3-2, Plate 3-3 and Plate 3-4.

Plate 3-1 Example of mature confider plantation (WD4) within the Proposed Wind Farm site.

Plate 3-2 Example of second rotation Conifer plantation (WD4) within the Proposed Wind Farm site.

Plate 3-3 Example of Conifer plantation (WD4) adjacent to Wet grassland (GS4)/ Wet heath (HH3) habitat.

Plate 3-4 Example of Conifer plantation (WD4) and Recently felled woodland (WS5) within the Proposed Wind Farm site.

3.2.1.2 Peatland Habitats

In areas where Conifer plantation (WD4) is not the dominant habitat type there are several areas of peatland habitat located within the Proposed Wind Farm site. These areas have been extensively altered by drainage and/or peat cutting. The peatlands primarily occur as a mosaic of degraded Wet heath (HH3), Lowland blanket bog (PB3) and Cutover bog (PB4) and often grade into Wet grassland (GS4), which dominates the surrounding agricultural lands. The development has been specifically designed to avoid these peatland habitat mosaics, given the ecological value of such habitats. However, there are some locations where the infrastructure unavoidably intersects with peatland habitats, which are described below.

T5 is located in an area of Cutover bog (PB4) which has regenerated into a mosaic of Wet heath (HH3) and Lowland blanket bog (PB3), which also presented as Wet grassland (GS4) in sections (Plate 3-5 and Plate 3-6). Species composition here was dominated by hare's tail cottongrass (*Eriophorum vaginatum*), ling heather (Calluna vulgaris), deergrass (*Tricophrum germanicum),* bell heather (*Erica cinerea*), bog myrtle (*Myrica gale*), *Sphagnum capillifolium,* and purple mooregrass (*Molinia caerulea*). Other species recorded include black bog rush (Schoenus nigricans), cross-leaved heath (*Erica tetralix*), heath rush (*Juncus squarrosus*), tormentil, *Sphagnum capillifolium, Sphagnum papillosum* and *Sphagnum subnitens, Racomitrium languinosum* and *Cladonia sp.*

Given the high biodiversity value of these habitat mosaics, albeit degraded due to historical turbary and grazing, they conform to the following Annex I habitats of the EU Habitats Directive, due to the presence of multiple indicator species for each:

- Northern Atlantic wet heaths with *Erica tetralix* [4010]
- Blanket bogs [7130]

Large areas of Wet heath (HH3) are also present to the north and south of T5. These are heavily grazed and trampled in places and interspersed with areas of rush-dominated Wet grassland (GS4) to the north of T5 and Cutover bog (PB4) with very small areas of Lowland blanket bog (PB3) to the south. These areas will not be impacted by the proposed infrastructure.

In addition to the above, there are peatland habitats within the Site that have been completely avoided by the Proposed Wind Farm. Cutover bog (PB4) and heath mosaics were recorded at various locations throughout the Proposed Wind Farm site with small areas of Lowland blanket bog (PB3) located within these mosaics (Plate 3-7).

Plate 3-5 Regenerated Cutover bog (PB4) located at T5, which now presents as a mosaic of Lowland blanket bog (PB3) and Wet heath (HH3) mosaic.

Plate 3-6 Example of degraded Wet heath (HH3) habitat to the north of T5, outside of the construction footprint.

Plate 3-7 Example of Lowland blanket bog (PB3) which occurs as small pockets in a mosaic with Cutover bog (PB4) and Wet heath (HH3) (outside development footprint)

3.2.1.2.1 Wet grassland (GS4)

Wet grassland (GS4) is common throughout the Proposed Wind Farm site where heath and forestry habitat do not dominate. This habitat was recorded within the footprint of Turbines 2 (Plate 3-8), 5, 6 and 8 (Plate 3-9), the proposed substation (Plate 3-10), the southern proposed borrow pit and met mast, and some sections of new access roads. Wet grassland (GS4) within the Proposed Wind Farm is dominated by soft rush, Yorkshire fog and common bent grass (*Agrostis capillaris*). Other species present in this habitat include sweet vernal grass, common sorrel, broad-leaved dock (*Rumex obtusifolius*), creeping buttercup, marsh thistle (*Cirsium palustre*) and tormentil. The Wet grassland (GS4) habitat within the site is subject to low intensity grazing by cattle and sheep.

The majority of T2 is located within rush dominated Wet grassland (GS4) which is of low ecological value. However, a small section of the turbine handstand has overlap with an area of Wet grassland (GS4) which supported higher diversity, including orchids (*Orchis* spp.), Jointed rush (*Juncus articulatus),* purple moor grass and sedge species (*Carex* spp.). Given the higher biodiversity value of this Wet grassland (GS4) area, it conforms to the following Annex I habitats of the EU Habitats Directive, due to the presence of multiple indicator species:

- Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]

Plate 3-8 Rush dominated Wet grassland (GS4) habitat recorded within the footprint of T2

Plate 3-9 Wet grassland (GS4) recorded within the footprint of T8.

Plate 3-10 Rush and grass dominated Wet grassland (GS4) habitat recorded at the proposed substation location.

3.2.1.2.2 Scrub (WS1)

Scrub (WS1) was present at various locations throughout the Proposed Wind Farm site, recorded delineating Conifer plantation (WD4), existing forestry tracks (Plate 3-11), and as a mosaic with recently felled woodlands (WS5) (conifer). This was generally recorded in small areas of old clear-fell and was in pockets that were too small to be accurately mapped. This habitat type was largely dominated by bramble (*Rubus fruticosus* agg.), with frequent to occasional rowan (*Sorbus aucuparia*) goat willow (*Salix capra*), rosebay willowherb and foxglove (*Digitalis purpurea*).

Plate 3-11 Example of bramble scrub recorded adjacent to unused forestry track and Conifer plantation (WD4).

3.2.1.2.3 Mixed Broadleaved Woodland (WD1)

Small areas of Scrub (WS1) within the site, particularly adjacent to Wet grasslands (GS4) and Conifer plantation (WD4), have matured into willow and birch Mixed broadleaved woodland (WD1) (Plate 3-12). Additionally, a small area of Mixed broadleaved woodland (WD1) was recorded on the northwestern boundary of the Proposed Wind Farm site along the edges of existing forestry track (Plate 3-13). The woodland is dominated by sycamore (*Acer pseudoplatanus*) and beech (*Fagus sylvatica*) with occasional larch (*Larix* sp.). Understorey species include hard fern (*Blechnum spicant*) and bracken. The woodland lies outside the infrastructure footprint.

Plate 3-12 Established willow and birch woodland adjacent to Conifer plantation (WD4) within the Proposed Wind Farm site.

Plate 3-13 Mixed broadleaved woodland (WD1) with beech and sycamore within the Proposed Wind Farm site.

3.2.1.2.4 Spoil and Bare Ground (ED2)

The Proposed Wind Farm site is accessed by a network of existing forestry tracks categorised as Spoil and bare ground (ED2) (Plate 3-14). Upgrading of the existing tracks is proposed across the site as shown in **Appendix 3**. Forestry track verges consist of Dry meadows and grassy verges (GS2) habitat, Wet grassland (GS4) and peatland habitat vegetation. Species recorded mainly comprised of Yorkshire fog, ribwort plantain (*Plantago lanceolata*), red clover (*Trifolium pratense*), selfheal (*Prunella vulgaris*), foxglove, tormentil, soft rush, hard rush (*Juncus inflexus*), ling heather, and purple moor grass.

Plate 3-14 Forestry track classified as Spoil and bare ground (ED2) delineated by grassy verges and Scrub (WS1).

3.2.1.2.5 Recolonising Bare Ground (ED3)

A number of existing forestry and land access tracks have become overgrown with vegetation and are classified as Recolonising bare ground (ED3) (Plate 3-15). Whereas some were drier in nature and supported species including hawkbits (*Leontodon* sp), colt's-foot (*Tussilago farfara)* and ragwort (*Senecio jacobea*), others contained vegetation typical of Wet grassland (GS4) and/or heath including ling heather, purple moor grass, Yorkshire fog (*Holcus lanatus*), soft rush, as well as bryophytes including *Sphagnum* sp. and *Hylcomium splendens*.

Plate 3-15 Forestry track classified as Recolonising bare ground (ED3)

3.2.1.2.6 Eroding/Upland Stream (FW1)

A number of watercourses drain the Proposed Wind Farm site. The northern section of the site is drained by the Lissyneillan Stream. The southern section of the site is drained by the Knocknahila More stream and the Clooneenagh Stream. The majority of the streams were <1m in width, shallow with a cobble, gravel and silt substrate with no instream macrophytes. Flow ranged from stagnant to fast and water clarity was poor. The majority of the streams were bordered by forestry and the banks were heavily vegetated with bramble (*Rubus fruticosus agg.*), soft rush, Yorkshire fog, common bent grass, purple moor grass, nettle (*Urtica dioica*) and wild angelica (*Angelica sylvestris*) (Plate 3-16). The rivers have been subject to detailed assessment downstream of the Proposed Wind Farm site and the results are presented in the Aquatic Report in **Appendix 2**.

Plate 3-16 Example of a highly vegetated Eroding upland stream (FW1) in the Proposed Wind Farm site (the Knocknahila More), which presented as a small first order stream.

3.2.1.2.7 Drainage ditches (FW4)

A number of Drainage ditches (FW4) are located within the Site. These were predominantly located within Conifer plantation (WD4) and occasionally along roadsides. An example of a typical drainage ditch within the Site is shown in Plate 3-17. All drainage within the Proposed Wind Farm site is presented in **Appendix 6**.

Plate 3-17 Typical example of a Drainage Ditch (FW4) recorded in association with Conifer plantation (WD4).

3.2.2 Habitats within and adjacent to the proposed Grid Connection

3.2.3 Habitats along the Grid Connection Route Options

The Proposed Grid Connection route will exit the wind farm site to the east, the majority of which will be laid within existing road infrastructure, until it reaches Moneypoint on the River Shannon estuary.

The majority of the Proposed Grid Connection route will predominantly follow roads classified as Buildings and artificial surfaces (BL3) (Plate 3-18), with small sections (northern most extent within the Proposed Wind Farm site and southern most extent within Moneypoint Power station lands) within roads of Spoil and bare ground (ED2) (Plate 3-19).

Habitats recorded adjacent to the Proposed Grid Connection route included typical verge habitats such as Dry meadows and grassy verges (GS2), Hedgerows (WL1), Treelines (WL2), Conifer plantation (WD4), Stonewalls and other stonework (BL1), Mixed broadleaved/conifer woodland (WD2), and Buildings and artificial surfaces (BL3). Watercourse crossings along the route, which were bridges, were comprised of Buildings and artificial surfaces (BL3) and Stonewalls and other stonework (BL1), such as that in Plate 3-21.

The Proposed Grid Connection route will cross 24 no. mapped watercourses, which were small Lowland depositing streams (FW2) (Plate 3-20) or Upland eroding rivers (FW1) (Plate 3-21). Smaller watercourses were typically bordered by highly vegetated banks, comprised of scrub and treeline species such as bramble, willow, alder and conifers (Plate 3-22 and Plate 3-23).

Full details on watercourses along the Proposed Grid Connection are provided in **Appendix 2**.

Plate 3-18 Existing roadway corridor to the east of the Proposed Wind Farm site classified as Buildings and Artificial surfaces (BL3) with Grassy verges (GS2) and Hedgerows (WL1).

Plate 3-19 Example of access track of Spoil and bare ground (ED2) within which small section of the grid route will be lain.

Plate 3-20 Lowland depositing stream along the grid route

Plate 3-21 Faster flowing upland eroding stream recorded along the grid route

Plate 3-22 Small first order stream highly vegetated by adjacent forestry

Plate 3-23 Completely vegetated watercourse, dominated by bramble Scrub (WS1).

Three small sections of the Proposed Grid Connection route will leave public road infrastructure and will traverse third party agricultural grasslands. This is primarily to facilitate Horizontal Directional Drilling (HDD) launch and receptors compounds. Where the grid exits road infrastructure, existing field entrances are utilised where possible.

The off-road sections of the Proposed Grid Connection and proposed HDD launch and receptors compounds are located within highly modified habitat of low ecological value. These included areas of Improved agricultural grassland (GA1) (Plate 3-24), Dry meadows and grassy verges (GS2) (Plate 6-25), and Recolonising bare ground (ED3) (Plate 6-26).

Plate 3-24 Example Improved agricultural grassland (GA1) where proposed HDD compounds will be located

Plate 3-25 Example Dry meadow and grass verge (GS2) where proposed HDD compounds will be located

Plate 3-26 Example of recolonising bare ground (ED3) where proposed HDD compounds will be located

3.2.4 Habitats along the Turbine Delivery Route

Works such as road widening are sometimes required along proposed turbine delivery routes to accommodate the large turbine components and associated vehicles seeking to access wind farm sites. The proposed turbine delivery route for the Proposed Wind Farm has been the subject of a route assessment to determine if any works are required along its length. A description of the TDR is summarised below.

The proposed turbine delivery route (TDR) for the Proposed Wind Farm is predominantly located within existing public road infrastructure. The route will will run from Foynes Port to the Proposed Wind Farm site entrance off the L-6254. The majority of the TDR is comprised of existing regional roads, classified as Buildings and artificial surfaces (BL3), which are bordered by a combination of both Hedgerows (WL1) and Treelines (WL2) (Plate 3-27), Improved agricultural grasslands (GA1), Wet grassland (GS4) (Plate 3-28), and Conifer plantation (WD4), in addition to Buildings and artificial surfaces (BL3), Earth banks (BL2), and Dry meadows and grassy verges (GS2).

To facilitate the TDR, there will be requirement for accommodation works at seven locations, requiring minor temporary vegetation clearance. These temporary minor losses include small sections of Hedgerows (WL1), Wet grassland (GS4) and Earth banks (BL2). As these works are temporary, all vegetation removal will be reinstated post construction.

Plate 3-27 Hedgerow (WL1) and Treeline (WL2) recorded along the proposed TDR.

Plate 3-28 Example of Wet grassland (GS4) where accommodation works are required.

3.2.4.1 Habitats within the Proposed Hen Harrier Offsetting & Enhancement Lands (HHEL)

As part of the Proposed Wind Farm, a total of 123.7 ha of enhancement lands to the east, northeast of the wind farm site is being proposed for the benefit of hen harrier, a Key Ornithological Receptor (KOR) of Ch. 7: Birds. It is proposed to enhance habitats such as heath/bog, forestry, scrub and grassland through the retention and reinstatement of beneficial landscape features (e.g. scrub and hedgerows), through rush management, and through the management of grazing timing and intensity.

The current land use of the HHELs is commercial forestry and agriculture, dominated by Conifer plantation (WD4) and mosaics of Improved agricultural grassland (GA1), and Wet grassland (GS4). Representative photos of these habitats are provided in Plate 3-29, Plate 3-30). Conifer plantation (WD4) was dominated by Sitka spruce (*Picea sitchensis*), and lodgepole pine (*Pinus contorta*) with small sections dominated by Japanese larch (*Larix kaempferi*).

The grassland mosaic recorded was dominated by species such as rushes (*Juncus* spp.), meadow-grasses (*Poa* spp.), Yorkshire fog (*Holcus lanatus*) and creeping buttercup (*Ranunculus repens*). Additional flora recorded in these grassland areas included thistles (*Cirsium arvense* and *Cirsium vulgare*), bramble (*Rubus fruticosus* agg.), broad-leaved dock (*Rumex obtusifolius*), dandelion (*Taraxacum*

vulgaria), jointed rush (*Juncus articulatus*), sheep's sorrel (*Rumex acetosella*), autumn hawkbit (*Leontodon autumnalis*), fescues (*Festuca* spp.) and clovers (*Trifolium* spp.).

The eastern portion of the proposed enhancement area was dominated by a mosaic of Lowland blanket bog (PB3) and Wet Heath (HH3) habitats (Plate 3-31). Key species included ling heather (*Calluna vulgaris*), cross-leaved heath (*Erica tetralix*), purple moor grass (*Molinia caerulea*), tormentil (*Potentilla erecta*), devil's-bit scabious (*Succisa pratensis*), deergrass (*Trichophorum germanicum*), jointed rush (*Juncus articulatus*), and various sedge species (*Carex* spp.) and bryophytes such as *Dicranum scoparium, Polytrichum* sp., *Sphagnum rubellum*, *Sphagnum papillosum*.

Other notable habitats included areas of Dense Bracken (HD1), with existing farm tracks, categorized as Spoil and Bare Ground (ED2) and Recolonizing Bare Ground (ED3), also observed. Several Drainage ditches (FW4) were recorded within the Wet grassland (GS4) habitats, often bordered by willows (*Salix* spp.) and alder (*Alnus glutinosa*). A large area of Scrub (WS1) habitat was recorded beside an existing road which included species such as gorse (*Ulex europaeus*), goat willow (*Salix caprea*), various rushes (*Juncus* spp.), bramble (*Rubus fruticosus* agg.), and willowherb (*Chamaenerion angustifolium*) (Plate 3-32). Stone walls and other stonework (BL1) consisting of derelict houses was recorded within the eastern proposed enhancement area. Eroding/upland rivers (FW1) was recorded along the western border of the western proposed enhancement area (Plate 3-33).

An Acid oligotrophic lake (FL2) was also recorded within the HHELs, with Reed and large sedge swamp (FS1) also recorded on its fringes, with willows, bulrush (*Typha latifolia*) and common reed (*Phragmites australis*) present (Plate 3-34).

Plate 3-29 Conifer plantation (WD4) recorded within the HHELs.

Plate 3-30 Example of mosaic of Improved agricultural grassland (GA1) and Wet grassland (GS4) within the HHELs.

Plate 3-31 Example of mosaic of Lowland blanket bog (PB2) and Wet heath (HH3) habitat within the HHELs.

Plate 3-32 Example of Scrub (WS1) within the HHELs.

Plate 3-33 River located on the western side of the HHELs.

Plate 3-34 Acid oligotrophic lake (FL2) located within the HHELs.

3.2.5 Otter surveys

No otter breeding or resting sites were recorded within the Proposed Project site during the surveys undertaken, including those undertaken as part of the aquatic surveys (Section 4.3 of **Appendix 2**: Aquatic Report). Several recordings of regular spraint were recorded on watercourses along the Proposed Grid Connection route, as detailed in the Aquatic Report, indicating foraging and commuting behaviour of this species. No indications of otter were recorded within the Proposed Wind Farm site but small watercourses may provide potential foraging and commuting habitat for this species, at least on occasion. Due to the forested nature of the site, the fisheries potential of the upper reaches of watercourses within the site is poor and therefore otter are more likely to utilise the lower reaches of the watercourses, downstream of the Proposed Wind Farm site.

3.2.6 Aquatic surveys

The results of the detailed aquatic surveys are provided in the Aquatic Report in **Appendix 2.**

The majority of the surveyed watercourses in the vicinity of the Proposed Wind Farm site were natural or semi-natural in character with good summer flows and supported species of high conservation value. This included Atlantic salmon and lamprey, in addition to European eel. However, these watercourses have hydrological connectivity to coastal European Sites only, which are not designated for freshwater QI species, nor any fisheries. Whilst several watercourses along the Proposed Grid Connection route were hydrologically connected to downstream European Sites designated for fisheries, many of these were small in nature, historically modified and of naturally lower aquatic value. There is no hydrological connectivity between the Proposed Project and any SAC populations of Freshwater pearl mussel.

3.2.7 Invasive species

During field surveys, a search for Invasive Alien Species (IAS) listed under the 'Third Schedule' of Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) and the 'First Schedule' of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) was conducted. One species - Rhododendron (*Rhododendron ponticum)* - was recorded as small immature stands within the Proposed Wind Farm site, with one infestation recorded within the footprint of T5. Multiple additional stands of Rhododendron was recorded within the Hen Harrier Offsetting & Enhancement Lands.

Along the Proposed Grid Connection route, two stands of Japanese knotweed (*Reynoutria japonica*) and one stand of Rhododendron were recorded on third party lands, directly adjacent to existing road

infrastructure (which is part of the grid connection route). A further stand of Rhododendron was also recorded along the Proposed Grid Connection route.

Full details of all scheduled invasive species recorded during the surveys, with locations and extent of infestation, are provided in the Invasive Species Management Plan (ISMP) in **Appendix 7.**

3.2.8 Bird Surveys

Bird species recorded during the multidisciplinary walkover surveys, of both the Proposed Wind Farm site and the Proposed Grid Connection, were typically an assemblage of common species typical of agricultural and rural environments.

Regards European Sites, the Proposed Wind Farm site is located within foraging range of three SCIs of surrounding Special Areas of Protection (SPAs) (SNH, 2016), consisting of the following designated as part of the River Shannon and River Fergus Estuaries SPA and/or the Mid-Clare Coast SPA:

- Cormorant (*Phalacrocorax carbo*) [A017]
- Black-headed Gull (*Chroicocephalus ridibundus*) [A179]
- Barnacle Goose (*Branta leucopsis*) [A045]

During the targeted bird surveys undertaken, just one observation of cormorant and four observations of black-headed gull were recorded within the Proposed Wind Farm site. There were no recordings of barnacle goose. It was therefore determined that the Proposed Wind Farm site is not of significance to any SCI population associated with any European Site, given how infrequently the Site is utilised by these species. Further detail are proved in **Appendix 1**.

The Proposed Grid Connection route is dominated by existing road infrastructure which does not provide significant supporting habitat for any SCI associated with nearby European Sites. However, it was observed that adjacent habitats, such as agricultural fields particularly along the southern section of the route, provided potential high tide roosting/foraging habitat for SCIs of the River Shannon and River Fergus Estuaries SPA. Whilst no SCIs of this SPA were recorded along the Proposed Grid Connection route during the surveys undertaken, given the suitability of adjacent lands, it is likely they support SCIs of the SPA, at least on occasion.

4. STAGE 1 – 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) on the 11/11/2025.
- All European Sites[14] 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. The Proposed Project does not overlap with any 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 4-1.
- 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 Proposed Projects 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.
- 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 consisted of those that are listed in **Appendix 8**.

[14] *All European Sites have been considered in this assessment, including proposed and/or candidate European Sites which are not yet officially designated. For the purposes of this report proposed and candidate European Sites have been given the same consideration to designated European Sites.*

Map Legend

- EIAR Site Boundary
- Special Area of Conservation (SAC)
- Special Protected Area (SPA)
- WFD Hydrological Catchments
- WFD River Waterbodies

Drawing Title
European Designated sites within the likely zone of Influence

Project Title
Cahermurphy West Wind Farm

Drawn By	Checked by
AMc	PD
Project No.	Drawing No.
230843	Figure 4-1
Scale	Date
1:150,000	16.01.2026

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

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 on the 03/02/2026	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for likely significant effects
Special Areas of Conservation (SAC)				
Lower River Shannon SAC (002165) Approx. distance from Proposed Wind Farm site **9.87 km** Approx. distance from Proposed Grid Connection route: **86m** at its nearest point Approx. Hydrological Distance from Proposed Project: **1 km**	› Sandbanks which are slightly covered by sea water all the time [1110] › Estuaries [1130] › Mudflats and sandflats not covered by seawater at low tide [1140] › Coastal lagoons [1150] › Large shallow inlets and bays [1160] › Reefs [1170] › Perennial vegetation of stony banks [1220] › Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] › *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	Detailed conservation objectives for this site (Version 1, August 2012), were reviewed as part of the assessment and are available at: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002165.pdf	The Proposed Project is located entirely outside of this Designated Site and therefore, no potential exists for direct effects. No Qualifying Interests (QIs) habitats were recorded within or adjacent to the Proposed Project and therefore, there is no potential for direct *ex-situ* effects on QI habitats of this European Site. However, suitable habitat for otter was recorded along the Proposed Grid Connection route, which is in close proximity to this SAC which provides suitable commuting and foraging habitat for aquatic and marine QI species. There is, therefore, potential for significant *ex-situ* direct effects on QI species of the SAC via disturbance/displacement during construction. The potential for significant indirect effects on this SAC was also considered. Surface water connectivity was identified between the Proposed Project and this SAC via several mapped EPA watercourses which overlap the Proposed Grid Connection route. These streams have downstream connectivity to this SAC, which also lies partially within the same surface water catchment (Shannon Estuary North). Overlapping watercourses with the potential to act as conduits for pollution include the following Order 1 streams: Burrane Lower [EPA Code: 27B87], the Molougha [EPA Code: 27M19], the Knockerry east [EPA Code: 27K49], the Kilcarroll Stream [EPA Code: 27K06], Wood 27 [EPA Code: 27W01], as well as another unnamed Order 1 stream. The closest of these streams to this SAC is the Burrane Lower, which discharges into the Lower River Shannon SAC approximately 1km downstream. Additionally, the southern section of the Proposed Grid Connection route is located within the same ground water body as this SAC, the Kilrush GWB.	**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 on the 03/02/2026	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for likely significant effects
	Callitricho-Batrachion vegetation [3260] › Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] › Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0] › *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] › *Petromyzon marinus* (Sea Lamprey) [1095] › *Lampetra planeri* (Brook Lamprey) [1096] › *Lampetra fluviatilis* (River Lamprey) [1099] › *Salmo salar* (Salmon) [1106] › *Tursiops truncatus* (Common Bottlenose Dolphin) [1349] › *Lutra lutra* (Otter) [1355]		Taking a precautionary approach and in the absence of best practice and mitigation, hydrological connectivity was identified between the Proposed Project and this SAC via six mapped watercourses. Therefore, potential exists for likely significant effects via the deterioration of water quality arising from the runoff of pollutants into surface waters during the construction and decommissioning phase of the Proposed Project. Regarding potential effects from Invasive species, both Japanese knotweed and Rhododendron were recorded along the Proposed Grid Connection route, which is hydrologically connected to this SAC. There is, therefore, potential for significant effects on this SAC as a result of the spread of invasive species as a result of the Proposed Project. **A 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.** No potential pathway for likely significant effects on this European Site was identified during the operational phase of the Proposed Project due to the nature of operation and maintenance of the Proposed Grid Connection, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects.	
Carrowmore Dunes SAC [002250] Approx. distance from Proposed	› Reefs [1170] › Embryonic shifting dunes [2110] › Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]	Detailed conservation objectives for this site (Version 1, March 2014), were reviewed as part of the	The Proposed Project is located entirely outside of this Designated Site and therefore, no potential exists for direct effects. No QI habitats or significant supporting habitat for any QI species associated with the SAC were recorded within or adjacent to the Proposed Project and therefore, there is no potential for direct *ex-situ* effects on this European Site. Supporting habitat for the single QI species of the SAC, the narrow-mouthed	**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 on the 03/02/2026	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for likely significant effects
Wind Farm site **7.1 km** Approx. distance from Proposed Grid Connection route: **8.4 km** Approx. Hydrological Distance from Proposed Project: **14 km**	› Fixed coastal dunes with herbaceous vegetation (grey dunes)* [2130] › Narrow-mouthed Whorl Snail (*Vertigo angustior*) [1014]	assessment and are available at: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002250.pdf	whorl snail, includes sand dune grasslands and marshes, which are not present within the Proposed Project Site. The potential for significant indirect effects on this SAC was also considered. There are two mapped watercourses, the Knocknahila More [EPA Code: 28K15] and Clooneenagh [EPA Code: 28C08], located within the Proposed Wind Farm site, which discharge into this SAC approx. 14km downstream. Additionally, the Proposed Grid Connection route will cross two watercourses, the Creegh [EPA Code: 28C02] and Cloonwhite_North [EPA Code: 28C30], that drain into this SAC. Additionally, the Proposed Wind Farm and the northern section of the Proposed Grid Connection route are located within the same ground water body as this SAC, the Miltown Malbay GWB. Therefore, potential exists for significant indirect effects on this SAC via deterioration of water quality arising from the runoff or percolation of pollutants into surface or groundwaters during the construction, operational and decommissioning phases of the Proposed Project. Regarding potential effects from Invasive species, both Japanese knotweed and Rhododendron were recorded along the Proposed Grid Connection route, which is hydrologically connected to this SAC. There is, therefore, potential for significant effects on this SAC as a result of the spread of invasive species as a result of the Proposed Project. **A 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.**	
Carrowmore Point to Spanish	› Coastal lagoons* [1150] › Reefs [1170]	Detailed conservation	There will be no direct effects as the Proposed Project is located entirely outside of this designated site.	**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 on the 03/02/2026	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for likely significant effects
Point and Islands SAC [001021] Approx. distance from Proposed Wind Farm site **6.3 km** Approx. distance from Proposed Grid Connection route: **8.28 km** Approx. Hydrological Distance from Proposed Project: **7.4 km**	› Perennial vegetation of stony banks [1220] › Petrifying springs with tufa formation (Cratoneurion) [7220]	objectives for this site (Version 1, April 2014), were reviewed as part of the assessment and are available at: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO001021.pdf	No QI habitats associated with the SAC were recorded within or adjacent to the Proposed Project site and therefore, there is no potential for direct *ex-situ* effects on this European Site. The potential for significant indirect effects on this SAC was also considered. There is one mapped watercourse, the Lissyneillan [EPA Code: 28L10], located within the Proposed Wind Farm site, which discharges into this SAC approx. 14km downstream. Additionally, the Proposed Wind Farm and the northern section of the Proposed Grid Connection route are located within the same ground water body as this SAC, the Miltown Malbay GWB. Therefore, potential exists for significant indirect effects on this SAC via deterioration of water quality arising from the runoff of pollutants into these watercourses during the construction, operational and decommissioning phases of the Proposed Project. Regarding potential effects from Invasive species, no significant effect is anticipated on this SAC, as it is not hydrologically connected to the Proposed Grid Connection route. Whilst Rhododendron was recorded within the Proposed Wind Farm site, the single infestation is over 500m from the closest mapped watercourses. **A complete source pathway receptor chain was identified and in the absence of mitigation, there is potential for the Proposed Project works 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.**	
Tullaher Lough and Bog SAC [002343]	› Active raised bogs* [7110] › Degraded raised bogs still capable of natural regeneration [7120]	Detailed conservation objectives for this site (Version 1, December 2016),	There will be no direct effects as the Proposed Project is located entirely outside of the designated site. The potential for significant indirect effects on this SAC was also considered.	**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 on the 03/02/2026	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for likely significant effects
Approx. distance from Proposed Wind Farm site **13.2 km** Approx. distance from Proposed Grid Connection route: **9.2 km** Approx. Hydrological Distance from Proposed Project: **n/a**	› Transition mires and quaking bogs [7140] › Depressions on peat substrates of the Rhynchosporion [7150]	were reviewed as part of the assessment and are available at: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002343.pdf	Given the terrestrial nature of the QIs of this SAC and the intervening distance between the Proposed Project and the SAC, no potential for significant indirect effects on the SAC was identified. No pathway for likely significant direct or indirect effect was identified, when considering the Proposed Project on its own, and following an assessment of the plans and projects listed in **Appendix 8**, no potential for cumulative or in combination effects with any other development has been 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 site is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.**	
Kilkee Reefs SAC (002264) Approx. distance from Proposed Wind Farm site **16.7 km** Approx. distance from Proposed Grid Connection route: **14.7 km**	› Large shallow inlets and bays [1160] › Reefs [1170] › Submerged or partially submerged sea caves [8330]	Detailed conservation objectives for this site (Version 1, August 2014), were reviewed as part of the assessment and are available at: https://www.npws.ie/sites/default/files/protected-	There will be no direct effects as the Proposed Project is located entirely outside of this designated site. No QI habitats associated with the SAC were recorded within or adjacent to the site of the Proposed Project and therefore, there is no potential for direct ex-situ effects on this European Site. The potential for significant indirect effects on this SAC was also considered. Considering the absence of direct hydrological connectivity, and the associated distance between the Proposed Project site and the SAC, no potential for significant indirect effects on the SAC was identified.	**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 on the 03/02/2026	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for likely significant effects
Approx. Hydrological Distance from Proposed Project: **No direct connectivity**		sites/conservation_objectives/CO002264.pdf	No pathway for likely significant direct or indirect effect was identified, when considering the Proposed Project on its own, and following an assessment of the plans and projects listed in **Appendix 8**, no potential for cumulative or in combination effects with any other development has been 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 site is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.**	
Special Protection Area (SPA)				
River Shannon and River Fergus Estuaries SPA [004077] Approx. distance from Proposed Wind Farm site **13.1 km** Approx. distance from Proposed Grid Connection route: **86m** Approx. Hydrological	› Cormorant (*Phalacrocorax carbo*) [A017] › Whooper Swan (*Cygnus cygnus*) [A038] › Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] › Shelduck (*Tadorna tadorna*) [A048] › Wigeon (*Anas penelope*) [A050] › Teal (*Anas crecca*) [A052] › Pintail (*Anas acuta*) [A054] › Shoveler (*Anas clypeata*) [A056] › Scaup (*Aythya marila*) [A062] › Ringed Plover (*Charadrius hiaticula*) [A137]	Detailed conservation objectives for this site (Version 1, September 2012) were reviewed as part of the assessment and are available at: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf	The Proposed Project is located entirely outside of this Designated Site and therefore, no potential exists for direct effects. No significant supporting wetland habitat for any Special Conservation Interest (SCI) of the SPA was recorded within the Proposed Project site. The Proposed Grid Connection route, the element of the Proposed Project in closest proximity to this SPA, will be lain within existing road, which does not provide significant supporting habitat for the SCIs of the SPA, which favour mudflats, estuaries, and agricultural fields. However, given the presence of potential high tide roosting habitat adjacent to the southernmost section of the Proposed Grid Connection route and the proximity of these works to the SPA, taking a precautionary approach, there is potential for *ex-situ* disturbance/displacement to SCIs of this SPA, during the construction phase of the Proposed Project. As the Proposed Wind Farm site is located within the core foraging range of populations of black headed gull associated within this SPA, taking a highly precautionary approach, there is potential for *ex-situ* direct effects on this SPA, as a result of collision risk with the proposed turbines.	**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 on the 03/02/2026	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for likely significant effects
Distance from Proposed Project: **1 km**	› 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] › Greenshank (*Tringa nebularia*) [A164] › Black-headed Gull (*Chroicocephalus ridibundus*) [A179] › Wetland and Waterbirds [A999]		The potential for significant indirect effects on this SAC was also considered. Surface water connectivity was identified between the Proposed Project and this SPA via several mapped EPA watercourses which overlap the Proposed Grid Connection route. These streams have downstream connectivity to this SPA, which also lies partially within the same surface water catchment (Shannon Estuary North). Overlapping watercourses with the potential to act as conduits for pollution include the following Order 1 streams: Burrane Lower [EPA Code: 27B87], the Molougha [EPA Code: 27M19], the Knockerry east [EPA Code: 27K49], the Kilcarroll Stream [EPA Code: 27K06], Wood 27 [EPA Code: 27W01], as well as another unnamed Order 1 stream. The closest of these streams to this SPA is the Burrane Lower, which discharges into this SPA approximately 1km downstream. Additionally, the southern section of the Proposed Grid Connection route is located within the same ground water body as this SPA, the Kilrush GWB. Therefore, following the precautionary principle and in the absence of best practice and mitigation, a potential pathway for significant indirect effects on supporting wetland habitat for the SCIs of this SPA was identified. There is potential for the deterioration of water quality within the SPA, arising from the runoff of pollutants into surface water systems from the construction phase of the Proposed Project. Regarding potential effects from Invasive species, both Japanese knotweed and Rhododendron were recorded along the Proposed Grid Connection route, which is hydrologically connected to this SPA. There is, therefore, potential for significant effects on this SPA as a result of the spread of invasive species as a result of the Proposed Project. **A complete source pathway receptor chain was identified and in the absence of mitigation, there is potential for the Proposed Project works to result in likely**	

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 on the 03/02/2026	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for likely significant effects
			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.	
Mid-Clare Coast SPA [004182] Approx. distance from Proposed Wind Farm site **6.2 km** Approx. distance from Proposed Grid Connection route: **8.6 km** Approx. Hydrological Distance from Proposed Project: **7.4 km**	› Cormorant (*Phalacrocorax carbo*) [A017] › Barnacle Goose (*Branta leucopsis*) [A045] › Ringed Plover (*Charadrius hiaticula*) [A137] › Sanderling (*Calidris alba*) [A144] › Purple Sandpiper (*Calidris maritima*) [A148] › Dunlin (*Calidris alpina*) [A149] › Turnstone (*Arenaria interpres*) [A169] › Wetland and Waterbirds [A999]	Detailed conservation objectives for this site (Version 1, September 2014), were reviewed as part of the assessment and are available at: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004182.pdf	There will be no direct effects as the Proposed Project is located outside of this European Site. No significant supporting wetland habitat for any SCI of the SPA was recorded within or adjacent to the Proposed Project. However taking a precautionary approach, the site of the Proposed Project lies within the 25 km core foraging range of Barnacle Goose (SNH, 2016), and therefore, there is potential for *ex-situ* disturbance/displacement to SCIs of this SPA, during the construction phase of the Proposed Project. No disturbance/displacement on other SCIs is anticipated, as the Proposed Project is located outside their core foraging ranges. As the Proposed Wind Farm site is located within the core foraging range of populations of barnacle geese associated within this SPA, taking a highly precautionary approach, there is potential for *ex-situ* direct effects on this SPA, as a result of collision risk with the proposed turbines. The potential for significant indirect effects on this SAC was also considered. Surface water connectivity was identified between the Proposed Project and this SPA via several mapped EPA watercourses which overlap the Proposed Project, including both the Proposed Wind Farm site and the Proposed Grid Connection route. These streams have downstream connectivity to this SPA, Overlapping watercourses with the potential to act as conduits for pollution include the following: Lissyneillan [EPA Code: 28L10], the Knocknahila_More [EPA Code: 28K15], the Clooneenagh Stream [EPA Code: 28C08], and the Creegh [EPA Code: 28C02]. Additionally, the Proposed Wind Farm and the northern section of the Proposed Grid Connection route are located within the same ground water body as this SPA, the Miltown Malbay GWB.	**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 on the 03/02/2026	Conservation Objectives	Identification of Source-Pathway-Receptor chain	Potential for likely significant effects
			Therefore, following the precautionary principle and in the absence of best practice and mitigation, a potential pathway for significant indirect effects on supporting wetland habitat for the SCIs of this SPA was identified. There is potential for the deterioration of water quality within the SPA, arising from the runoff of pollutants into surface water systems from the construction phase of the Proposed Project. Regarding potential effects from Invasive species, both Japanese knotweed and Rhododendron were recorded along the Proposed Grid Connection route, which is hydrologically connected to this SPA. There is, therefore, potential for significant effects on this SPA as a result of the spread of invasive species as a result of the Proposed Project. **A complete source pathway receptor chain was identified and in the absence of mitigation, there is potential for the Proposed Project works 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 Stage 1 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:

- Lower River Shannon SAC [002165],
- Carrowmore Dunes SAC [002250],
- Carrowmore Point to Spanish Point and Islands SAC [001021],
- River Shannon and River Fergus Estuaries SPA [004077], and
- Mid-Clare Coast SPA [004182].

As a result, an Appropriate Assessment 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 of this report.

5. STAGE 2- NATURA IMPACT STATEMENT (NIS)

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:

- Lower River Shannon SAC [002165]
- Carrowmore Dunes SAC [002250]
- Carrowmore Point to Spanish Point and Islands SAC [001021]
- River Shannon and River Fergus Estuaries SPA [004077]
- Mid-Clare Coast SPA [004182]

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.
3. Provide the results of any additional survey work that was necessary to inform an impact assessment.

5.1 Identification of relevant Qualifying Features and Desk Study

5.1.1 Lower River Shannon SAC [002165]

The potential for impacts on this SAC were identified in Section 4.1 above. The identified pathways for effect consisted of the following:

- Deterioration of water quality via the indirect runoff or spillage of pollutants during construction due to the grid connection component of the Proposed Project being hydrologically connected to this SAC.
- Disturbance/displacement to QI species which may utilising suitable habitat adjacent to the site of the Proposed Project during the construction phase.
- Indirect effects due to the spread of invasive species, including Japanese knotweed and Rhododendron, as a result of the construction phase of the Proposed Project.

The Site-Specific Conservation Objectives (SSCOs) document and Natura 2000 Data Form for this designated site were reviewed during this assessment and can be found at the following online locations:

SSCOs: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002165.pdf Accessed the 11th of November 2025

Natura 2000 Data Form:
https://natura2000.eea.europa.eu/Natura2000/sdf/#/sdf?site=IE0002165&release=55 Accessed the 11th of November 2025

Table 5-1 below lists the qualifying features 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 Features with the Potential to be Affected.

Table 5-1 Assessment of potential effects on Qualifying features of Lower River Shannon SAC.

Qualifying feature	Conservation Objective (NPWS, Version 1, August 2012),	Rationale	Potential for Adverse Effects
[1110] Sandbanks which are slightly covered by sea water all the time	To maintain the favourable conservation condition of Sandbanks which are slightly covered by sea water all the time in the Lower River Shannon SAC.	According to Map 3 in the SSCO for this SAC, the extent of this QI habitat is located approximately 20 km from the closest point of the Proposed Project. Therefore, no potential for adverse effects, as a result of habitat degradation via the deterioration of water quality within the SAC, was identified due to the intervening distance between the known distribution of this QI and the location of the Proposed Project. Given the marine and saline nature of this habitat, there is no potential for recorded invasive species (Japanese knotweed and Rhododendron which are both entirely terrestrial) to establish within this habitat, as a result of the Proposed Project. **No complete source- pathway- receptor chain for adverse effects on this QI habitat as a result of the Proposed Project was identified. No further assessment is required.**	No
[1130] Estuaries	To maintain the favourable conservation condition of Estuaries in the Lower River Shannon SAC.	According to Map 4 in the SSCO for this SAC, this QI habitat is located approximately 86m from the closest point of the Proposed Project (the southern extent of the Proposed Grid Connection Route) which has direct downstream connectivity to this SAC. Therefore, a potential pathway for adverse effect on this QI was identified via the deterioration of water quality within the SAC arising from the potential runoff of pollutants into surface water systems during the construction phase of the Proposed Project. Given the marine and saline nature of this habitat, there is no potential for recorded invasive species (Japanese knotweed and Rhododendron which are both entirely terrestrial) to establish within this habitat, as a result of the Proposed Project.	Yes

Qualifying feature	Conservation Objective (NPWS, Version 1, August 2012),	Rationale	Potential for Adverse Effects
		A complete source-pathway-receptor chain for adverse effects on this habitat 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 Lower River Shannon SAC.	According to Map 5 in the SSCO for this SAC, the closest example of this QI habitat to the site is located approximately 3.4 km away with direct hydrological connectivity. However, due the associated distance between the Proposed Project and this QI habitat, the scale and duration of the proposed works in proximity to this SAC, and large extent of receiving water (the River Shannon Estuary), no pathway for adverse effect on this QI was identified as a result of the Proposed Project. Given the marine and saline nature of this habitat, there is no potential for recorded invasive species (Japanese knotweed and Rhododendron which are both entirely terrestrial) to establish within this habitat, as a result of the Proposed Project. **No complete source- pathway- receptor chain for adverse effects on this QI habitat as a result of the Proposed Project was identified. No further assessment is required.**	No
[1150] *Coastal lagoons	To restore the favourable conservation condition of Coastal lagoons in the Lower River Shannon SAC.	According to Map 6 in the SSCO for this SAC, the closest example of this QI habitat to the site is located approximately 6.5km away. Due to the absence of direct hydrological connectivity and associated distance between the Proposed Project and this QI habitat, the scale and duration of the proposed works in proximity to this SAC, and large extent of receiving water (the River Shannon Estuary), no pathway for adverse effect on this QI was identified as a result of the Proposed Project. Given the marine and saline nature of this habitat, there is no potential for recorded invasive species (Japanese knotweed and Rhododendron which are both entirely terrestrial) to establish within this habitat, as a result of the Proposed Project.	No

Qualifying feature	Conservation Objective (NPWS, Version 1, August 2012),	Rationale	Potential for Adverse Effects
		No complete source- pathway- receptor chain for adverse effects on this QI habitat as a result of the Proposed Project was identified. No further assessment is required.	
[1160] Large shallow inlets and bays	To maintain the favourable conservation condition of Large shallow inlets and bays in the Lower River Shannon SAC.	According to Map 7 in the SSCO for this SAC, this QI habitat is located on the outer reaches of the River Shannon estuary, approximately 3.5 km from the Proposed Project. Due to the absence of direct hydrological connectivity (this QI is located in the outer regions of the River Shannon Estuary) and associated distance between the Proposed Project and this QI habitat, the scale and duration of the proposed works in proximity to this SAC, and large extent of receiving water (the River Shannon Estuary), no pathway for adverse effect on this QI was identified as a result of the Proposed Project. **No complete source- pathway- receptor chain for adverse effects on this QI habitat as a result of the Proposed Project was identified. No further assessment is required.**	No
[1170] Reefs	To maintain the favourable conservation condition of Reefs in the Lower River Shannon SAC.	According to Map 8 in the SSCO for this SAC, this QI habitat is located approximately 300m from the closest point of the Proposed Project (the southern extent of the Proposed Grid Connection Route) which has direct downstream connectivity to this SAC. The Proposed Grid Connection crosses the Burrane_Lower (EPA code 27B87) watercourse, which discharges into the SAC approximately 400m from the known extent of this QI. Therefore, taking a highly precautionary approach, a potential pathway for adverse effect on this QI was identified via the deterioration of water quality within the SAC arising from the potential runoff of pollutants into surface water systems during the construction phase of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this habitat was identified and it is assessed further in this NIS.**	Yes

Qualifying feature	Conservation Objective (NPWS, Version 1, August 2012),	Rationale	Potential for Adverse Effects
[1220] Perennial vegetation of stony banks	To maintain the favourable conservation condition of Perennial vegetation of stony banks in the Lower River Shannon SAC.	According to Map 10 in the SSCO for this SAC, the current extent of this habitat is unknown within the SAC. However, given the predominantly terrestrial nature of this QI habitat and the intervening distance between SAC and the site of the Proposed Project, there is no potential for adverse effects. Given the marine and saline nature of this habitat, there is no potential for recorded invasive species (Japanese knotweed and Rhododendron which are both entirely terrestrial) to establish within this habitat, as a result of the Proposed Project. **No complete source- pathway- receptor chain for adverse effects on this QI habitat as a result of the Proposed Project was identified. No further assessment is required.**	No
[1230] Vegetated sea cliffs of the Atlantic and Baltic coasts	To maintain the favourable conservation condition of Vegetated sea cliffs in the Lower River Shannon SAC.	According to Map 11 in the SSCO for this SAC, the closest example of this QI habitat to the Proposed Project lies approximately 15km away. Due to the terrestrial nature of this QI habitat and the intervening distance between this QI and the site of the Proposed Project, there is no potential for adverse effects. **No complete source- pathway- receptor chain for adverse effects on this QI habitat as a result of the Proposed Project was identified. No further assessment is required.**	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 Lower River Shannon SAC.	The SSCOs for this SAC state that further areas of this habitat that have not been surveyed may be present within the SAC in addition to those outlined in Map 12. There is direct hydrological connectivity between this SAC and the Proposed Grid Connection route via the several mapped watercourses. Therefore, following the precautionary principle, a potential pathway for significant effect on this QI was identified via the deterioration of water quality within the SAC arising from the runoff or percolation of pollutants into surface water systems during the construction phase of the Proposed Project.	Yes

Qualifying feature	Conservation Objective (NPWS, Version 1, August 2012),	Rationale	Potential for Adverse Effects
		Given the marine and saline nature of this habitat, there is no potential for recorded invasive species (Japanese knotweed and Rhododendron which are both entirely terrestrial) to establish within this habitat, as a result of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this habitat 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 Lower River Shannon SAC.	According to Map 12 in the SSCO for this SAC, the closest example of this QI habitat to the Proposed Project lies approximately 4km away. The SSCOs also state that further areas of this habitat that have not been surveyed may be present within the SAC. There is direct hydrological connectivity between this SAC and the Proposed Grid Connection route via the several mapped watercourses. Therefore, following the precautionary principle, a potential pathway for significant effect on this QI was identified via the deterioration of water quality within the SAC arising from the runoff or percolation of pollutants into surface water systems during the construction phase of the Proposed Project. Given the marine and saline nature of this habitat, there is no potential for recorded invasive species (Japanese knotweed and Rhododendron which are both entirely terrestrial) to establish within this habitat, as a result of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this habitat was identified and it is assessed further in this NIS.**	Yes
[1410] Mediterranean salt meadows (*Juncetalia maritimi*)	To restore the favourable conservation condition of Mediterranean salt meadows (*Juncetalia maritimi*) in the Lower River Shannon SAC	According to Map 12 in the SSCO for this SAC, the closest example of this QI habitat to the Proposed Project site lies approximately 6km away. The SSCOs also state that further areas of this habitat that have not been surveyed maybe present within the SAC. There is direct hydrological connectivity between this SAC and the Proposed Grid Connection route via the several mapped watercourses.	Yes

Qualifying feature	Conservation Objective (NPWS, Version 1, August 2012),	Rationale	Potential for Adverse Effects
		Therefore, following the precautionary principle, a potential pathway for significant effect on this QI was identified via the deterioration of water quality within the SAC arising from the runoff or percolation of pollutants into surface water systems during the construction phase of the Proposed Project. Given the marine and saline nature of this habitat, there is no potential for recorded invasive species (Japanese knotweed and Rhododendron which are both entirely terrestrial) to establish within this habitat, as a result of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this habitat was identified and it is assessed further in this NIS.**	
[3260] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation	To maintain the favourable conservation condition of Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation in the Lower River Shannon SAC.	According to Map 13 in the SSCO for this SAC, the closest example of this QI habitat to the Proposed Project lies in excess of 50km away upstream of Limerick City. However, as per the SSCO, this QI habitat may not be fully mapped within the SAC. Taking a highly precautionary approach and considering the proximity of the SAC to the proposed works and the direct hydrological connectivity which exists via mapped watercourses, a potential pathway for adverse effects on this QI was identified via the deterioration of water quality within the SAC arising from the runoff of pollutants into surface water systems during the construction phase of the Proposed Project **A complete source-pathway-receptor chain for adverse effects on this habitat was identified and it is assessed further in this NIS.**	Yes
[6410] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	To maintain the favourable conservation condition of Molinia meadows on calcareous, peaty or clayey-silt laden soils (*Molinion caeruleae*) in the Lower River Shannon SAC.	The Proposed Project is located entirely outside the boundary of this SAC. Given the terrestrial nature of this QI habitat, no pathway for adverse effects was identified. **No complete source- pathway- receptor chain for adverse effects on this QI habitat as a result of the Proposed Project was identified. No further assessment is required.**	No

Qualifying feature	Conservation Objective (NPWS, Version 1, August 2012),	Rationale	Potential for Adverse Effects
[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 Lower River Shannon SAC.	According to Map 14 in the SSCO for this SAC, the closest example of this QI habitat to the Proposed Project lies in excess of approximately 70km away and is located upstream within the Shannon River. Therefore, due to the significant distance between this QI and the Proposed Project site, the scale of the proposed works, and the terrestrial nature of this QI habitat, there is no potential for adverse effects on this QI habitat. **No complete source- pathway- receptor chain for adverse effects on this QI habitat as a result of the Proposed Project was identified. No further assessment is required.**	No
[1029] Freshwater pearl Mussel (*Margaritifera margaritifera*)	To restore the favourable conservation condition of Freshwater Pearl Mussel in the Lower River Shannon SAC.	As per the SSCOs of the SAC, the population of freshwater pearl mussel designated for this SAC are located within the Cloon River. According to Map 15 in the SSCO for this SAC, the Cloon freshwater pearl mussel population lies approximately 10km from the site of the Proposed Project which is also located in the Shannon Estuary North WFD Catchment and Kilrush groundwater catchment. However, there is no hydrological connectivity between the Cloon River and its associated freshwater pearl mussel population and the Proposed Project. **No complete source- pathway- receptor chain for adverse effects on this QI habitat as a result of the Proposed Project was identified. No further assessment is required.**	No
[1095] Sea Lamprey (*Petromyzon marinus*)	To restore the favourable conservation condition of Sea Lamprey in the Lower River Shannon SAC.	There is potential for these species to occur within the Lower Shannon SAC. There is direct hydrological connectivity between this SAC and the Proposed Grid Connection route via several mapped watercourses. Therefore, taking a precautionary approach, a pathway for adverse effects on these QI species was identified via the deterioration of water quality within the SAC arising from the runoff of pollutants into surface water systems during the construction phase of the Proposed Project.	Yes
[1096] Brook Lamprey (*Lampetra planeri*)	To maintain the favourable conservation condition of Brook Lamprey in the Lower River Shannon SAC.		Yes

Qualifying feature	Conservation Objective (NPWS, Version 1, August 2012),	Rationale	Potential for Adverse Effects
[1099] River Lamprey (*Lampetra fluviatilis*)	To maintain the favourable conservation condition of River Lamprey in the Lower River Shannon SAC.	**A complete source-pathway-receptor chain for adverse effects on these species was identified and it is assessed further in this NIS.**	Yes
[1106] Atlantic Salmon (*Salmo salar*)	To restore the favourable conservation condition of Salmon in the Lower River Shannon SAC.		Yes
[1349] Bottlenose Dolphin (*Tursiops truncatus*)	To maintain the favourable conservation condition of Bottlenose Dolphin in the Lower River Shannon SAC.	According to Map 16 in the SSCO for this SAC, the habitat of this QI species is mapped throughout the SAC. Furthermore, Map 16 indicates that the southern extent of the Proposed Grid Connection route is in close proximity (approx. 100m) to the mapped 'Critical Habitat' for this species. However, this species is entirely marine and mobile, and considering the scale and short-term nature of the works in close proximity to this SAC (laying the grid connection), which will be confined to existing road infrastructure, no potential for adverse effects on this QI has been identified. **No complete source- pathway- receptor chain for adverse effects on this QI habitat as a result of the Proposed Project was identified. No further assessment is required.**	No
[1355] Otter (*Lutra lutra*)	To restore the favourable conservation condition of Otter in the Lower River Shannon SAC.	The southern extent of the Proposed Grid Connection route is in close proximity (approx. 86m) to this SAC. The Proposed Grid Connection route also crosses several mapped watercourses which provide potential supporting habitat for this species. Therefore, taking a precautionary approach, a pathway for adverse effects on this QI species was identified via the deterioration of water quality within the SAC arising from the runoff of pollutants into surface water systems and disturbance/displacement from the construction phase of the Proposed Project.	Yes

Qualifying feature	Conservation Objective (NPWS, Version 1, August 2012),	Rationale	Potential for Adverse Effects
		A complete source-pathway-receptor chain for adverse effects on this species was identified and it is assessed further in this NIS.	

5.1.1.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form, 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.

Table 5-2 Site-specific threats, pressures, *and activities with potential to have effects on the Lower River Shannon SAC.*

Negative Impacts			
Rank	Threats and Pressures		Threat or pressure from Inside/Outside the SAC
M	E01	Urbanised areas, human habitation	Outside
M	K02.03	Eutrophication (natural)	Outside
M	J02.01.02	Reclamation of land from sea, estuary or marsh	Outside
L	C01.01.02	Removal of beach materials	Inside
L	F01	Marine and Freshwater Aquaculture	Inside
M	E03	Discharges	Outside
M	E03	Discharges	Inside
L	J02.10	Management of aquatic and bank vegetation for drainage purposes	Inside
M	A08	Fertilization	Outside
M	H04	Air pollution, air-borne pollutants	Outside
M	A08	Fertilization	Inside
L	F03.01	Hunting	Inside
M	A04	Grazing	Inside
L	B	Sylviculture, forestry	Inside
L	J02.12.01	Sea defence or coast protection works, tidal barrages	Inside
L	G01.01	Nautical sports	Inside
M	J02.01.01	Polderisation	Inside
L	D01.01	Paths, tracks, cycling tracks	Inside
L	C01.03.01	Hand cutting of peat	Inside
L	I01	Invasive non-native species	Inside

Rank: H = high, M = medium, L = low i = inside, o = outside, b = both

As potential impacts on water quality within this European Site, as well as the spread of invasive species, has been identified, the Proposed Project, in the absence of mitigation, can potentially contribute to the existing threats and pressures of this SAC.

5.1.1.3 Habitat Specific Information

[1130] Estuaries

According to the SSCO (NPWS, 2012), estuaries for this SAC has been mapped in detail and thus total area of the qualifying habitat is 2,4273.3ha as per the Natura 2000 Data Form.

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI habitat is 'Inadequate' and the overall Conservation Trend is 'Deteriorating'.

There is potential for estuaries downstream of the Proposed Project to be subject to a deterioration in water quality via the indirect runoff or spillage of pollutants during construction.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 5-3.

Table 5-3 Targets and Attributes for [1130] Estuaries of the Lower River Shannon SAC.

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Habitat area	Area stable or increasing, subject to natural processes. The permanent habitat area is stable or increasing, subject to natural processes.	No – There will be no reduction in habitat area, as a result of the Proposed Project, as the works are located entirely outside of this SAC.
Community distribution	Conserve the following community types in a natural condition: Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex; Estuarine subtidal muddy sand to mixed sediment with gammarids community complex; Subtidal sand to mixed sediment with *Nucula nucleus* community complex; Subtidal sand to mixed sediment with *Nephtys* spp. community complex; Fucoid-dominated intertidal reef community complex; Faunal turf-dominated subtidal reef community; and Anemone-dominated subtidal reef community	Yes – Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.

[1170] Reefs

According to the SSCO (NPWS, 2012), reefs for this SAC has been estimated area of 21,421.3ha.

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI habitat is 'Inadequate' with a stable trend.

Taking a precautionary approach, there is potential for reefs downstream of the Proposed Project to be subject to a deterioration in water quality as a result of the Proposed Project.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 5-4.

Table 5-4 Targets and Attributes for [1170] Reefs of the Lower River Shannon SAC.

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Habitat distribution	The distribution of Reefs is stable, subject to natural processes.	No, deterioration of water quality will not undermine this target
Habitat area	The permanent habitat area is stable, subject to natural processes.	No, deterioration of water quality will not undermine this target
Community distribution	Conserve the following reef community types in a natural condition: Fucoid-dominated intertidal reef community complex; Mixed subtidal reef community complex; Faunal turf-dominated subtidal reef community; Anemone- dominated subtidal reef community; and Laminaria-dominated community complex.	Yes – Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.

[1310] Salicornia and other annuals colonizing mud and sand

According to the SSCO (NPWS, 2012), *Salicornia* and other annuals colonizing mud and sand for this SAC has been mapped in detail and thus total area of the qualifying habitat is 0.2214ha as per the Natura 2000 Data Form.

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI habitat is 'Favourable' with a stable trend.

Taking a precautionary approach, there is potential for *Salicornia* and other annuals colonizing mud and sand downstream of the Proposed Project to be subject to a deterioration in water quality as a result of the Proposed Project.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 5-5.

Table 5-5 Targets and Attributes for [1310] Salicornia *and other annuals colonizing mud and sand of the Lower River Shannon SAC.*

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-sites mapped: Carrigafoyle - 0.005ha; Inishdea, Owenshere - 0.003ha; Knock - 0.029ha; Querin - 0.185ha; Rinevilla Bay - 0.001ha.	No, deterioration of water quality will not undermine this target
Habitat distribution	No decline, or change in habitat distribution, subject to natural processes.	No, deterioration of water quality will not undermine this target
Physical structure: sediment supply	Maintain natural circulation of sediments and organic matter, without any physical obstructions	No, deterioration of water quality will not undermine this target
Physical structure: creeks and pans	Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession	No, deterioration of water quality will not undermine this target
Physical structure: flooding regime	Maintain natural tidal regime	No, deterioration of water quality will not undermine this target
Vegetation structure: zonation	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Yes, Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.
Vegetation structure: vegetation height	Maintain structural variation within sward	Yes, Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.
Vegetation structure: vegetation cover	Maintain more than 90% of area outside creeks vegetated	Yes, Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.
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)	Yes, Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.

Vegetation structure: negative indicator species- *Spartina anglica*	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%	No, deterioration of water quality will not undermine this target as this would not increase the threats from invasive species

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

According to the SSCO (NPWS, 2012), Atlantic salt meadows *(Glauco-Puccinellietalia maritimae)* for this SAC has been mapped in detail and thus total area of the qualifying habitat is 495.434ha as per the Natura 2000 Data Form.

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI habitat is 'Inadequate' with an overall deteriorating trend.

Taking a precautionary approach, there is potential for Atlantic salt meadows *(Glauco-Puccinellietalia maritimae)* downstream of the Proposed Project to be subject to a deterioration in water quality as a result of the Proposed Project.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 5-6.

Table 5-6 Targets and Attributes for [1330] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) of the Lower River Shannon SAC.

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-sites mapped: Carrigafoyle- 6.774ha; Barrigone, Aughinish- 10.288ha; Beagh- 0.517ha; Bunratty- 26.939ha; Shepperton, Fergus Estuary- 37.925ha; Inishdea, Owenshere- 18.127ha; Killadysert, Inishcorker- 2.604ha; Knock- 0.576ha; Querin- 3.726ha; Rinevilla Bay- 11.883ha	No, deterioration of water quality will not undermine this target
Habitat distribution	No decline or change in habitat distribution, subject to natural processes.	No, deterioration of water quality will not undermine this target
Physical structure: sediment supply	Maintain natural circulation of sediments and organic matter, without any physical obstructions	No, deterioration of water quality will not undermine this target
Physical structure: creeks and pans	Maintain creek and pan structure, subject to natural processes, including erosion and succession	No, deterioration of water quality will not undermine this target
Physical structure: flooding regime	Maintain natural tidal regime	Yes, Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.
Vegetation structure: zonation	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Yes, Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.

Vegetation structure: vegetation height	Maintain structural variation within sward	Yes, Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.
Vegetation structure: vegetation cover	Maintain more than 90% of the saltmarsh area vegetated	Yes, Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.
Vegetation composition: typical species and sub-communities	Maintain range of sub- communities with typical species listed in Saltmarsh Monitoring Project (McCorry and Ryle, 2009)	Yes, Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.
Vegetation structure: negative indicator species- *Spartina anglica*	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%	No, deterioration of water quality will not undermine this target as this would not increase the threats from invasive species

[1410] Mediterranean salt meadows (Juncetalia maritimi)

According to the SSCO (NPWS, 2012), Mediterranean salt meadows (*Juncetalia maritimi*) for this SAC have been mapped in detail and thus the total area of the qualifying habitat is 24.6711ha as per the Natura 2000 Data Form.

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI habitat is 'Inadequate' with an overall deteriorating trend.

Taking a precautionary approach, there is potential for Mediterranean salt meadows (*Juncetalia maritimi*) downstream of the Proposed Project to be subject to a deterioration of water quality via the direct or indirect runoff or spillage of pollutants during construction due to the Proposed Project being directly adjacent to this SAC.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 5-7.

Table 5-7 Targets and Attributes for [1330] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) of the Lower River Shannon SAC.

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Habitat area	Area increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: Carrigafoyle- 4.193ha; Barrigone, Aughinish- 2.407ha; Bunratty- 0.865ha; Inishdea, Owenshere- 11.609ha; Killadysert, Inishcorker- 0.705ha; Knock- 0.143ha, Querin- 0.008ha; Rinevilla Bay- 2.449ha.	No, deterioration of water quality will not undermine this target
Habitat distribution	No decline or change in habitat distribution, subject to natural processes.	No, deterioration of water quality will not undermine this target
Physical structure: sediment supply	Maintain natural circulation of sediments and organic matter, without any physical obstructions	No, deterioration of water quality will not undermine this target

Physical structure: creeks and pans	Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession	No, deterioration of water quality will not undermine this target
Physical structure: flooding regime	Maintain natural tidal regime	No – The Proposed Project will have no effect on flooding or tidal regimes.
Vegetation structure: zonation	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Yes, Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.
Vegetation structure: vegetation height	Maintain structural variation within sward	Yes, Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.
Vegetation structure: vegetation cover	Maintain more than 90% of area outside creeks vegetated	Yes, Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.
Vegetation composition: typical species	Maintain range of sub- communities with typical species listed in Saltmarsh Monitoring Project (McCorry and Ryle, 2009)	Yes, Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.
Vegetation structure: negative indicator species - *Spartina anglica*	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%	No, deterioration of water quality will not undermine this target as this would not increase the threats from invasive species

[3260] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation

According to the SSCO (NPWS, 2012), Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation for this SAC has not been mapped in detail and thus total area of the qualifying habitat is unknown.

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI habitat is 'Inadequate' with an overall deteriorating trend.

Taking a precautionary approach, there is potential for water courses of plain to montane levels with *Ranunculion fluitantis* and *Calltricho-Batrachion* vegetation downstream of the Proposed Project to be subject to a deterioration of water quality via the direct or indirect runoff or spillage of pollutants during construction due to the Proposed Project being directly adjacent to this SAC.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 5-8.

Table 5-8 Targets and Attributes associated with nominated site-specific conservation objectives for Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation in the Lower River Shannon SAC.

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Habitat area	Area stable or increasing, subject to natural processes	No, the Proposed Project will not undermine this target as there will be no reduction in riparian habitat as a result of construction

Habitat distribution	No decline, subject to natural processes	No, the Proposed Project will not undermine this target as there will be no reduction in riparian habitat as a result of construction
Hydrological regime: river flow	Maintain appropriate hydrological regimes	No, the Proposed Project will not undermine this target as there will be no effect on river flows
Hydrological regime: tidal influence	Maintain natural tidal regime	No, the Proposed Project will not undermine this target as there will be no effect on tidal influence
Hydrological regime: freshwater seepage	Maintain appropriate freshwater seepage regimes	No, the Proposed Project will not undermine this target as there will be no effect on freshwater seepage
Substratum composition: particle size range	The substratum should be dominated by the particle size ranges, appropriate to the habitat sub-type (frequently sands, gravels and cobbles)	Yes, silt laden runoff from the Proposed Project could undermine this target
Water quality: nutrients	The concentration of nutrients in the water column should be sufficiently low to prevent changes in species composition or habitat condition	Yes, Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.
Vegetation composition: typical species	Typical species of the relevant habitat sub-type should be present and in good condition	Yes, Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.
Floodplain connectivity	The area of active floodplain at and upstream of the habitat should be maintained	No, the Proposed Project will not undermine this target as it will not result in any barriers of connectivity
Riparian habitat	The area of riparian woodland at and upstream of the bryophyte-rich sub-type should be maintained	No, the Proposed Project will not undermine this target as there will be no reduction in riparian habitat as a result of construction

5.1.1.4 Species Specific Information

[1095] Sea Lamprey (Petromyzon marinus)

According to the SSCO (NPWS, 2012), with respect to the distribution of this species within the SAC, artificial barriers can block or cause difficulties to lampreys' upstream migration, thereby limiting the species to lower stretches and restricting access to spawning areas. The upper extent of the SAC in the River Fergus is delineated by a barrier to migration. Barriers are also present in the Mulkear and Feale.

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI species is 'Bad' with a stable trend. The sea lamprey is listed in the most recent Irish Red Data Book as Near Threatened. Barriers to upstream migration (e.g. weirs) are considered the major impediment to good conservation status for sea lamprey as these limit access to spawning beds and juvenile habitat.

Taking a precautionary approach there is potential for deterioration of water quality to impact on sea lamprey which may occur downstream of the Proposed Project.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 5-9.

Table 5-9 Targets and Attributes [1095] Sea Lamprey of the Lower River Shannon SAC.

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, the Proposed Project will not undermine this target as it will not result in any barriers of connectivity
Population structure of juveniles	At least three age/size groups present	Yes, Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target via deterioration of supporting habitat and reduced prey
Juvenile density in fine sediment	At least three age/size groups present	Yes, Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target via deterioration of supporting habitat and reduced prey
Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds	Yes, silt laden runoff from the Proposed Project could undermine this target via deterioration of supporting habitat
Availability of juvenile habitat	More than 50% of sample sites positive	Yes, silt laden runoff from the Proposed Project could undermine this target via deterioration of supporting habitat

[1096] Brook Lamprey (Lampetra planeri)

According to the SSCO (NPWS, 2012), artificial barriers can block or cause difficulties to brook lampreys' migration, both up- and downstream, thereby possibly limiting the species to specific stretches and creating genetically isolated populations (Espanhol et al., 2007).

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI species is 'Favourable'.

Taking a precautionary approach there is potential for deterioration of water quality to impact on brook lamprey which may occur downstream of the Proposed Project.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 5-10.

Table 5-10 Targets and Attributes [1096] Brook Lamprey of the Lower River Shannon SAC.

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Distribution	Access to all water courses down to first order streams	No, the Proposed Project will not undermine this target as it will not result in any barriers of connectivity
Population structure of juveniles	At least three age/size groups of river/brook lamprey present	Yes, Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target via

		deterioration of supporting habitat and reduced prey
Juvenile density in fine sediment	Mean catchment juvenile density of river/brook lamprey at least 2/m²	Yes, Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target via deterioration of supporting habitat and reduced prey
Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds	Yes, silt laden runoff from the Proposed Project could undermine this target via deterioration of supporting habitat
Availability of juvenile habitat	More than 50% of sample sites positive	Yes, silt laden runoff from the Proposed Project could undermine this target via deterioration of supporting habitat

[1099] River Lamprey (Lampetra fluviatilis)

According to the SSCO (NPWS, 2012), artificial barriers can block or cause difficulties to river lampreys' migration, both up- and downstream, thereby possibly limiting species to specific stretches and creating genetically isolated populations (Espanhol et al., 2007).

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI species is unknown. This is largely due to the inability to distinguish between river lamprey and brook lamprey larvae, and the challenges associated with sampling for adult river lamprey, which means that an evaluation of their actual range and population size cannot be undertaken.

Taking a precautionary approach there is potential for deterioration of water quality to impact on river lamprey which may occur downstream of the Proposed Project.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 5-11.

Table 5-11 Targets and Attributes [1099] River Lamprey of the Lower River Shannon SAC.

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Distribution: extent of anadromy	Access to all water courses down to first order streams	No, the Proposed Project will not undermine this target as it will not result in any barriers of connectivity
Population structure of juveniles	At least three age/size groups of river/brook lamprey present	Yes, Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target via deterioration of supporting habitat and reduced prey
Juvenile density in fine sediment	Mean catchment juvenile density of river/brook lamprey at least 2/m²	Yes, Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target via deterioration of supporting habitat and reduced prey
Out-migrating smolt abundance	No significant decline	Yes, Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.

Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds	Yes, silt laden runoff from the Proposed Project could undermine this target via deterioration of supporting habitat
Availability of juvenile habitat	More than 50%	Yes, silt laden runoff from the Proposed Project could undermine this target via deterioration of supporting habitat

[1106] Salmon (*Salmo salar*)

According to the SSCO (NPWS, 2012), with respect to the distribution of this QI species within the SAC, artificial barriers block salmons' upstream migration, thereby limiting species to lower stretches and restricting access to spawning areas. The large hydro-electric station at Ardnacrusha and the Parteen regulating weir present considerable obstructions to upstream passage of salmon on the Shannon main channel. While both have fish passes installed, upstream migration of salmon is still problematical. Further weirs upstream on the Shannon also restrict access to spawning habitat. No such obstacles, causing significant fish passage issues for salmon are present on the Feale and Mulkear rivers.

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI species is 'Inadequate' and the overall Conservation Trend is 'Stable'.

Taking a precautionary approach there is potential for deterioration of water quality to impact on salmon which may occur downstream of the Proposed Project.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 5-12.

Table 5-12 Targets and Attributes [1106] Salmon (Salmo salar) of the Lower River Shannon SAC.

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 undermine this target as it will not result in any barrier to connectivity
Adult spawning fish	Conservation limit (CL) for each system consistently exceeded	Yes, Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.
Salmon fry abundance	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 minutes sampling	Yes, Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.
Out-migrating smolt abundance	No significant decline	Yes, Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.
Number and distribution of redds	No decline in number and distribution of spawning redds due to anthropogenic causes	Yes, silt laden runoff from the Proposed Project could undermine this target
Water quality	At least Q4 at all sites sampled by EPA	Yes, Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.

[1355] Otter (Lutra lutra)

According to the SSCO (NPWS, 2012), the area of terrestrial habitat is mapped and calculated as 596.8ha. The length of freshwater (river) habitat was mapped and calculated as 500.1km, which was calculated on the basis that otters will utilise freshwater habitats from estuary to headwaters (Chapman and Chapman, 1982). The area of freshwater (lake) habitat was mapped and calculated as 125.6ha, based on evidence that otters tend to forage within 80 metres of the shoreline (NPWS, 2007).

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI species is 'Inadequate' and the overall Conservation Trend is 'Stable'.

Taking a precautionary approach there is potential for deterioration of water quality to impact on otter, via reduced prey availability, which may occur downstream of the Proposed Project. Furthermore, given there is requirement for watercourses crossings, there is potential for disturbance/displacement to this species.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 5-13.

Table 5-13 Targets and Attributes [1355] Otter (Lutra lutra) of the Lower River Shannon SAC.

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Distribution	No significant decline	No, the Proposed Project will not undermine this target as it will not result in any barrier to connectivity
Extent of terrestrial habitat	No significant decline. Area mapped and calculated as 596.8ha above high water mark; 958.9ha along river banks/around ponds	No, the Proposed Project will not undermine this target as it will result in any loss of supporting terrestrial habitat
Extent of marine habitat	No significant decline. Area mapped and calculated as 4,461.6ha	No, the Proposed Project will not undermine this target as it will result in any loss of supporting marine habitat
Extent of freshwater (river) habitat	No significant decline. Length mapped and calculated as 500.1km	No, the Proposed Project will not undermine this target as it will result in any loss of supporting riparian habitat
Extent of freshwater (lake/lagoon) habitat	No significant decline. Area mapped and calculated as 125.6ha	No, the Proposed Project will not undermine this target as it will result in any loss of supporting lake/lagoon habitat
Couching sites and holts	No significant decline	No, the Proposed Project will not undermine this target as there will be no loss of supporting resting sites
Fish biomass available	No significant decline	Yes, Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.
Barriers to connectivity	No significant increase	No, the Proposed Project will not undermine this target as it will not result in any barrier to connectivity

5.1.2 Carrowmore Dunes SAC [002250]

The potential for impacts on this SAC were identified in Section 4.1 above. The identified pathways for effect consists of the following:

- Deterioration of water quality via the indirect runoff or spillage of pollutants during construction, operation, and decommissioning due to the Proposed Project being hydrologically connected to this SAC.
- Indirect effects due to the spread of invasive species, including Japanese knotweed and Rhododendron, as a result of the Proposed Project.

The Site-Specific Conservation Objectives (SSCOs) document and Natura 2000 Data Form for this designated site were reviewed during this assessment and can be found at the following online locations:

SSCOs: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002250.pdf Accessed the 11th of November 2025

Natura 2000 Data Form:
https://natura2000.eea.europa.eu/Natura2000/sdf/#/sdf?site=IE0002250&release=55 Accessed the 11th of November 2025

Table 5-14 below lists the qualifying features 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 Features with the Potential to be Affected.

Table 5-14 Assessment of Qualifying features potentially affected for Carrowmore Dunes SAC.

Qualifying feature	Conservation Objective (NPWS, Version 1, March 2014)	Rationale	Potential for Adverse Effects
[1170] Reefs	To maintain the favourable conservation condition of Reefs in Carrowmore Dunes SAC	According to Map 3 in the SSCO for this SAC, this QI habitat is located approx. 14.5 km downstream of the Proposed Project via several mapped watercourses. Therefore, a potential pathway for adverse effect on this QI was identified via the deterioration of water quality within the SAC arising from the potential runoff of pollutants into surface water systems during the construction, operational and decommissioning phases of the Proposed Project. Given the marine and saline nature of this habitat, there is no potential for recorded invasive species (Japanese knotweed and Rhododendron which are both entirely terrestrial) to establish within this habitat, as a result of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this habitat was identified and it is assessed further in this NIS.**	Yes
[2110] Embryonic shifting dunes	To restore the favourable conservation condition of Embryonic shifting dunes in Carrowmore Dunes SAC	According to Map 5 in the SSCO for this SAC, these QI habitats are located approximately 8km from the Proposed Project. However, due to the intervening terrestrial distance and terrestrial nature of these QI habitats, which are in excess of 7 km form the Proposed Project site, there is no potential for adverse effects. Given the coastal nature of this habitat, there is no potential for recorded invasive species (Japanese knotweed and Rhododendron which are both entirely terrestrial and do not tolerate saline conditions) to establish within these habitats, as a result of the Proposed Project. **No complete source- pathway- receptor chain for any effect on this habitat as a result of the Proposed Project was identified. No further assessment is required.**	No
[2120] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)	To restore the favourable conservation condition of Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes') in Carrowmore Dunes SAC		No
[2130] Fixed coastal dunes with herbaceous vegetation (grey dunes)*	To restore the favourable conservation condition of Fixed coastal dunes with herbaceous		No

Qualifying feature	Conservation Objective (NPWS, Version 1, March 2014)	Rationale	Potential for Adverse Effects
	vegetation ('grey dunes') in Carrowmore Dunes SAC		
[1014] Narrow-mouthed Whorl Snail (*Vertigo angustior*)	To maintain the favourable conservation condition of Narrow-mouthed Whorl Snail in Carrowmore Dunes SAC,	According to Map 6 in the SSCO for this SAC, the distribution of this QI species is located within terrestrial sand dune habitats. Given to the intervening distance and terrestrial nature of this QI species, there is no potential for adverse effects. **No complete source- pathway- receptor chain for any effect on this habitat as a result of the Proposed Project was identified. No further assessment is required.**	No

5.1.2.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form, 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 5-15.

Table 5-15 Site-specific threats, pressures, *and activities with potential to have effects on Carrowmore Dunes SAC.*

Negative Impacts			
Rank	Threats and Pressures		Threat or pressure from Inside/Outside the SAC
L	A05.02	Stock feeding	Inside
L	F06	Hunting, fishing or collecting activities not referred to above	Inside
M	C01.01	Sand and gravel extraction	Outside
M	A04	Grazing	Inside
H	K01.01	Erosion	Inside
L	F06	Hunting, fishing or collecting activities not referred to above	Inside
H	A04	Grazing	Outside
M	A08	Fertilisation	Outside
H	A05.02	Stock feeding	Outside
M	G01.01	Nautical sports	Inside

Rank: H = high, M = medium, L = low i = inside, o = outside, b = both

No works associated with any phase of the Proposed Project have the potential to contribute the above listed threats.

5.1.2.3 Habitat Specific Information

[1170] Reefs

According to the SSCO (NPWS, 2014), reefs for this SAC has been mapped in detail and thus total area of the qualifying habitat is 211.367ha as per the Natura 2000 Data Form.

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI habitat is 'Inadequate' with a stable trend.

There is potential for reefs downstream of the Proposed Project to be subject to a deterioration in water quality via the indirect runoff or spillage of pollutants during construction.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 5-16.

Table 5-16 Targets and Attributes for [1170] Reefs of Carrowmore Dunes SAC.

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, deterioration of water quality will not undermine this target as it will affect habitat area
Habitat distribution	The distribution of Reefs is stable or increasing, subject to natural processes.	No, deterioration of water quality will not undermine this target as it will affect habitat distribution

Community distribution	Conserve the following community types in a natural condition: Intertidal reef community complex; Laminaria-dominated community complex.	Yes – Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.

5.1.3 Carrowmore Point to Spanish Point and Islands SAC [001021]

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

- Deterioration of water quality via the indirect runoff or spillage of pollutants during construction, operation, and decommissioning due to the Proposed Project being hydrologically connected to this SAC.

The Site-Specific Conservation Objectives (SSCOs) document and Natura 2000 Data Form for this designated site were reviewed during this assessment and can be found at the following online locations:

SSCOs: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO001021.pdf Accessed the 11th of November 2025

Natura 2000 Data Form:
https://natura2000.eea.europa.eu/Natura2000/sdf/#/sdf?site=IE0001021&release=55 Accessed the 11th of November 2025

Table 5-17 below lists the qualifying features 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 Features with the Potential to be Affected.

Table 5-17 Assessment of Qualifying features potentially affected for Carrowmore Point to Spanish Point and Islands SAC.

Qualifying feature	Conservation Objective (NPWS, Version 1, April 2014)	Rationale	Potential for Adverse Effects
[1150] Coastal lagoons*	To restore the favourable conservation condition of Coastal lagoons in Carrowmore Point to Spanish Point and Islands SAC.	According to Map 3 in the SSCO for this SAC, these QI habitats are located approx. 7.4 km and 8 km, respectively, downstream of the Proposed Project. Several mapped watercourses which traverse the Proposed Wind farm site have direct downstream connectivity to this SAC and these QI habitats. Therefore, a potential pathway for adverse effect on these QIs was identified via the deterioration of water quality within the SAC arising from the potential runoff of pollutants into surface water systems during the construction, operational, and decommissioning phases of the Proposed Project. Given the marine and saline nature of this habitat, there is no potential for recorded invasive species (Japanese knotweed and Rhododendron which are both entirely terrestrial) to establish within these habitat, as a result of the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on this habitat was identified and it is assessed further in this NIS.**	Yes
[1170] Reefs	To maintain the favourable conservation condition of Reefs in Carrowmore Point to Spanish Point and Islands SAC.		Yes
[1220] Perennial vegetation of stony banks	To maintain the favourable conservation condition of Perennial vegetation of stony banks in Carrowmore Point to Spanish Point and Islands SAC.	According to Map 6 in the SSCO for this SAC, these QI habitats are located approximately 8 km from the Proposed Project (the Proposed Wind Farm site). Given the intervening distance and terrestrial nature of these habitats, they will not be considered further in this NIS as there is no potential for adverse effects. **No complete source- pathway- receptor chain for adverse effects on these habitats as a result of the Proposed Project was identified. No further assessment is required.**	No
[7220] Petrifying springs with tufa formation (*Cratoneurion*)	To maintain the favourable conservation condition of Petrifying springs with tufa formation (*Cratoneurion*) in Carrowmore Point to Spanish Point and Islands SAC.		No

5.1.3.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form, 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 5-18.

Table 5-18 Site-specific threats, pressures, *and activities with potential to have effects on Carrowmore Point to Spanish Point and Islands SAC.*

Negative Impacts			
Rank	Threats and Pressures		Threat or pressure from Inside/Outside the SAC
M	F06	Hunting, fishing or collecting activities not referred to above	Inside
M	A04	Grazing	Inside
M	G01.01	Nautical sports	Inside
M	A04	Grazing	Outside
H	J02.12.01	Dykes and flooding defense in inland water systems	Inside
M	A08	Fertilisation	Outside
M	F02.03	Leisure fishing	Inside
H	G01.02	Walking, horseriding and non-motorised vehicles	Inside
M	A08	Fertilisation	Inside
M	K01.02	Silting up	Inside
M	C01.01	Sand and gravel extraction	Inside

Rank: H = high, M = medium, L = low i = inside, o = outside, b = both

As potential impacts on water quality within this European Site has been identified, the Proposed Project, in the absence of mitigation, can potentially contribute to the existing threats and pressures of this SAC.

5.1.3.3 Habitat Specific Information

[1150] Coastal lagoons

According to the SSCO (NPWS, 2014), Coastal lagoons for this SAC has been mapped in detail and thus total area of the qualifying habitat is 12.5ha as per the Natura 2000 Data Form.

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI habitat is 'Bad' with a deteriorating trend.

There is potential for coastal lagoons downstream of the Proposed Project to be subject to a deterioration in water quality via the indirect runoff or spillage of pollutants during construction, operational and decommissioning phases of the Proposed Project.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 5-19.

Table 5-19 Targets and Attributes for [1150] Coastal lagoons of Carrowmore point to Spanish Point and Islands SAC.

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Habitat area	Area stable, or increasing, subject to natural processes. Favourable reference area 12.5ha.	No, deterioration of water quality will not undermine this target as it will affect habitat area

Habitat distribution	No decline, subject to natural processes.	No, deterioration of water quality will not undermine this target as it will affect habitat distribution
Salinity regime	Median annual salinity and temporal variation within natural ranges	No, the Proposed Project will not undermine this target as it will not impact on the salinity regime
Hydrological regime	Annual water level fluctuations and minima within natural ranges	No, the Proposed Project will not undermine this target as it will not impact the hydrological regime
Barrier: connectivity between lagoon and sea	Appropriate hydrological connections between lagoon and sea, including where necessary, appropriate management	No, the Proposed Project will not undermine this target as it will not result in any barrier to connectivity
Water quality: Chlorophyll *a*	Annual median chlorophyll a within natural range and less than 5µg/L	Yes – Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.
Water quality: Molybdate Reactive Phosphorus (MRP)	Annual median MRP within natural range and less than 0.1mg/L	Yes – Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.
Water quality: Dissolved Inorganic Nitrogen (DIN)	Annual median DIN within natural range and less than 0.15mg/L	Yes – Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.
Depth of macrophyte colonisation	Macrophyte colonisation to maximum depth of lagoon	Yes – Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.
Typical plant species	Maintain number and extent of listed lagoonal specialists, subject to natural variation	Yes – Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.
Typical animal species	Maintain listed lagoon specialists, subject to natural variation	Yes – Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.
Negative indicator species	Negative indicator species absent or under control	No, the Proposed Project will not undermine this target as there will be no means of introducing negative indicator species into the this habitat within the SAC

[1170] Reefs

According to the SSCO (NPWS, 2014), reefs for this SAC has been mapped in detail and thus total area of the qualifying habitat is 2,829.46ha as per the Natura 2000 Data Form.

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI habitat is 'Inadequate' with a stable trend.

There is potential for reefs downstream of the Proposed Project to be subject to a deterioration in water quality via the indirect runoff or spillage of pollutants during construction, operational and decommissioning phases of the Proposed Project.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 5-20.

Table 5-20 Targets and Attributes for [1170] Reefs of Carrowmore Point to Spanish Point and Islands SAC.

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, deterioration of water quality will not undermine this target as it will affect habitat area
Habitat distribution	The distribution of Reefs is stable or increasing, subject to natural processes.	No, deterioration of water quality will not undermine this target as it will affect habitat distribution
Community distribution	Conserve the following community types in a natural condition: Intertidal reef community complex; Laminaria-dominated community complex.	Yes – Deterioration of water quality as a result of silt-laden run-off and other pollutants could undermine this target.

5.1.4 River Shannon and River Fergus Estuaries SPA [004077]

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

- Deterioration of water quality via the indirect runoff or spillage of pollutants during construction phase only, due to the Proposed Project being hydrologically connected to this SPA.
- Given the close proximity of the SPA to the Proposed Project in parts, there is potential for disturbance/displacement to SCIs of the SPA.
- Indirect effects due to the spread of invasive species, including Japanese knotweed and Rhododendron, as a result of the Proposed Project.
- Potential collision risk to SCIs of this SPA, as the Proposed Wind Farm is within the core foraging range of one SCI, black-headed gull.

The Site-Specific Conservation Objectives (SSCOs) document and Natura 2000 Data Form for this designated site were reviewed during this assessment and can be found at the following online locations:

SSCOs: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf Accessed the 11th of November 2025

Natura 2000 Data Form:
https://natura2000.eea.europa.eu/Natura2000/sdf/#/sdf?site=IE0004077&release=55 Accessed the 11th of November 2025

Table 5-21 below lists the qualifying features 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 Features with the Potential to be Affected.

Table 5-21 Assessment of Qualifying features potentially affected for River Shannon and River Fergus Estuaries SPA.

Qualifying feature	Conservation Objective (NPWS, Version 1, September 2012),	Rationale	Potential for Adverse Effects
[A017] Cormorant (*Phalacrocorax carbo*)	To maintain the favourable conservation condition of Cormorant in the River Shannon and River Fergus Estuaries SPA	No significant supporting wetland habitat for any SCI of the SPA was recorded within or immediate adjacent to the Proposed Project. The Proposed Grid Connection route, the element of the Proposed Project in closest proximity to this SPA, will be lain within existing road, which does not provide significant supporting habitat for the SCIs of the SPA. However, given the presence of potential high tide roosting habitat adjacent to the southernmost section of the Proposed Grid Connection route, and the proximity of these works to the SPA, taking a precautionary approach, there is potential for *ex-situ* disturbance/displacement to SCIs of this SPA, during the construction phase of the Proposed Project. Furthermore, the Proposed Project is hydrologically connected to the SPA and taking a precautionary approach, it was considered that the Proposed Project has the potential to undermine the favourable conservation status of the SCI species through a deterioration of water quality during the construction, operational, and decommissioning 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 or restoring favourable conversation status for these SCI species. **Therefore, a complete source-pathway-receptor chain for adverse effects on the SCIs of the SPA was identified, and it is assessed further in this NIS.** Regarding black-headed gull and the potential pathway for likely significant effect as a result of collision risk, only four recordings of this species was recorded within the Proposed Wind Farm Site during the surveys undertaken. Regarding cormorant, this species was not recorded.	Yes
[A038] Whopper Swan (*Cygnus cygnus*)	To maintain the favourable conservation condition of Whooper Swan in the River Shannon and River Fergus Estuaries SPA		Yes
[A046] Light-bellied Brent Goose (*Branta bernicla hrota*)	To maintain the favourable conservation condition of Light-bellied Brent Goose in the River Shannon and River Fergus Estuaries SPA		Yes
[A048] Shelduck (*Tadorna tadorna*)	To maintain the favourable conservation condition of Shelduck in the River Shannon and River Fergus Estuaries SPA		Yes
[A050] Widgeon (*Anas Penelope*)	To maintain the favourable conservation condition of Wigeon in the River Shannon and River Fergus Estuaries SPA		Yes

Qualifying feature	Conservation Objective (NPWS, Version 1, September 2012),	Rationale	Potential for Adverse Effects
[A052] Teal (*Anas crecca*)	To maintain the favourable conservation condition of Teal in the River Shannon and River Fergus Estuaries SPA	Whilst the Proposed Wind Farm site is within the foraging range of these species, given to very low numbers, infrequent occurrences or in the case of cormorant which was absent, the Proposed Wind Farm site is not of significance to these species and therefore, there is no potential for adverse effects on these SCI, as result of collision risk.	Yes
[A054] Pintail (*Anas acuta*)	To maintain the favourable conservation condition of Pintail in the River Shannon and River Fergus Estuaries SPA		Yes
[A056] Shoveler (*Anas clypeata*)	To maintain the favourable conservation condition of Shoveler in the River Shannon and River Fergus Estuaries SPA		Yes
[A062] Scaup (*Aythya marila*)	To maintain the favourable conservation condition of Scaup in the River Shannon and River Fergus Estuaries SPA		Yes
[A137] Ringed Plover (*Charadrius hiaticula*)	To maintain the favourable conservation condition of Ringed Plover in the River Shannon and River Fergus Estuaries SPA		Yes
[A140] Golden Plover (*Pluvialis apricaria*)	To maintain the favourable conservation condition of Golden Plover in the River Shannon and River Fergus Estuaries SPA		Yes

Qualifying feature	Conservation Objective (NPWS, Version 1, September 2012),	Rationale	Potential for Adverse Effects
[A141] Grey Plover (*Pluvialis squatarola*)	To maintain the favourable conservation condition of Grey Plover in the River Shannon and River Fergus Estuaries SPA		Yes
[A142] Lapwing (*Vanellus vanellus*)	To maintain the favourable conservation condition of Lapwing in the River Shannon and River Fergus Estuaries SPA		Yes
[A143] Knot (*Calidris canutus*)	To maintain the favourable conservation condition of Knot in the River Shannon and River Fergus Estuaries SPA		Yes
[A149] Dunlin (*Calidris alpina*)	To maintain the favourable conservation condition of Dunlin in the River Shannon and River Fergus Estuaries SPA		Yes
[A156] Black-tailed Godwit (*Limosa limosa*)	To maintain the favourable conservation condition of Black-tailed Godwit in the River Shannon and River Fergus Estuaries SPA		Yes
[A157] Bar-tailed Godwit (*Limosa lapponica*)	To maintain the favourable conservation condition of Bar-tailed Godwit in the River Shannon and River Fergus Estuaries SPA		Yes

Qualifying feature	Conservation Objective (NPWS, Version 1, September 2012),	Rationale	Potential for Adverse Effects
[A160] Curlew (*Numenius arquata*)	To maintain the favourable conservation condition of Curlew in the River Shannon and River Fergus Estuaries SPA		Yes
[A162] Redshank (*Tringa tetanus*)	To maintain the favourable conservation condition of Redshank in the River Shannon and River Fergus Estuaries SPA		Yes
[A164] Greenshank (*Tringa nebularia*)	To maintain the favourable conservation condition of Greenshank in the River Shannon and River Fergus Estuaries SPA		Yes
[A179] Black-headed Gull (*Chroicocephalus ridibundus*)	To maintain the favourable conservation condition of Black-headed Gull in the River Shannon and River Fergus Estuaries SPA		Yes
[A999] Wetlands	To maintain the favourable conservation condition of the wetland habitat in the River Shannon and River Fergus Estuaries SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.	Following the precautionary principle, a potential pathway for significant indirect effect on supporting habitat for the SCIs of the SPA was identified via the deterioration of water quality within the SPA, arising from the runoff or percolation of pollutants into surface water during the construction phase of the Proposed Project. **Therefore, a complete source-pathway-receptor chain for adverse effects on supporting wetland habitat for the SCIs of the SPA was identified and it is assessed further in this NIS.**	Yes

Qualifying feature	Conservation Objective (NPWS, Version 1, September 2012),	Rationale	Potential for Adverse Effects
		Given the marine and saline nature of this SCI, there is no potential for recorded invasive species (Japanese knotweed and Rhododendron which are both entirely terrestrial) to establish within this habitat, as a result of the Proposed Project.	

5.1.4.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form, 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.

Table 5-22 Site-specific threats, pressures, *and activities with potential to have effects on the River Shannon and River Fergus Estuaries SPA.*

Negative Impacts			
Rank	Threats and Pressures		Threat or pressure from Inside/Outside the SAC
M	A04	Grazing	Inside
M	G01.02	Walking, horseriding and non-motorised vehicles	Inside
M	A04	Grazing	Outside
M	G01.01	Nautical sports	Inside
M	F02.03	Leisure fishing	Inside

Rank: H = high, M = medium, L = low

No works associated with any phase of the Proposed Project have the potential to contribute the above listed threats

5.1.4.3 Special Conservation Interests' Specific Information

[A017] Cormorant (*Phalacrocorax carbo*)

As per the conservation objectives supporting document for the SPA (NPWS, 2012), during winter the SPA regularly supports 1% or more of the all-Ireland population of Cormorant (*Phalacrocorax carbo*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 245 individuals. Recent data indicates that numbers have decreased within the SPA to 237 individuals (2006/07 – 2010/11).

According to the Article 12 Report (NPWS 2019), the long-term population trend (1987-2012) is increasing for this SCI species.

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Project resulting in potential for adverse effects on this species via a deterioration in water quality. Additionally, given the proximity of the Proposed Project to this SPA and suitable habitat for this species, there is potential for adverse effects as a result of disturbance/displacement during the construction phase only.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-23.

Table 5-23 Targets and attributes associated with nominated site-specific conservation objectives for cormorant in River Shannon and River Fergus Estuaries SPA

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Breeding population abundance: apparently occupied nests (AONs)	No significant decline	No - changes to breeding site abundance as a result of the Proposed Project will not occur as there is no potential for adverse effect on any breeding sites of this species
Productivity rate	No significant decline	**Yes -** habitat degradation as a result of silt-laden run-off and other pollutants or disturbance could undermine this target.

Distribution: breeding colonies	No significant decline	No - disturbance on breeding colonies as a result of the Proposed Project will not occur as there is no potential for adverse effect on any breeding sites of this species
Prey biomass available	No significant decline	**Yes -** deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Barriers to connectivity	No significant increase	No – there will be no new barriers to connectivity as a result of the Proposed Project
Disturbance at breeding site	Human activities should occur at levels that do not adversely affect the breeding cormorant population	**Yes** – Construction of the Proposed Project has the potential to disturb this species at breeding sites
Population trend	Long term population trend stable or increasing	**Yes -** habitat degradation as a result of silt-laden run-off and other pollutants or disturbance could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by cormorant other than that occurring from natural patterns of variation	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target. Disturbance as a result of construction works could cause displacement which could lead to changes in the use of areas by this species within the SPA.

[A038] Whooper Swan (*Cygnus cygnus*)

As per the conservation objectives supporting document for the SPA (NPWS, 2012), during winter the SPA regularly supports 1% or more of the all-Ireland population of the Annex I species Whooper Swan (*Cygnus cygnus*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 118 individuals. Recent data indicates that numbers have increased within the SPA to 269 individuals (2006/07 – 2010/11).

According to the Article 12 Report (NPWS 2019), the long-term population trend (1986-2010) is increasing for this SCI species.

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Project resulting in potential for adverse effects on this species via a deterioration in water quality. Additionally, given the proximity of the Proposed Project to this SPA and suitable habitat for this species, there is potential for adverse effects as a result of disturbance/displacement as a result of the construction phase only.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-24

Table 5-24 Targets and attributes associated with the conservation objectives for Whooper Swan

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - habitat degradation as a result of silt-laden run-off and other pollutants or disturbance could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by whooper swan other than that occurring from natural patterns of variation	**Yes** - habitat degradation as a result of silt-laden run-off and other pollutants or disturbance could undermine this target.

[A046] Light-bellied Brent Goose (*Branta bernicla hrota*)

As per the conservation objectives supporting document for the SPA (NPWS, 2012), during winter the SPA regularly supports 1% or more of the biogeographical population of Light-bellied Brent Goose (*Branta bernicla hrota*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 494 individuals. Recent data indicates that numbers have decreased within the SPA to 176 individuals (2006/07 – 2010/11).

According to the Article 12 Report (NPWS 2019), the long-term population trend (1987-2011) is increasing for this SCI species.

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Project resulting in potential for adverse effects on this species via a deterioration in water quality. Additionally, given the proximity of the Proposed Project to this SPA and suitable habitat for this species, there is potential for adverse effects as a result of disturbance/displacement as a result of the construction phase only.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-25

Table 5-25 Targets and attributes associated with the conservation objective for Light-bellied Brent Goose

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by light-bellied brent goose other than that occurring from natural patterns of variation	**Yes** - habitat degradation as a result of silt-laden run-off and other pollutants or disturbance could undermine this target.

[A048] Shelduck (*Tadorna tadorna*)

As per the conservation objectives supporting document for the SPA (NPWS, 2012), during winter the SPA regularly supports 1% or more of the all-Ireland population of Shelduck (*Tadorna tadorna*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 1,025 individuals. Recent data indicates that numbers have decreased within the SPA to 291 individuals (2006/07 – 2010/11).

According to the Article 12 Report (NPWS 2019), the long-term population trend (1980-2011) is unknown for this SCI species.

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Project resulting in potential for adverse effects on this species via a deterioration in water quality. Additionally, given the proximity of the Proposed Project to this SPA and suitable habitat for this species, there is potential for adverse effects as a result of disturbance/displacement as a result of the construction phase only.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-26.

Table 5-26 Targets and attributes associated with the conservation objective for Shelduck

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by shelduck other than that occurring from natural patterns of variation	**Yes -** habitat degradation as a result of silt-laden run-off and other pollutants or disturbance could undermine this target.

[A050] Wigeon (*Anas Penelope*)

As per the conservation objectives supporting document for the SPA (NPWS, 2012), during winter the SPA regularly supports 1% or more of the all-Ireland population of Wigeon (*Anas penelope*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 3,761 individuals. Recent data indicates that numbers have decreased within the SPA to 1,821 individuals (2006/07 – 2010/11).

According to the Article 12 Report (NPWS 2019), the long-term population trend (1987-2011) is decreasing for this SCI species.

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Project resulting in potential for adverse effects on this species via a deterioration in water quality. Additionally, given the proximity of the Proposed Project to this SPA and suitable habitat for this species, there is potential for adverse effects as a result of disturbance/displacement as a result of the construction phase only.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-27.

Table 5-27 Targets and attributes associated with the conservation objective for Wigeon

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by wigeon other than that occurring from natural patterns of variation	**Yes** - habitat degradation as a result of silt-laden run-off and other pollutants or disturbance could undermine this target.

[A052] Teal (*Anas crecca*)

As per the conservation objectives supporting document for the SPA (NPWS, 2012), during winter the SPA regularly supports 1% or more of the all-Ireland population of Teal (*Anas crecca*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 2,260 individuals. Recent data indicates that numbers have decreased within the SPA to 812 individuals (2006/07 – 2010/11).

According to the Article 12 Report (NPWS 2019), the long-term population trend (1972-2011) is decreasing for this SCI species.

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Project resulting in potential for adverse effects on this species via a deterioration in water quality. Additionally, given the proximity of the Proposed Project to this SPA and suitable habitat for this species, there is potential for adverse effects as a result of disturbance/displacement as a result of the construction phase only.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-28.

Table 5-28 Targets and attributes associated with the conservation objective for Teal

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by teal other than that occurring from natural patterns of variation	**Yes** - habitat degradation as a result of silt-laden run-off and other pollutants or disturbance could undermine this target.

[A054] Pintail (*Anas acuta*)

As per the conservation objectives supporting document for the SPA (NPWS, 2012), Pintail (*Anas acuta*) was recorded in numbers of all-Ireland importance during the baseline period (1995/96 – 1999/00), at 62 individuals. Recent data indicates that numbers have decreased within the SPA to 30 individuals (2006/07 – 2010/11).

According to the Article 12 Report (NPWS 2019), the long-term population trend (1987-2011) is unknown for this SCI species.

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Project resulting in potential for adverse effects on this species via a deterioration in water quality. Additionally, given the proximity of the Proposed Project to this SPA and suitable habitat for this species, there is potential for adverse effects as a result of disturbance/displacement as a result of the construction phase only.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-29.

Table 5-29 Targets and attributes associated with the conservation objective for Pintail

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by pintail other than that occurring from natural patterns of variation	**Yes -** habitat degradation as a result of silt-laden run-off and other pollutants or disturbance could undermine this target.

[A056] Shoveler (*Anas clypeata*)

As per the conservation objectives supporting document for the SPA (NPWS, 2012), Shoveler (*Anas clypeata*) was recorded in numbers of all-Ireland importance during the baseline period (1995/96 – 1999/00), at 107 individuals. Recent data indicates that numbers have decreased within the SPA to 45 individuals (2006/07 – 2010/11).

According to the Article 12 Report (NPWS 2019), the long-term population trend (1980-2011) is increasing for this SCI species.

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Project resulting in potential for adverse effects on this species via a deterioration in water quality. Additionally, given the proximity of the Proposed Project to this SPA and suitable habitat for this species, there is potential for adverse effects as a result of disturbance/displacement as a result of the construction phase only.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-30.

Table 5-30 Targets and attributes associated with the conservation objective for Shoveler

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by shoveler other than that occurring from natural patterns of variation	**Yes -** habitat degradation as a result of silt-laden run-off and other pollutants or disturbance could undermine this target.

[A062] Scaup (*Aythya marila*)

As per the conservation objectives supporting document for the SPA (NPWS, 2012), Scaup (*Aythya marila*) was recorded in numbers of all-Ireland importance during the baseline period (1995/96 –

1999/00), at 102 individuals. Recent data indicates that numbers have decreased within the SPA to 24 individuals (2006/07 – 2010/11).

According to the Article 12 Report (NPWS 2019), the long-term population trend (1980-2011) is unknown for this SCI species.

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Project resulting in potential for adverse effects on this species via a deterioration in water quality. Additionally, given the proximity of the Proposed Project to this SPA and suitable habitat for this species, there is potential for adverse effects as a result of disturbance/displacement as a result of the construction phase only.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-31.

Table 5-31 Targets and attributes associated with the conservation objective for Scaup

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by scaup other than that occurring from natural patterns of variation	**Yes -** habitat degradation as a result of silt-laden run-off and other pollutants or disturbance could undermine this target.

[A137] Ringed Plover (*Charadrius hiaticula*)

As per the conservation objectives supporting document for the SPA (NPWS, 2012), during winter the SPA regularly supports 1 % or more of the all-Ireland population of Ringed Plover (*Charadrius hiaticula*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 223 individuals. Recent data indicates that numbers have decreased within the SPA to 92 individuals (2006/07 – 2010/11).

According to the Article 12 Report (NPWS 2019), the long-term population trend (1999-2011) is unknown for this SCI species.

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Project resulting in potential for adverse effects on this species via a deterioration in water quality. Additionally, given the proximity of the Proposed Project to this SPA and suitable habitat for this species, there is potential for adverse effects as a result of disturbance/displacement as a result of the construction phase only.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-32.

Table 5-32 Targets and attributes associated with the conservation objective for Ringed Plover

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as

		a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by ringed plover other than that occurring from natural patterns of variation	**Yes -** habitat degradation as a result of silt-laden run-off and other pollutants or disturbance could undermine this target.

[A140] Golden Plover (*Pluvialis apricaria*)

As per the conservation objectives supporting document for the SPA (NPWS, 2012), during winter the SPA regularly supports 1% or more of the all-Ireland population of the Annex I species Golden Plover (*Pluvialis apricaria*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 5,664 individuals. Recent data indicates that numbers have decreased within the SPA to 1,929 individuals (2006/07 – 2010/11).

According to the Article 12 Report (NPWS 2019), the long-term population trend (1987-2011) is unknown for this SCI species.

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Project resulting in potential for adverse effects on this species via a deterioration in water quality. Additionally, given the proximity of the Proposed Project to this SPA and suitable habitat for this species, there is potential for adverse effects as a result of disturbance/displacement as a result of the construction phase only.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-33.

Table 5-33 Targets and attributes associated with the conservation objective for Golden Plover

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by golden plover other than that occurring from natural patterns of variation	**Yes -** habitat degradation as a result of silt-laden run-off and other pollutants or disturbance could undermine this target.

[A141] Grey Plover (*Pluvialis squatarola*)

As per the conservation objectives supporting document for the SPA (NPWS, 2012), during winter the SPA regularly supports 1% or more of the all-Ireland population of Grey Plover (*Pluvialis squatarola*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 558 individuals. Recent data indicates that numbers have decreased within the SPA to 69 individuals (2006/07 – 2010/11).

According to the Article 12 Report (NPWS 2019), the long-term population trend (1987-2011) is unknown for this SCI species.

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Project resulting in potential for adverse effects on this species via a deterioration in water quality. Additionally, given the proximity of the Proposed Project to this SPA and suitable habitat for this species, there is potential for adverse effects as a result of disturbance/displacement during the construction phase only.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-34.

Table 5-34 Targets and attributes associated with the conservation objective for Grey Plover

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by grey plover other than that occurring from natural patterns of variation	**Yes -** habitat degradation as a result of silt-laden run-off and other pollutants or disturbance could undermine this target.

[A142] Lapwing (*Vanellus vanellus*)

As per the conservation objectives supporting document for the SPA (NPWS, 2012), during winter the SPA regularly supports 1% or more of the all-Ireland population of Lapwing (*Vanellus vanellus*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 15,126 individuals. Recent data indicates that numbers have decreased within the SPA to 2,012 individuals (2006/07 – 2010/11).

According to the Article 12 Report (NPWS 2019), the long-term population trend (1987-2011) is decreasing for this SCI species.

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Project resulting in potential for adverse effects on this species via a deterioration in water quality. Additionally, given the proximity of the Proposed Project to this SPA and suitable habitat for this species, there is potential for adverse effects as a result of disturbance/displacement as a result of the construction phase only.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-35.

Table 5-35 Targets and attributes associated with the conservation objective for Lapwing

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by lapwing other than that	**Yes -** habitat degradation as a result of silt-laden run-off and other pollutants or disturbance could undermine this target.

	occurring from natural patterns of variation	

[A143] Knot (*Calidris canutus*)

As per the conservation objectives supporting document for the SPA (NPWS, 2012), during winter the SPA regularly supports 1% or more of the all-Ireland population of Knot (*Calidris canutus*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 2,015 individuals. Recent data indicates that numbers have decreased within the SPA to 2,012 individuals (2006/07 – 2010/11).

According to the Article 12 Report (NPWS 2019), the long-term population trend (1987-2011) is unknown for this SCI species.

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Project resulting in potential for adverse effects on this species via a deterioration in water quality. Additionally, given the proximity of the Proposed Project to this SPA and suitable habitat for this species, there is potential for adverse effects as a result of disturbance/displacement during the construction phase only.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-36.

Table 5-36 Targets and attributes associated with the conservation objective for Knot

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by knot other than that occurring from natural patterns of variation	**Yes -** habitat degradation as a result of silt-laden run-off and other pollutants or disturbance could undermine this target.

[A149] Dunlin (*Calidris alpina*)

As per the conservation objectives supporting document for the SPA (NPWS, 2012), during winter the SPA regularly supports 1% or more of the biogeographic population of Dunlin (*Calidris alpina*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 15,131 individuals. Recent data indicates that numbers have decreased within the SPA to 2,012 individuals (2006/07 – 2010/11).

According to the Article 12 Report (NPWS 2019), the long-term population trend (1987-2011) is decreasing for this SCI species.

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Project resulting in potential for adverse effects on this species via a deterioration in water quality. Additionally, given the proximity of the Proposed Project to this SPA and suitable habitat for this species, there is potential for adverse effects as a result of disturbance/displacement during the construction phase only.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-37.

Table 5-37 Targets and attributes associated with the conservation objective for Dunlin

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by dunlin other than that occurring from natural patterns of variation	**Yes -** habitat degradation as a result of silt-laden run-off and other pollutants or disturbance could undermine this target.

[A156] Black-tailed Godwit (*Limosa limosa*)

As per the conservation objectives supporting document for the SPA (NPWS, 2012), during winter the SPA regularly supports 1% or more of the biogeographical population of Black-tailed Godwit (*Limosa limosa*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 2,035 individuals. Recent data indicates that numbers have decreased within the SPA to 2,012 individuals (2006/07 – 2010/11).

According to the Article 12 Report (NPWS 2019), the long-term population trend (1987-2011) is increasing for this SCI species.

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Project resulting in potential for adverse effects on this species via a deterioration in water quality. Additionally, given the proximity of the Proposed Project to this SPA and suitable habitat for this species, there is potential for adverse effects as a result of disturbance/displacement during the construction phase only.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-38.

Table 5-38 Targets and attributes associated with the conservation objective for Black-tailed Godwit

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by black-tailed godwit other than that occurring from natural patterns of variation	**Yes -** habitat degradation as a result of silt-laden run-off and other pollutants or disturbance could undermine this target.

[A157] Bar-tailed Godwit (*Limosa lapponica*)

As per the conservation objectives supporting document for the SPA (NPWS, 2012), during winter the SPA regularly supports 1% or more of the all-Ireland population of the Annex I species Bar-tailed Godwit (*Limosa lapponica*). The mean peak number within the SPA during the baseline period

(1995/96 – 1999/00) was 460 individuals. Recent data indicates that numbers have decreased within the SPA to 2,012 individuals (2006/07 – 2010/11).

According to the Article 12 Report (NPWS 2019), the long-term population trend (1987-2011) is decreasing for this SCI species.

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Project resulting in potential for adverse effects on this species via a deterioration in water quality. Additionally, given the proximity of the Proposed Project to this SPA and suitable habitat for this species, there is potential for adverse effects as a result of disturbance/displacement during the construction phase only.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-39.

Table 5-39 Targets and attributes associated with the conservation objective for Bar-tailed Godwit

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by bar-tailed godwit other than that occurring from natural patterns of variation	**Yes -** habitat degradation as a result of silt-laden run-off and other pollutants or disturbance could undermine this target.

[A160] Curlew (*Numenius arquata*)

As per the conservation objectives supporting document for the SPA (NPWS, 2012), during winter the SPA regularly supports 1% or more of the all-Ireland population of Curlew (*Numenius arquata*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 2,396 individuals. Recent data indicates that numbers have decreased within the SPA to 2,012 individuals (2006/07 – 2010/11).

According to the Article 12 Report (NPWS 2019), the long-term population trend (1987-2011) is decreasing for this SCI species.

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Project resulting in potential for adverse effects on this species via a deterioration in water quality. Additionally, given the proximity of the Proposed Project to this SPA and suitable habitat for this species, there is potential for adverse effects as a result of disturbance/displacement during the construction phase only.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-40.

Table 5-40 Targets and attributes associated with the conservation objective for Curlew

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by curlew other than that occurring from natural patterns of variation	**Yes -** habitat degradation as a result of silt-laden run-off and other pollutants or disturbance could undermine this target.

[A162] Redshank (*Tringa totanus*)

As per the conservation objectives supporting document for the SPA (NPWS, 2012), during winter the SPA regularly supports 1% or more of the all-Ireland population of Redshank (*Tringa totanus*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 2,645 individuals. Recent data indicates that numbers have decreased within the SPA to 2,012 individuals (2006/07 – 2010/11).

According to the Article 12 Report (NPWS 2019), the long-term population trend (1972-2008) is decreasing for this SCI species.

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Project resulting in potential for adverse effects on this species via a deterioration in water quality. Additionally, given the proximity of the Proposed Project to this SPA and suitable habitat for this species, there is potential for adverse effects as a result of disturbance/displacement during the construction phase only.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-41.

Table 5-41 Targets and attributes associated with the conservation objective for Redshank

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by redshank other than that occurring from natural patterns of variation	**Yes -** habitat degradation as a result of silt-laden run-off and other pollutants or disturbance could undermine this target.

[A164] Greenshank (*Tringa nebularia*)

As per the conservation objectives supporting document for the SPA (NPWS, 2012), during winter the SPA regularly supports 1% or more of the all-Ireland population of Greenshank (*Tringa nebularia*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was

61 individuals. Recent data indicates that numbers have decreased within the SPA to 30 individuals (2006/07 – 2010/11).

According to the Article 12 Report (NPWS 2019), the long-term population trend (1987-2011) is increasing for this SCI species.

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Project resulting in potential for adverse effects on this species via a deterioration in water quality. Additionally, given the proximity of the Proposed Project to this SPA and suitable habitat for this species, there is potential for adverse effects as a result of disturbance/displacement during the construction phase.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-42.

Table 5-42 Targets and attributes associated with the conservation objective for Greenshank

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by greenshank other than that occurring from natural patterns of variation	**Yes -** habitat degradation as a result of silt-laden run-off and other pollutants or disturbance could undermine this target.

[A179] Black-headed Gull (*Larus ridibundus*)

As per the conservation objectives supporting document for the SPA (NPWS, 2012), Black-headed Gull (*Larus ridibundus*) was recorded in numbers of all-Ireland importance during the baseline period (1995/96 – 1999/00), at 2,681 individuals. Recent data indicates that numbers have decreased within the SPA to 1,303 individuals (2006/07 – 2010/11).

According to the Article 12 Report (NPWS 2019), the long-term population trend (1980-2011) is unknown for this SCI species.

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Project resulting in potential for adverse effects on this species via a deterioration in water quality. Additionally, given the proximity of the Proposed Project to this SPA and suitable habitat for this species, there is potential for adverse effects as a result of disturbance/displacement during the construction phase.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-43.

Table 5-43 Targets and attributes associated with the conservation objective for Black-headed Gull

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-

		laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by black-headed gull other than that occurring from natural patterns of variation	**Yes** - habitat degradation as a result of silt-laden run-off and other pollutants or disturbance could undermine this target.

[A999] Wetlands and Waterbirds

According to the site-specific conservation objectives the extent of wetland habitat within the SPA was estimated as 32,261ha, using OSI data and relevant orthophotographs (NPWS, 2012). The following relevant extracts have been gleaned from the NPWS site synopsis and Natura 2000 Data From for the SPA:

'*The estuaries of the River Shannon and River Fergus form the largest estuarine complex in Ireland. The site comprises the entire estuarine habitat from Limerick City westwards as far as Doonaha in Co. Clare and Dooneen Point in Co. Kerry. The site has vast expanses of intertidal flats which contain a diverse macroinvertebrate community, e.g. Macoma-Scrobicularia-Nereis, which provides a rich food resource for the wintering birds. Salt marsh vegetation frequently fringes the mudflats and this provides important high tide roost areas for the wintering birds. Elsewhere in the site the shoreline comprises stony or shingle beaches.*'

Taking a precautionary approach there is potential for the deterioration of this SCI supporting habitat for species within the SPA during the construction phase of the Proposed Project.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-44.

Table 5-44 Targets and attributes associated with nominated site-specific conservation objectives for wetlands and waterbirds.

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target
Wetland habitat area	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 32,261ha, other than that occurring from natural patterns of variation	No (changes to wetland habitat area as a result of the Proposed Project will not occur)

5.1.5 Mid-Clare Coast SPA [004182]

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

- There is potential for the deterioration of water quality within the SPA, arising from the runoff or percolation of pollutants into surface or ground water systems from the construction, operational, and decommissioning phases of the Proposed Project.
- Given the Proposed Wind Farm site is within the core foraging range for SCIs of the SPA, there is potential for disturbance/displacement to SCIs of the SPA.
- Indirect effects due to the spread of invasive species, including Japanese knotweed and Rhododendron, as a result of the Proposed Project.
- Potential collision risk to SCIs of this SPA, as the Proposed Wind Farm is within the core foraging range of one SCI, barnacle goose.

The Site-Specific Conservation Objectives (SSCOs) document and Natura 2000 Data Form for this designated site were reviewed during this assessment and can be found at the following online locations:

SSCOs: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004182.pdf Accessed the 11th of November 2025

Natura 2000 Data Form:
https://natura2000.eea.europa.eu/Natura2000/sdf/#/sdf?site=IE0004182&release=55 Accessed the 11th of November 2025

Table 5-45 below lists the qualifying features 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 Features with the Potential to be Affected

Table 5-45 Assessment of Qualifying features potentially affected for Mid-Clare Coast SPA.

Qualifying feature	Conservation Objective (NPWS, Version 1, September 2014),	Rationale	Potential for Adverse Effects
[A017] Cormorant (*Phalacrocorax carbo*)	To maintain the favourable conservation condition of Cormorant in Mid-Clare Coast SPA.	No significant supporting wetland habitat for any SCI of the SPA was recorded within or adjacent to the Proposed Project, nor were significant recordings of any SCI within the Proposed Project site. Therefore, no potential for adverse effects exists, as a result of disturbance/displacement, on these SCIs. However, the Proposed Project is hydrologically connected to the SPA and taking a precautionary approach, it was considered that the Proposed Project has the potential to undermine the favourable conservation status of the SCI species through a deterioration of water quality during the construction, operational, and decommissioning 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 or restoring favourable conversation status for these SCI species. **Therefore, a complete source-pathway-receptor chain for adverse effects on the SCIs of the SPA was identified, and it is assessed further in this NIS.** Regarding barnacle goose and the potential pathway for likely significant effect as a result of collision risk, this species was not recorded within the Proposed Wind Farm Site during the surveys undertaken. Whilst the Proposed Wind Farm site is within the foraging range of this species, given this species was not recorded within the Site, the Proposed Wind Farm site is not of significance to this species and therefore, there is no potential for adverse effects on this SCI, as result of collision risk.	Yes
[A045] Barnacle Goose (*Branta leucopsis*)	To maintain the favourable conservation condition of Barnacle Goose in Mid-Clare Coast SPA.		Yes
[A137] Ringed Plover (*Charadrius hiaticula*)	To maintain the favourable conservation condition of Ringed Plover in Mid-Clare Coast SPA.		Yes
[A144] Sanderling (*Calidris alba*)	To maintain the favourable conservation condition of Sanderling in Mid-Clare Coast SPA.		Yes
[A148] Purple Sandpiper (*Calidris maritima*)	To maintain the favourable conservation condition of Purple Sandpiper in Mid-Clare Coast SPA.		Yes
[A149] Dunlin (*Calidris alpina alpina*)	To maintain the favourable conservation condition of Dunlin in Mid-Clare Coast SPA.		Yes

Qualifying feature	Conservation Objective (NPWS, Version 1, September 2014),	Rationale	Potential for Adverse Effects
[A169] Turnstone (*Arenaria interpres*)	To maintain the favourable conservation condition of Turnstone in Mid-Clare Coast SPA.		Yes
[A999] Wetlands	To maintain the favourable conservation condition of the wetland habitat in Mid-Clare Coast SPA as a resource for the regularly occurring migratory waterbirds that utilise it.	Following the precautionary principle, a potential pathway for significant indirect effect on supporting habitats for the SCIs of the SPA was identified via the deterioration of water quality within the SPA, arising from the runoff or percolation of pollutants into surface water during the construction, operational, and decommissioning phases of the Proposed Project. **Therefore, a complete source-pathway-receptor chain for adverse effects on supporting wetland habitat for the SCIs of the SPA was identified and it is assessed further in this NIS.** Given the marine and saline nature of this SCI, there is no potential for recorded invasive species (Japanese knotweed and Rhododendron which are both entirely terrestrial) to establish within this habitat, as a result of the Proposed Project.	Yes

5.1.5.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form, 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 5-46.

Table 5-46 Site-specific threats, pressures, *and activities with potential to have effects on Mid-Clare Coast SPA.*

Negative Impacts			
Rank	Threats and Pressures		Threat or pressure from Inside/Outside the SAC
M	G01.01	Nautical sports	Inside
M	D03.02	Shipping lanes	Inside
H	E03	Discharges	Inside
H	E01	Urbanised areas, human habitation	Outside
H	A08	Fertilisation	Outside
H	E02	Industrial or commercial areas	Outside
M	F01	Marine and Freshwater Aquaculture	Inside

Rank: H = high, M = medium, L = low

No works associated with any phase of the Proposed Project have the potential to contribute the above listed threats

5.1.5.3 Special Conservation Interests' Specific Information

[A017] Cormorant (*Phalacrocorax carbo*)

As per the conservation objectives supporting document for the SPA (NPWS, 2014), during the breeding season the site regularly supports 1% or more of the all-Ireland population of Cormorant. The peak number of this species recorded in 1990 was 60 breeding pairs.

According to the Article 12 Report (NPWS 2019), the long-term population trend (1987-2012) is increasing for this SCI species.

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Project resulting in potential for adverse effects on this species via a deterioration in water quality.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-47.

Table 5-47 Targets and attributes associated with nominated site-specific conservation objectives for cormorant in Mid-Clare Coast SPA

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Breeding population abundance: apparently occupied nests (AONs)	No significant decline	No (changes to breeding site abundance as a result of the Proposed Project will not occur)
Productivity rate	No significant decline	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

Distribution: breeding colonies	No significant decline	No (disturbance on breeding colonies as a result of the Proposed Project will not occur)
Prey biomass available	No significant decline	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Barriers to connectivity	No significant decline	No (no barriers to connectivity as a result of the Proposed Project will not occur)
Disturbance at the breeding site	Human activities should occur at levels that do not adversely affect the breeding cormorant population	No (disturbance as a result of the Proposed Project will not occur)

[A045] Barnacle Goose (*Branta leucopsis*)

As per the conservation objectives supporting document for the SPA (NPWS, 2014), during winter the site regularly supports 1% or more of the all-Ireland population of Barnacle Goose (*Branta leucopsis*). The mean peak number of this Annex I species within the SPA during the baseline period (1993-2003) was 250 individuals. The most recent census on barnacle goose was on the 26th of March 2013 when a total of 450 individuals were recorded (Mitchell & Hall, 2013). The flyway population of Greenland Barnacle Goose that winters in Britain and Ireland has been increasing. The last reported census in 2013 estimated the total wintering population in Britain and Ireland to be 80,670 birds, representing a 14.4% increase on the 2008 census total (Mitchell & Hall, 2013). The numbers counted in Ireland (17,500) also represented a 43% increase on the number counted in the 2008 census (Crowe et al. 2014). The estimated site population trend for Mid- Clare Coast is therefore in line with the overall population increase. Most of the population of Greenland Barnacle Goose winter in just a few sites, typically coastal grazed saltmarshes and pastures as well as more intensively managed grasslands on Islay. This species is well adapted for feeding on short coastal turf, including saltmarshes, and machair, but have become more dependent on intensively managed grasslands, and will also take clover, and spilled grain amongst stubble (Ogilvie et al. 1999).

According to the Article 12 Report (NPWS 2019), the long-term population trend (1983-2008) is increasing for this SCI species.

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Project resulting in potential for adverse effects on this species via a deterioration in water quality.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-48.

Table 5-48 Targets and attributes associated with nominated site-specific conservation objectives for barnacle goose in Mid-Clare Coast SPA

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

Distribution	No significant decrease in the range, timing or intensity of use of areas by barnacle goose other than that occurring from natural patterns of variation	**Yes -** habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

[A137] Ringed Plover (*Charadrius hiaticula*)

As per the conservation objectives supporting document for the SPA (NPWS, 2014), during winter the site regularly supports 1% or more of the all-Ireland population of Ringed Plover (*Charadrius hiaticula*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 316 individuals. The estimated site trend should be treated with some caution given that the national trend for this wader species is showing an increase; while the all-Ireland trend is stable. Other west coast sites (e.g. Blacksod/Broadhaven Bays and Inner Galway Bay) show no apparent declines based on I-WeBS peak data (Boland & Crowe, 2012). Increasing numbers in Ireland however contrasts with Northern Ireland and Britain, both of which have seen a long-term decline in numbers.

According to the Article 12 Report (NPWS 2019), the long-term population trend (1999-2011) is unknown for this SCI species.

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Project resulting in potential for adverse effects on this species via a deterioration in water quality.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-49.

Table 5-49 Targets and attributes associated with nominated site-specific conservation objectives for ringed plover in Mid-Clare Coast SPA

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	No significant decrease in the range, timing or intensity of use of areas by ringed plover other than that occurring from natural patterns of variation	**Yes -** habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

[A144] Sanderling (*Calidris alba*)

As per the conservation objectives supporting document for the SPA (NPWS, 2014), during winter the site regularly supports 1% or more of the all-Ireland population of Sanderling (Calidris alba). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 272 individuals. The estimated site trend should be treated with some caution given that the national and all-Ireland trends for this wader species are for increasing numbers. Numbers in Britain have also increased over the long-term.

According to the Article 12 Report (NPWS 2019), the long-term population trend (1987-2011) is increasing for this SCI species.

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Project resulting in potential for adverse effects on this species via a deterioration in water quality.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-50.

Table 5-50 Targets and attributes associated with nominated site-specific conservation objectives for sanderling in Mid-Clare Coast SPA

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	No significant decrease in the range, timing or intensity of use of areas by sanderling other than that occurring from natural patterns of variation	**Yes -** habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

[A148] Purple Sandpiper (*Calidris maritima*)

As per the conservation objectives supporting document for the SPA (NPWS, 2014), during winter the site regularly supports 1% or more of the biogeographic population of Purple Sandpiper (*Calidris maritima*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 393 individuals. Long-term I-WeBS data suggests a stable national population while the all-Ireland trend is for decline. Mid-Clare Coast is the main wintering site for this species in Ireland. Incomplete coverage and missing data from I-WeBS means that population size and trend for this site is inadequate. However, of note is that the recent peak count from the co-ordinated 2010/11 Waterbird Survey Programme is less than half of the baseline mean peak number recorded at the site which suggests a real decline in numbers. Further census work at key sites is essential to understand population trends and movements (Boland & Crowe, 2012).

According to the Article 12 Report (NPWS 2019), the long-term population trend (1987-2011) is decreasing for this SCI species.

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Project resulting in potential for adverse effects on this species via a deterioration in water quality.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-51.

Table 5-51 Targets and attributes associated with nominated site-specific conservation objectives for purple sandpiper in Mid-Clare Coast SPA

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other

		pollutants could undermine this target.
Distribution	No significant decrease in the range, timing or intensity of use of areas by purple sandpiper other than that occurring from natural patterns of variation	**Yes -** habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

[A149] Dunlin (*Calidris alpina alpina*)

As per the conservation objectives supporting document for the SPA (NPWS, 2014), during winter the site regularly supports 1% or more of the all-Ireland population of Dunlin (*Calidris alpina*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 2,708 individuals. The estimated site trend for Dunlin is in line with the national and all-Ireland trends for decline and a similar downward trend has been observed in Britain and Northern Ireland.

According to the Article 12 Report (NPWS 2019), the long-term population trend (1987-2011) is decreasing for this SCI species.

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Project resulting in potential for adverse effects on this species via a deterioration in water quality.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-52.

Table 5-52 Targets and attributes associated with nominated site-specific conservation objectives for dunlin in Mid-Clare Coast SPA

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	No significant decrease in the range, timing or intensity of use of areas by dunlin other than that occurring from natural patterns of variation	**Yes -** habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

[A169] Turnstone (*Arenaria interpres*)

As per the conservation objectives supporting document for the SPA (NPWS, 2014), during winter the site regularly supports 1% or more of the all-Ireland population of Turnstone (*Arenaria interpres*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 571 individuals. Numbers of Turnstone in the Republic of Ireland have been showing an increase since the early 2000's. This contrasts markedly with Britain and Northern Ireland where a decline in numbers has been evident for some time.

According to the Article 12 Report (NPWS 2019), the long-term population trend (1987-2011) is unknown for this SCI species.

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Project resulting in potential for adverse effects on this species via a deterioration in water quality.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-53.

Table 5-53 Targets and attributes associated with nominated site-specific conservation objectives for turnstone in Mid-Clare Coast SPA

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	No significant decrease in the range, timing or intensity of use of areas by turnstone other than that occurring from natural patterns of variation	**Yes -** habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

Wetlands and Waterbirds

According to the site-specific conservation objectives the extent of wetland habitat within the SPA was estimated as 4,641ha, using OSi data and relevant orthophotographs (NPWS, 2014). The following relevant extracts have been gleaned from the NPWS site synopsis and Natura 2000 Data From for the SPA:

'*The Mid-Clare Coast SPA site extends along the Co. Clare coastline in a south-southwesterly direction from Spanish Point (3 km west of Milltown Malbay) to just west of Doonbeg Bay, a distance of some 14 km. It comprises the mainland shoreline, Mutton Island and Mattle Island, a series of rocky reefs and the open marine water of Mal Bay between the islands and the mainland.*

The Mid-Clare Coast SPA is of high ornithological importance and supports an internationally important population of Purple Sandpiper, and nationally important populations of wintering Barnacle Goose and four wader species.'

Taking a precautionary approach there is potential for the deterioration of this supporting habitat for species within the SPA resulting in potential for adverse effects.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 5-54.

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Table 5-54 Targets and attributes associated with nominated site-specific conservation objectives for wetlands and waterbirds.

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target
Wetland habitat area	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 4,641 hectares, other than that occurring from natural patterns of variation	No (changes to wetland habitat area as a result of the Proposed Project will not occur)

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/s. The Conservation Objectives each of the European Sites assessed were reviewed on the 19/11/2025. The Conservation Objectives for these sites are available at the following locations:

- Lower River Shannon SAC [002165]
  https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002165.pdf
- Carrowmore Dunes SAC [002250]
  https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002250.pdf
- Carrowmore Point to Spanish Point and Islands SAC [001021]
  https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO001021.pdf
- River Shannon and River Fergus Estuaries SPA [004077]
  https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf
- Mid-Clare Coast SPA [004182]
  https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004182.pdf

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

6.1 Potential for Direct Effects on the European Sites

There will be no direct effects on the Qualifying Interests (QI's) or on the Special Conservation Interests (SCI's) of any of the above European Sites, as a result of habitat loss/degradation or collision risk. However, given the close proximity (approx. 86m) of the Proposed Grid Connection route to the River Shannon SAC and River Shannon and River Fergus Estuaries SPA, taking a precautionary approach, the potential for disturbance/displacement of the QIs/SCIs of these Sites as a result of the construction phase of the Proposed Project only is considered below.

6.1.1 Disturbance/Displacement

6.1.1.1 Construction Phase

No resting or breeding sites for otter were recorded during the multidisciplinary surveys. However, the shores along the Shannon Estuary which form part of the Lower River Shannon SAC, provide suitable foraging, resting, and breeding habitat for otter. Additionally, indications of foraging otter were recorded along watercourses which the Proposed Grid Connection route crosses. There is, therefore, potential for disturbance/displacement to populations of otter designated under the Lower Shannon SAC during the construction phase of the Proposed Project.

The Proposed Wind Farm site is located over 13km from the River Shannon and River Fergus Estuaries SPA and over 6 km from the Mid Clare Coast SPA. These distances are outside the foraging ranges for the majority of the SCIs of both SPA, with the exception of cormorant, barnacle goose, and black headed gull. However, as no significant recordings (breeding sites or large numbers) of these species were recorded during the targeted bird surveys of the Proposed Wind Farm site, no potential for adverse effects are anticipated, as a result of *ex-situ* disturbance/displacement within the wind farm site.

The southern extent of the Proposed Grid Connection route is located within existing road infrastructure in close proximity to the River Shannon SAC and River Shannon and River Fergus Estuaries SPA. As the construction of the Proposed Grid Connection route will require the use of heavy machinery and ground works in close proximity, and that potential suitable habitat for QIs/SCIs of these European Sites was recorded adjacent to the route, taking a precautionary approach, there is potential for adverse effects on the following QIs/SCIs as a result of disturbance/displacement:

River Shannon SAC (002165)

- [1355] Otter (*Lutra lutra*)

River Shannon and River Fergus Estuaries SPA (004077)

- [A017] Cormorant (*Phalacrocorax carbo*)
- [A038] Whooper Swan (*Cygnus cygnus*)
- [A046] Light-bellied Brent Goose (*Branta bernicla hrota*)
- [A048] Shelduck (*Tadorna tadorna*)
- [A050] Wigeon (*Anas Penelope*)
- [A052] Teal (*Anas crecca*)
- [A054] Pintail (*Anas acuta*)
- [A056] Shoveler (*Anas clypeata*)
- [A062] Scaup (*Aythya marila*)
- [A137] Ringed Plover (*Charadrius hiaticula*)
- [A140] Golden Plover (*Pluvialis apricaria*)
- [A141] Grey Plover (Pluvialis squatarola)
- [A142] Lapwing (*Vanellus vanellus*)
- [A143] Knot (*Calidris canutus*)
- [A149] Dunlin (*Calidris alpina*)
- [A156] Black-tailed Godwit (*Limosa limosa*)
- [A157] Bar-tailed Godwit (*Limosa lapponica*)
- [A160] Curlew (*Numenius arquata*)
- [A162] Redshank (*Tringa tetanus*)
- [A164] Greenshank (*Tringa nebularia*)
- [A179] Black-headed Gull (*Chroicocephalus ridibundus*)

Mitigation

Mitigation by Avoidance

There are no instream or any riverside works proposed as part of the Proposed Project. There will be no works within any European Site, and where watercourse crossings are required, methods such as clear span and horizontal directional drilling (HDD) will be employed to remove the necessity of instream works, and thus avoiding potential disturbance to otter.

Additional mitigation

Otter are predominantly crepuscular in nature and are unlikely to be adversely impacted by the proposed works as a result of disturbance/displacement. Works will be mostly confined to daytime hours, thus minimizing potential disturbance related impacts to the species. The NPWS Threat Response Plan for Otter NPWS (2009) acknowledges that "Little evidence has come to light in recent studies to suggest that disturbance by recreation is a significant pressure." It also identifies that Otter are known to travel significant distances from streams and lakes in search of new territory and feeding areas.

Channin P (2003) provides a literary review with regard to anthropogenic disturbance and refers to several reports which have found that disturbance is not detrimental to Otters (Jefferies (1987), (Durbin 1993), (Green & Green 1997). The report also describes successful breeding in towns, under ferry terminals and under the jetties of one of Europe's largest oil and gas terminals at Sullom Voe in North Scotland.

Irish Wildlife Manual No 23 (National Otter Survey of Ireland 2004/2005) found no significant relationship between disturbance and otter occurrence. In addition, no significant difference in otter presence was found between sites with and without recreational activity. It also states, "the lowest percentage occurrence was found at the sites with the lowest recorded disturbance" Irish Wildlife Manual No 76 (National Otter Survey of Ireland 2010/2012) notes that the occurrence of Otter was unaffected by perceived levels of disturbance at the survey sites. It also notes that there is little published evidence demonstrating any consistent relationship between Otter occurrence and human disturbance (Mason & Macdonald 1986, Delibes et al. 1991; Bailey & Rochford, 2006).

Regardless of the findings of the above noted literature, adopting a highly precautionary approach, in the absence of appropriate design and mitigation measures, the construction phase of the Proposed Project has the potential for some localised disturbance to otter resulting from noise and increased anthropogenic activities adjacent to watercourses within the Proposed Wind Farm site and along the Proposed Grid Connection route. Mitigation measures to reduce any potential disturbance-related impact on QI populations of otter associated with the Lower River Shannon SAC are outlined below.

No active otter holts were recorded within 150m of any Proposed Project infrastructure within the Proposed Wind Farm site or along the Proposed Grid Connection route. However, it is noted that this is a mobile species and could potentially migrate within the Site. As such, prior to the commencement of construction works associated with the installation of watercourse crossings, the following measures will be undertaken for the avoidance of disturbance/displacement and direct mortality and to ensure that no otter holts/breeding sites have been established since the original surveys undertaken (NRA, 2008):

- A confirmatory pre-commencement otter survey will be undertaken in accordance with standard best practice guidance prior to the commencement of site works.
- Should the surveys identify the presence of an otter holt, the following measures will be undertaken.

    - No works will be undertaken within 150m of any holts at which breeding females or cubs are present.
    - No wheeled or tracked vehicles (of any kind) will be used within 20m of active, but non-breeding, otter holts. Light work, such as digging by hand or scrub clearance will also not take place within 15m of such holts, except under licence (NRA, 2008).

In addition, the following mitigation measures will be implemented:

- All plant and equipment for use will comply with Statutory Instrument No 632/2001 - European Communities (Noise Emission by Equipment For Use Outdoors) Regulations, 2001 as amended
- Operating machinery will be restricted to the proposed works site area.
- Construction works will be limited to daylight hours and artificial lighting to facilitate works will not be permitted, where works occur in proximity to watercourses. Otters, being crepuscular in nature, will therefore not be disturbed by construction works.
- All vehicles and mechanical plant machinery will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract.
- Compressors will be of the "sound reduced" models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.
- Machines which are used intermittently will be shut down or throttled back to a minimum during those periods when they are not in use.

Regarding wintering birds, to mitigate any potential adverse effects on foraging SCIs within estuarine habitat in close proximity to the Proposed Project, or within agricultural grasslands adjacent to the southernmost section of the Proposed Grid Connection route, temporal restrictions on construction activity will be employed to avoid adverse effects on SCIs of the River Shannon and River Fergus Estuaries SPA (004077). Between October and March, no construction works will be undertaken within 500m of this SPA, to ensure no disturbance impacts on any wintering SCI.

Residual adverse effects:

Following the successful implementation of the above listed mitigation measures, there will be no potential for residual adverse effects on QIs/SCIs of European Sites as a result of disturbance/displacement during construction.

6.1.1.2 Operational Phase

The operational phase of the Proposed Project will not result in any potential for adverse effects on any European Site, as a result of disturbance/displacement. No significant supporting habitat for otter or SCIs of the River Shannon and River Fergus Estuaries SPA or the Mid Clare Coast SPA was identified within the Proposed Wind Farm site, which will typically be unmanned with just occasional requirement for maintenance works. Regarding the Proposed Grid Connection route, once this has been constructed, it will be located entirely underground with minimal requirement for maintenance works.

Given the above, no further assessment required, regards operational phase impacts on European Sites as a result of disturbance/ displacement.

6.1.1.3 Decommissioning Phase

The decommissioning phase of the Proposed Project will not result in any potential for adverse effects on any European Site, as a result of disturbance/displacement. No significant supporting habitat for otter or SCIs of the River Shannon and River Fergus Estuaries SPA or the Mid Clare Coast SPA exists within the Proposed Wind Farm site. The Proposed Grid Connection route will be permanent development with no decommissioning as it will form part of the national grid. No further assessment is required, in relation to the decommissioning phase impacts as a result of disturbance/displacement.

6.2 Potential for Indirect Effects on European Sites

6.2.1 Deterioration of Surface Water Quality

Within the Proposed Wind Farm site, there is the requirement for the creation of 1 no. watercourse crossing along proposed access roads and an upgrade of an existing river crossing, as well as a number of forestry drains/ditches with connectivity to the watercourses within the site. These watercourses ultimately discharge into the Carrowmore Dunes SAC, the Carrowmore Point to Spanish Point and Islands SAC, and the Mid-Clare Coast SPA downstream.

Additionally, the Proposed Grid Connection route crosses 24 no. mapped watercourses, which discharge either into the Lower River Shannon SAC, Carrowmore Dunes SAC, Carrowmore Point to Spanish Point and Islands SAC, River Shannon and River Fergus Estuaries SPA, and Mid-Clare Coast SPA.

Whilst no instream works are proposed as part of the Proposed Project, taking a precautionary approach, the proposed works have the potential to cause deterioration in surface water quality during the construction, operational and decommissioning phases of the Proposed Project due to the potential release of pollutants, including suspended solids and hydrocarbons, which, in the absence of mitigation

could potentially affect downstream aquatic habitats and supporting faunal wetland habitat of the following QIs/SCIs:

Lower River Shannon SAC [002165]

- [1130] Estuaries
- [1170] Reefs
- [1220] Perennial vegetation of stony banks
- [1310] Salicornia and other annuals colonizing mud and sand
- [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
- [1410] Mediterranean salt meadows (*Juncetalia maritimi*)
- [3260] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation
- [1095] Sea Lamprey (*Petromyzon marinus*)
- [1096] Brook Lamprey (*Lampetra planeri*)
- [1099] River Lamprey (*Lampetra fluviatilis*)
- [1106] Atlantic Salmon (*Salmo salar*)
- [1355] Otter (*Lutra lutra*)

Carrowmore Dunes SAC [002250]

- [1170] Reefs

Carrowmore Point to Spanish Point and Islands SAC [001021]

- [1170] Reefs
- [1150] Coastal lagoons

River Shannon and River Fergus Estuaries SPA [004077]

- [A017] Cormorant (*Phalacrocorax carbo*)
- [A038] Whooper Swan (*Cygnus cygnus*)
- [A046] Light-bellied Brent Goose (*Branta bernicla hrota*)
- [A048] Shelduck (*Tadorna tadorna*)
- [A050] Widgeon (*Anas Penelope*)
- [A052] Teal (*Anas crecca*)
- [A054] Pintail (*Anas acuta*)
- [A056] Shoveler (*Anas clypeata*)
- [A062] Scaup (*Aythya marila*)
- [A137] Ringed Plover (*Charadrius hiaticula*)
- [A140] Golden Plover (*Pluvialis apricaria*)
- [A141] Grey Plover (Pluvialis squatarola)
- [A142] Lapwing (*Vanellus vanellus*)
- [A143] Knot (*Calidris canutus*)
- [A149] Dunlin (*Calidris alpina*)
- [A156] black-tailed Godwit (*Limosa limosa*)
- [A157] Bar-tailed Godwit (*Limosa lapponica*)
- [A160] Curlew (*Numenius arquata*)
- [A162] Redshank (*Tringa tetanus*)
- [A164] Greenshank (*Tringa nebularia*)
- [A179] Black-headed Gull (*Chroicocephalus ridibundus*)
- [A999] Wetlands

Mid-Clare Coast SPA [004182]

- [A017] Cormorant (*Phalacrocorax carbo*)

- [A045] Barnacle Goose (Branta leucopsis)
- [A137] Ringed Plover (*Charadrius hiaticula*)
- [A144] Sanderling (*Calidris alba*)
- [A148] Purple Sandpiper (*Calidris maritima*)
- [A149] Dunlin (*Calidris alpina alpina*)
- [A169] Turnstone (*Arenaria interpres*)
- [A999] Wetlands

Mitigation by Design

The project design has followed the basic principles outlined below to eliminate the potential for adverse effects on QI and SCI receptors:

- Sensitive hydrological features have and will be avoided where possible, by application of suitable buffer zones (i.e. 50m to main watercourses, and 10m to main drains). All of the key Proposed Project areas are located significantly away from the delineated 50m watercourse buffer zones with the exception of the creation of 1 no. watercourse crossings and 1 no. upgrade to an existing watercourse crossing along proposed access roads.
- Hard standing areas have been designed to the minimum size necessary to reduce potential impacts on water quality.

6.2.1.2 Construction Phase

The construction phase of the Proposed Project will involve, clear-felling, excavations and earth moving and creation/upgrading of watercourse crossings, which create the potential for pollution in various forms, i.e. the generation of suspended solids and the potential for spillage of fuels associated with the refuelling of excavation machinery.

Surface and groundwater flowpaths have been identified as pathways for effect on the screened in European Sites, via deterioration of water quality.

Section 3.2 of **Appendix 5** prescribes detailed mitigation measures which will be implemented to ensure that no impacts on any hydrological receptor occurs during the construction phase of the Proposed Project. Those pertinent to mitigating adverse effects on European Sites are highlighted below.

Furthermore, detailed drawings of the proposed drainage measures to be implemented during all phases of the Proposed Project are provided in **Appendix 6** of this report. These provide detail on the measures that have been incorporated into the Proposed Project to ensure that no runoff of sediment or hydrocarbons enter watercourses or downstream European Sites.

Potential Effects from Clear Felling

Proposed Mitigation Measures:

All felling operations will conform to current best practice Forest Service regulations, policies and strategic guidance documents as well as Coillte and DAFM guidance documents, including the specific guidelines listed below, to ensure that felling, planting and other forestry operations result in minimal potential negative effects to the receiving environment.

- Forestry Standards Manual (Forest Service, 2015);
- Forest Protection Guidelines (Forest Service, 2002);
- Forest Operations and Water Protection Guidelines (Coillte, 2013);
- Forestry and Water Quality Guidelines (Forest Service, 2000b);
- Forests and Water, Achieving Objectives under Ireland's River Basin Management Plan 2018-2021 (DAFM, 2018);

- Coillte Planting Guideline SOP;
- A Guide to Forest Tree Species Selection and Silviculture in Ireland (Horgan et al., 2003);
- Management Guidelines for Ireland's Native Woodlands. Jointly published by the National Parks & Wildlife Service (Cross and Collins, 2017);
- Native Woodland Scheme Framework (Forest Service, 2018); and,
- Code of Best Forest Practice (Forest Service, 2000)

Mitigation by Avoidance:

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 at planting stage. Minimum buffer zone widths recommended in the Forest Service (2000) guidance document *"Forestry and Water Quality Guidelines"* are shown in Table 6-1.

Table 6-1 Minimum Buffer Zone Widths (Forest Service, 2000)

Average slope leading to the aquatic zone		Buffer zone width on either side of the aquatic zone	Buffer zone width for highly erodible soils
Moderate	(0 – 15%)	10 m	15 m
Steep	(15 – 30%)	15 m	20 m
Very steep	(>30%)	20 m	25 m

During the wind turbine construction phase a self-imposed buffer zone of 50 metres will be maintained for all streams. No felling is required along the Proposed Grid Connection route so this only applies to the Proposed Wind Farm.

With the exception of existing road upgrades and proposed new roads, all proposed tree felling areas at the Proposed Wind Farm are generally located outside of imposed buffer zones (<1ha inside of buffers). Additional mitigation (detailed below) will be carried out where tree felling is required inside the buffer zones.

The large distance between most of the proposed felling areas (which are outside the 50m buffer zone) and sensitive aquatic zones means that potential poor quality runoff from felling areas will be adequately managed and attenuated prior to even reaching the aquatic buffer zone and primary drainage routes.

The following additional mitigation measures will be employed during tree felling inside the 50m buffer zone.

Mitigation by Design:

Mitigation measures which will be implemented to reduce the risk of entrainment of suspended solids and nutrient release in surface watercourses comprise best practice methods which are set out as follows:

- Machine combinations (i.e., handheld or mechanical) will be chosen which are most suitable for ground conditions and which will minimise soils disturbance;
- All machinery will be operated by suitably qualified personnel;
- Checking and maintenance of roads and culverts will be on-going through any felling operation. No tracking of vehicles through watercourses will occur, as vehicles will use road infrastructure and existing watercourse crossing points. Where possible, existing drains will not be disturbed during felling works;
- Machines will traverse the Site along specified off-road routes (referred to as racks);
- The location of racks will be chosen to avoid wet and potentially sensitive areas;
- Ditches which drain from the proposed area to be felled towards existing surface watercourses will be blocked, and temporary silt traps will be constructed. No direct discharge of such

ditches to watercourses will occur. Drains and sediment traps will be installed during ground preparation. Collector drains will be excavated at an acute angle to the contour (approximately 0.3%-3% gradient), to minimise flow velocities. Main drains to take the discharge from collector drains will include water drops and rock armour, as required, where there are steep gradients, and will avoid being placed at right angles to the contour;

- Sediment traps will be sited in drains downstream of felling areas. Machine access will be maintained to enable the accumulated sediment to be excavated. Sediment will be carefully disposed of in the peat disposal areas. Where possible, all new silt traps will be constructed on even ground and not on sloping ground;
- All drainage channels will taper out before entering the 50m buffer zone. This ensures that discharged water gently fans out over the buffer zone before entering the aquatic zone, with sediment filtered out from the flow by ground vegetation within the zone. On erodible soils, silt traps will be installed at the end of the drainage channels, to the outside of the buffer 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. Correct drain alignment, spacing and depth will ensure that erosion and sediment build-up are minimized and controlled;
- Brash mats will be used to support vehicles on soft ground, reducing peat and mineral soils erosion and avoiding the formation of rutted areas, in which surface water ponding can occur. 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 occurring, extraction will be suspended during periods of high rainfall;
- Timber will be stacked in dry areas, and outside a local 50 metre watercourse buffer. Straw bales and check dams will be emplaced on the down gradient side of timber storage/processing sites;
- Works will be carried out during periods of no, or low rainfall, in order to minimise entrainment of exposed sediment in surface water run-off;
- Refuelling or maintenance of machinery will not occur within 100m of a watercourseand will only take place within the construction compounds;
- A permit to refuel system will be adopted;
- 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;
- Crossing of streams will not be permitted;
- Trees will be cut manually from along streams and using machinery to extract whole tree; and,
- Travel will only be perpendicular to and away from streams.

Silt Traps:

Silt traps will be strategically placed down-gradient within forestry drains near streams. The main purpose of the silt traps is to slow water flow, increase residence time, and allow settling of silt in a controlled manner.

Drain Inspection and Maintenance:

The following items shall be carried out 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;
- Inspection of all areas reported as having unusual ground conditions;
- Inspection of main drainage ditches and outfalls. During pre-felling inspections the main drainage ditches shall be identified.
- Following tree felling all main drains shall be inspected to ensure that they are functioning;
- Extraction tracks nears drains will be broken up and diversion channels created to ensure that water in the tracks spreads out over the adjoining ground;
- Culverts on drains existing in the Site will be unblocked; and,

- 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 Quality Monitoring:

Sampling will be completed before, during (if the operation is conducted over a protracted time) and after the felling activity. The 'before' sampling will be conducted within 4 weeks of the felling activity commencing, preferably in medium to high water flow conditions. The "during" sampling will be undertaken once a week or after rainfall events. The 'after' sampling will comprise as many samplings as necessary to demonstrate that water quality has returned to pre-activity status (i.e., where an impact has been shown).

The following criteria will be employed for the selection of water sampling points:

- Avoid man-made ditches and drains, or watercourses that do not have year-round flows, i.e. avoid ephemeral ditches, drains or watercourses;
- Select sampling points upstream and downstream of the forestry activities;
- It is advantageous if the upstream location is outside/above the forest in order to evaluate the impact of land-uses other than forestry;
- Where possible, downstream locations will be selected: one immediately below the forestry activity, the second at exit from the forest, and the third some distance from the second (this allows demonstration of no impact through dilution effect or contamination by other land-uses where impact increases at third downstream location relative to second downstream location); and,
- The above sampling strategy will be undertaken for all on-site sub-catchments streams where tree felling is proposed.

Also, daily surface water monitoring forms (for visual inspections and field chemistry measurements) will also be utilised at every works site near any watercourse. These will be taken daily and kept on site for record and inspection.

Potential Effects from Earthworks (Removal of Vegetation Cover, Excavations and Stock Piling) Resulting in Suspended Solids Entrainment in Surface Waters

Mitigation by Avoidance:

The key mitigation measure during the construction phase of the Proposed Wind Farm is the avoidance of sensitive aquatic areas where possible. All of the key areas of the Proposed Wind Farm infrastructure are located at significant distances from the 50m delineated buffer zones with the exception of 2 no. proposed watercourse crossing locations (1 no. already existing and 1 no. newly proposed).

The large setback distance from sensitive hydrological features means that adequate room is maintained for the proposed drainage mitigation measures (discussed below) to be properly installed and operated effectively. The proposed buffer zone will:

- Avoid physical damage to watercourses, and associated release of sediment;
- Avoid excavations within close proximity to surface water courses;
- Avoid the entry of suspended sediment from earthworks into watercourses; and,
- Avoid the entry of suspended sediment from the construction phase drainage system into watercourses, achieved in part by ending drain discharge outside the buffer zone and allowing percolation across the vegetation of the buffer zone.

Mitigation by Design:

- Source controls:
    - Interceptor drains, vee-drains, diversion drains, flume pipes, erosion and velocity control measures such as use of sand bags, oyster bags filled with gravel, filter fabrics, and other similar/equivalent or appropriate systems.
    - Small working areas, covering stockpiles, weathering off stockpiles, cessation of works in certain areas or other similar/equivalent or appropriate measures.
- In-Line controls:
    - Interceptor drains, vee-drains, oversized swales, erosion and velocity control measures such as check dams, sand bags, oyster bags, straw bales, flow limiters, weirs, baffles, silt bags, silt fences, sedimats, filter fabrics, and collection sumps, temporary sumps/attenuation lagoons, sediment traps, pumping systems, settlement ponds, temporary pumping chambers, or other similar/equivalent or appropriate systems.
- Treatment systems:
    - Temporary sumps and attenuation ponds, temporary storage lagoons, sediment traps, and settlement ponds, and proprietary settlement systems such as Siltbuster, and/or other similar/equivalent or appropriate systems.

It should be noted that a network of bog, agricultural and roadside drains already exist at the Proposed Wind Farm, and these will be integrated and enhanced as required and used within the Proposed Project drainage system. The integration of the existing drainage network and the Proposed Project network is relatively simple. The key elements being the upgrading and improvements to water treatment elements, in line controls and treatment systems, including silt traps, stilling ponds and buffered outfalls.

The main elements of interaction with existing drains will be as follows:

- Apart from interceptor drains, which will convey clean runoff water to the downstream drainage system, there will be no direct discharge (without treatment for sediment reduction, and attenuation for flow management) of runoff from the Proposed Project drainage into the existing site drainage network. This will reduce the potential for any increased risk of downstream flooding or sediment transport/erosion;
- Silt traps will be placed in the existing drains upstream of any streams where construction works / tree felling is taking place, and these will be diverted into proposed interceptor drains, or culverted under/across the works area;
- Runoff from individual turbine hardstanding areas will be not discharged into the existing drain network but discharged locally at each turbine location through stilling ponds and buffered outfalls onto vegetated surfaces;
- Buffered outfalls which will be numerous over the site will promote percolation of drainage waters across vegetation and close to the point at which the additional runoff is generated, rather than direct discharge to the existing drains of the site; and,
- Drains running parallel to the existing roads requiring widening will be upgraded, widening will be targeted to the opposite side of the road. Velocity and silt control measures such as check dams, sand bags, oyster bags, straw bales, flow limiters, weirs, baffles, silt fences will be used during the upgrade construction works. Regular buffered outfalls will also be added to these drains to protect downstream surface waters.

Pre-commencement Temporary Drainage Works

Prior to the commencement of new road/hardstand (or road upgrades) the following key temporary drainage measures will be installed:

- All existing dry drains that intercept the proposed works area will be temporarily blocked down-gradient of the works using temporary check dams/silt traps;
- Clean water diversion drains will be installed upgradient of the works areas;
- Check dams/silt fence arrangements (silt traps) will be placed in all existing drains that have surface water flows and also along existing roadside drains; and,
- A double silt fence perimeter will be placed down-slope of works areas that are located inside the 50m watercourse and 10m drain buffer zones such as at watercourse crossings.

Water Treatment Train:

A final line of defence will be provided by a water treatment train such as a "Siltbuster". If the discharge water from construction areas fails to be of a high quality during regular inspections, then a filtration treatment system (such as a 'Siltbuster' or similar equivalent treatment train (sequence of water treatment processes)) will be used to filter and treat all surface discharge water collected in the dirty water drainage system. This will apply for all of the construction phase.

Silt Fences:

Silt fences will be emplaced within drains down-gradient of all construction areas. Silt fences are effective at removing heavy settleable solids. This will act to prevent entry to water courses of sand and gravel sized sediment, released from excavation of mineral sub-soils of glacial and glacio-fluvial origin, and entrained in surface water runoff. Inspection and maintenance of these structures will be carried out during the construction phase as it is critical to their functioning to stated purpose. They will remain in place throughout the entire construction phase. Double silt fences will be placed within drains down-gradient of all construction areas inside the 50m hydrological buffer zones.

Silt Bags:

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 water outfall from the silt bag. Sedimats will be secured to the ground surface using stakes/pegs. The sedimat will extend to the full width of the outfall to ensure all water passes through this additional treatment measure.

Settlement Ponds:

The Proposed Wind Farm infrastructure footprint has been divided into drainage catchments (based on topography, outfall locations, and catchment size) and stormwater runoff rates based on the 10-year return period rainfall event.

Level Spreaders and Vegetation Filters:

The purpose of level spreaders is to release treated drainage flow in a diffuse manner, and to prevent the concentration of flows at any one location thereby avoiding erosion. Level spreaders are not intended to be a primary treatment component for development surface water runoff. They are not stand-alone but occur as part of a treatment train of systems that will reduce the velocity of runoff prior to be released at the level spreader.

Vegetation filters are essentially end-of-line polishing filters that are located at the end of the treatment train. In fact, vegetation filters are ultimately a positive consequence of not discharging directly into watercourses which is one of the mitigation components of the drainage philosophy. This makes use of the natural vegetation of the Site to provide a polishing filter for the Wind Farm drainage prior to reaching the downstream watercourses.

Again, vegetation filters are not intended to be a single or primary treatment component for treatment of works area runoff. They are not stand alone but are intended as part of a treatment train of water quality improvement/control systems (i.e. source controls - check dams - silt traps - settlement ponds - level spreaders - silt fences - vegetation filters).

Pre-emptive Site Drainage Management

The works programme for the entire construction stage of the Proposed Project will also take account of weather forecasts, and predicted rainfall in particular. Large excavations and movements of peat/subsoil or vegetation stripping will be suspended or scaled back if heavy rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount of rainfall forecast.

The following forecasting systems are available and will be used on a daily basis at the site to direct proposed construction activities:

- General Forecasts: Available on a national, regional and county level from the Met Eireann website (www.met.ie/forecasts). These provide general information on weather patterns including rainfall, wind speed and direction but do not provide any quantitative rainfall estimates;
- MeteoAlarm: Alerts to the possible occurrence of severe weather for the next 2 days. Less useful than general forecasts as only available on a provincial scale;
- 3-hour Rainfall Maps: Forecast quantitative rainfall amounts for the next 3 hours but does not account for possible heavy localised events;
- Rainfall Radar Images: Images covering the entire country are freely available from the Met Eireann website (www.met.ie/latest/rainfall_radar.asp). The images are a composite of radar data from Shannon and Dublin airports and give a picture of current rainfall extent and intensity. Images show a quantitative measure of recent rainfall. A 3-hour record is given and is updated every 15 minutes. Radar images are not predictive; and,
- Consultancy Service: Met Eireann provides a 24-hour telephone consultancy service. The forecaster will provide an interpretation of weather data and give the best available forecast for the area of interest.

Using the safe threshold rainfall values will allow work to be safely controlled (from a water quality perspective) in the event of forecasting of an impending high rainfall intensity event.

Works will be suspended if forecasting suggests either of the following is likely to occur:

- >10 mm/hr (i.e., high intensity local rainfall events);
- >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or,
- >half monthly average rainfall in any 7 days.

Prior to works being suspended the following control measures will be completed:

- Secure all open excavations;
- Provide temporary or emergency drainage to prevent back-up of surface runoff; and,
- Avoid working during heavy rainfall and for up to 24 hours after heavy events to ensure drainage systems are not overloaded.

Management of Runoff from Peat and Spoil Repository Areas:

It is proposed that excavated spoil and peat will be used for landscaping where required. The excess material will then be placed in 6 no. dedicated peat/spoil deposition areas as well as placement of peat in the 2 no. proposed borrow pits once the rock is fully extracted. Further details on the measures that will be implemented to prevent runoff from Peat and Spoil Repository Areas can be found in Section **Appendix 4**.

Timing of Site Construction Works:

Construction of the site drainage system will only be carried out during periods of low rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses. Construction of the drainage system during this period will also ensure that attenuation features associated with the drainage system will be in place and operational for all subsequent construction works.

Monitoring:

An inspection and maintenance plan for the on-site construction drainage system will be prepared in advance of commencement of any works. Regular inspections of all installed drainage systems will be undertaken, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water in parts of the systems where it is not intended. Inspections will also be undertaken after tree felling.

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 carried out on a daily basis.

During the construction phase field testing and laboratory analysis of a range of parameters with relevant regulatory limits and EQSs will be undertaken for each primary watercourse and specifically following heavy rainfall events).

Potential Effects on Surface Water Quality from Excavation Dewatering

Proposed Mitigation Measures:

Management of excavation inflows and subsequent treatment prior to discharge into the drainage network will be undertaken as follows:

- Appropriate interceptor drainage, to prevent upslope surface runoff from entering excavations will be put in place;
- If required, pumping of excavation inflows will prevent build-up of water in the excavation;
- The interceptor drainage will be discharged to the site constructed drainage system or onto natural vegetated surfaces and not directly to surface waters;
- The pumped water volumes will be discharged via volume and sediment attenuation ponds adjacent to excavation areas, or via specialist treatment systems such as a silt bags or silt buster;
- There will be no direct discharge to surface watercourses, and therefore no risk of hydraulic loading or contamination will occur;
- Daily monitoring of excavations by a suitably qualified person will occur during the construction phase. If high levels of seepage inflow occur, excavation work will immediately be stopped and a geotechnical assessment undertaken;
- At the turbine locations and borrow pits adequately sized settlement ponds will be constructed to treat pumped water prior to discharge into a local manmade drain; and,
- A mobile 'Siltbuster' or similar equivalent specialist treatment system will be made available at turbine locations for emergencies in order to treat sediment polluted waters from settlement

ponds or excavations should they occur. Siltbusters are mobile silt traps that can remove fine particles from water using a proven technology and hydraulic design in a rugged unit. The mobile units are specifically designed for use on construction-sites. They will be used as final line of defence if needed.

Potential Effects from Hydrocarbons

Mitigation measures proposed to avoid release of hydrocarbons at the Site are as follows:

- On site re-fuelling of machinery will be carried out within the bunded construction compounds only.;
- Mobile measures drip trays and fuel absorbent mats will be used during all refuelling operations;
- On-site refuelling will be carried out by trained personnel only;
- Fuels stored on site will be minimised. Fuel storage areas if required will be bunded appropriately for the fuel storage volume for the time period of the construction and fitted with a storm drainage system and an appropriate oil interceptor;
- The plant used during construction will be regularly inspected for leaks and fitness for purpose; and,
- An emergency plan for the construction phase to deal with accidental spillages is included within the Construction and Environmental Management Plan, which is included in **Appendix 5**. Spill kits will be available to deal with and accidental spillage in and outside the re-fuelling area.

Potential Effects from Wastewater

Proposed Mitigation Measures:

- It is proposed to manage wastewater from the staff welfare facilities by means of a sealed storage tank, with all wastewater being tankered off site by permitted waste collector to wastewater treatment plants. It is not proposed to treat wastewater on-site.

Potential Effects from Cement-Based Products

Proposed Mitigation Measures:

- 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 culverts and concrete works will be used;
- Where concrete is delivered on site, only the chute will be cleaned, using the smallest volume of water practicable. 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 will be undertaken at lined cement washout ponds located outside 50m watercourse buffer zones);
- Weather forecasting will be used to plan dry days for pouring concrete; and,
- The pour site will be kept free of standing water and plastic covers will be ready in case of a sudden rainfall event.

Potential Effects due to New Watercourse Crossing Works within the Proposed Wind Farm

Proposed Mitigation Measures:

- All proposed 2 no. stream crossings will be bottomless or clear span structures and the existing banks will remain undisturbed. No in-stream excavation works are proposed and therefore there will be no direct impact on the stream at the proposed crossing location;
- Where the proposed cable route follows an existing road or road proposed for upgrade, the cable will pass over or below the culvert within the access road;
- All guidance / mitigation measures proposed by the OPW or the Inland Fisheries Ireland[15] is incorporated into the design of the proposed crossings;
- As a further precaution, near stream construction work, will only be carried out during the period permitted by Inland Fisheries Ireland for in-stream works according to the Eastern Regional Fisheries Board (2004) guidance document "Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites", i.e., May to September inclusive. This time period coincides with the period of lowest expected rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses (any deviation from this will be done in discussion with the IFI);
- During the near stream construction work double row silt fences will be emplaced immediately down-gradient of the construction area for the duration of the construction phase. There will be no batching or storage of cement allowed in the vicinity of the crossing construction areas;
- All new river/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; and,
- All crossings will be designed to accommodate a 100-year design flood with allowance for 300mm freeboard.

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. 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 location will be carried out by the Project Civil/Structural Engineer and the Project Hydrologist prior to the construction of the crossing.

In relation to the new proposed culverts and proposed culvert upgrades at forestry drain crossings, the culverts will be suitably sized (approx. 900mm) for the expected peak flows in the relevant drain. All culverts will be installed with a minimum internal gradient of 1% (1 in 100). Smaller culverts will have a smooth internal surface. Larger culverts may have corrugated surfaces which will trap silt and contribute to the stream ecosystem. Depending on the management of water on the downstream side of the culvert, large stone may be used to interrupt the flow of water. This will help dissipate its energy and help prevent problems of erosion. Smaller water crossings, such as at any small forestry drains will simply consist of an appropriately sized pipe buried in the sub-base of the road at the necessary invert level to ensure ponding or pooling does not occur above or below the culvert and water can continue to flow as necessary.

[15] *Inland Fisheries Ireland (2016): Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters*

Potential Effects from the Use of Siltbuster

Mitigation Measures:

The following measures will be employed to prevent overdosing and potential chemical carryover:

- The siltbuster system comprises an electronic in-line dosing system which provides an accurate means of adding reagents, so overdosing cannot occur;
- Continued monitoring and water analysis of pre and post treated water by means of an inhouse lab and dedicated staff, means the correct amount of chemical is added by the dosing system;
- Dosing rates of chemical to initiate settlement is small, being in the order of 2-10 mg/L and the vast majority of the chemical is removed in the deposited sediment;
- Final effluent not meeting the discharge criteria is recycled and retreated, which has a secondary positive effect of reducing carryover; and,
- Use of biodegradable chemical agents will be used at very sensitive sites (i.e. upstream of SACs).

Potential Effects from Earthworks Works and Watercourse Crossings along the Proposed Grid Connection route

Proposed Mitigation Measures:

Pre-commencement Temporary Drainage Works:

Prior to the commencement of the cable trenching or crossing works the following key temporary drainage measures will be installed:

- All existing roadside drains (where present) that intercept the proposed works area will be temporarily blocked down-gradient of the works using check dams/silt traps;
- Culverts, manholes and other drainage inlets (where present) will also be temporarily blocked; and,
- A double silt fence perimeter will be placed along the road verge on the down-slope side of works areas that are located inside a watercourse 50m buffer zone.

The following mitigation measures will be implemented for the underground cabling watercourse crossing works:

- No stock-piling of construction materials will take place along the grid route;
- No refuelling of machinery or overnight parking of machinery is permitted in this area;
- No concrete truck chute cleaning is permitted in this area;
- Works will not take place at periods of high rainfall, and will be scaled back or suspended if heavy rain is forecast;
- Local road drainage, culverts and manholes will be temporarily blocked during the works;
- Machinery deliveries will be arranged using existing structures along the public road;
- All machinery operations will take place away from the stream and ditch banks, apart from where crossings occur. Although no instream works are proposed;
- Any excess construction material will be immediately removed from the area and sent to a licenced waste facility;
- No stockpiling of materials will be permitted in the constraint zones;
- Spill kits will be available in each item of plant required to complete the stream crossing; and,
- Silt fencing will be erected on ground sloping towards watercourses at the stream crossings if required.

Fracture Blow-out (Frac-out) Prevention and Contingency Plan for HDD:

- The drilling fluid/bentonite will be non-toxic and naturally biodegradable (i.e. Clear Bore Drilling Fluid or similar will be used);
- The area around the drilling fluid batching, pumping and recycling plants will be bunded using terram and/or sandbags to contain any potential spillage;
- One or more lines of silt fencing will be placed between the works area and the adjacent river;
- Spills of drilling fluid will be cleaned up immediately and transported off-site for disposal at a licensed facility;
- Adequately sized skips will be used where temporary storage of arisings are required;
- The drilling process / pressure will be constantly monitored to detect any possible leaks or breakouts into the surrounding geology or local watercourse;
- This will be gauged by observation and by monitoring the pumping rates and pressures. If any signs of breakout occur, then drilling will be immediately stopped;
- Any frac-out material will be contained and removed off-site;
- The drilling location will be reviewed, before re-commencing with a higher viscosity drilling fluid mix; and,
- If the risk of further frac-out is high, a new drilling alignment will be sought at the crossing location.

Potential Effects from the Proposed Hen Harrier Offsetting & Enhancement Plan

All proposed habitat management and enhancement works will be in accordance with the best practice Forest Service regulation, policies and strategic guidance documents as well as Coillte, DAFM and NatureScot guidance documents to ensure minimal potential negative effects on the local peat, soil and subsoil environment.

Given the nature of the restoration measures the following mitigation measures will be implemented:

- Before any works are completed silt fences will be installed to limit the movement of entrained sediment in surface water runoff;
- Proposed off-road routes will be walked in advance of any machinery;
- All machinery operators will be experienced;
- The proposed areas will be walked before a machine goes off-road;
- Bog mats will be used where the excavator is required to travel over wet ground;
- A low ground pressure excavator with wide tracks (1.9m or greater) will be used to reduce compaction of the peat and subsoils.; and,
- Standard tree felling water quality protection mitigation as presented in Section 6.2.1.2 above will be employed.

6.2.1.2.2 *Residual adverse effects from Construction:*

Following the successful implementation of the above listed mitigation measures, there will be no potential for residual adverse effects on water quality/habitat degradation of European Sites as a result deterioration of water quality during construction of the Proposed Project.

6.2.1.3 Operational Phase

The following pathways for which deterioration of water quality may occur during the operational phase of the Proposed Project have been identified:

- Progressive Replacement of Natural Surface with Lower Permeability Surface
- Potential Effects from Runoff

As discussed above, a potential pathway for adverse effects on European Sites, taking a precautionary approach, was identified due to downstream hydrological connectivity from the Site. Each of the above pathways are assessed below, with mitigation prescribed to ensure no significant impacts on water quality during operation. Full details on mitigations are detailed in the drainage drawings in **Appendix 6** and are summarised below.

Progressive Replacement of Natural Surface with Lower Permeability Surface

As part of the Proposed Project drainage design, it is proposed that runoff from the proposed infrastructure will be collected locally in new proposed silt traps, settlement ponds and vegetated buffer areas prior to release into the existing drainage network. The new proposed drainage measures will then create significant additional attenuation to what is already present. The operational phase drainage system will be installed and constructed in conjunction with the existing forestry drainage network and will include the following:

- Interceptor drains will be installed up-gradient of all proposed infrastructure to collect clean surface runoff, in order to minimise the amount of runoff reaching areas where suspended sediment could become entrained. It will then be directed to areas where it will be re-distributed into downstream field drains;
- Collectors drains will be used to gather runoff from access roads and turbine hardstanding areas of the Site, likely to have entrained suspended sediment, and channel it to new local settlement ponds for sediment settling;
- On sections of access road transverse drains ('grips') will be constructed in the surface layer of the road to divert any runoff off the road into swales/roadside drains;
- Check dams will be used along sections of access road drains to intercept silts at source. Check dams will be constructed from a 4/40mm non-friable crushed rock;
- Settlement ponds, emplaced downstream of access road sections and at turbine locations, will buffer volumes of runoff discharging from the drainage system during periods of high rainfall, by retaining water until the storm hydrograph has receded, thus reducing the hydraulic loading to existing drains;
- Settlement ponds will be designed in consideration of the greenfield runoff rate; and
- Finally, all surface water runoff from the development will have to pass through the settlement ponds at the existing forestry outfall locations.

Potential Effects from Runoff

Proposed Mitigation Measures:

- Mitigation measures for sediment control during operation are the same as those outlined in Section 6.2.1.2 for the construction phase.
- Mitigation measures for control of hydrocarbons during maintenance works are same to those outlined in Section 6.2.1.2 for construction phase.

6.2.1.3.2 *Residual adverse effects from Operation:*

Following the successful implementation of the above listed mitigation measures, there will be no potential for residual adverse effects on water quality/habitat degradation of European Sites as a result of deterioration of water quality during operation of the Proposed Project.

6.2.1.4 Decommissioning Phase

The potential impacts on water quality and associated aquatic receptors will be similar to those associated with construction phase i.e. primarily the runoff of sediment and/or hydrocarbons into downstream European Sites, but of a reduced magnitude, due to the reduced scale of the proposed decommissioning works in comparison to construction phase works.

Decommissioning of the Proposed Project is fully described in **Appendix 9**. The wind turbines proposed as part of the Proposed Project are expected to have a lifespan of 35 years. Following the end of their useful life, the wind turbines may be replaced with a new set of turbines, subject to planning permission being obtained, or the Proposed Project will be decommissioned fully. The onsite 110kV electrical substation and 110kV electrical cabling will remain in place as it will be under the ownership of the ESB and will form a permanent part of the national electricity grid.

Upon decommissioning of the Proposed Project, the wind turbines will be disassembled in reverse order to how they were erected. All above ground turbine components will be separated and removed off-site for recycling.

Turbine hardstands and foundations will remain in place underground and will be left to revegetate naturally. Leaving the turbine hardstands and 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 environment nuisances such as noise, dust and/or vibration.

Site roadways will be left in situ, as appropriate to facilitate on-going forestry operations. Underground cables, including grid connection, will be removed and the ducting left in place.

Mitigations

The mitigations detailed in the construction phase in Section 6.2.1.2 above, primarily relating to earthworks, hydrocarbons, and wastewater, will be applied during decommissioning. This will ensure that no adverse effects on any European Site will occur, as a result of deterioration of water quality.

Whilst a Decommissioning Plan has been provided as part of this application, a final plan will be agreed with the local authorities three months prior to decommissioning the Proposed Project. The provided final Plan will be informed by the provided Decommissioning Plan.

6.2.1.4.2 *Residual adverse effects from Decommissioning:*

Following the successful implementation of the above listed mitigation measures, there will be no potential for residual adverse effects on water quality/habitat degradation of European Sites as a result deterioration of water quality during decommissioning of the Proposed Project.

6.2.2 Invasive species

During field surveys, a search for Invasive Alien Species (IAS) listed under the 'Third Schedule' of Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) and the 'First Schedule' of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) was conducted. One species - Rhododendron (*Rhododendron ponticum)* - was recorded as small immature stands within the Proposed Wind Farm site, with one infestation recorded

within the footprint of T5. One stand of Rhododendron was similarly recorded within Area B of the Hen Harrier Offsetting & Enhancement Lands.

Along the Proposed Grid Connection route, two stands of Japanese knotweed (*Reynoutria japonica*) and one stand of Rhododendron were recorded on third party lands, directly adjacent to existing road infrastructure (which is part of the grid connection route). A further stand of Rhododendron was also recorded along the Proposed Grid Connection route.

Full details of all scheduled invasive species recorded during the surveys, with locations and extent of infestation, are provided in the Invasive Species Management Plan (ISMP) in **Appendix 4.**

6.2.2.1 Construction phase

The ISMP in **Appendix 4** provides robust mitigation and best practice measures to ensure that infestations of rhododendron and Japanese knotweed do not spread into both the local environment and European Sites, as a result of the Proposed Project.

6.2.2.1.1 *Residual adverse effects from Construction*

Following the successful implementation of the mitigation measures detailed in **Appendix 4**, there will be no potential for residual adverse effects on European Sites as a result invasive species during decommissioning of the Proposed Project.

6.2.2.2 Operation Phase

No potential for adverse effects on any European Site is anticipated, as a result of invasive species spreading as result if the Proposed Project, during operation.

6.2.2.3 Decommissioning Phase

Provided the successful implantation of the ISMP in **Appendix 4,** no Invasive Alien Species (IAS) listed under the 'Third Schedule' of Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) and the 'First Schedule' of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) will be in close proximity to Proposed Wind farm infrastructure. Therefore, no potential for adverse effects on any European Site is anticipated, as a result of invasive species spreading as result if the Proposed Project, during decommissioning.

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, in view of its conservation objectives.

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 is provided below:

> *'favourable 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 in-combination impacts on European Sites was conducted. This assessment focuses on the potential for 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 is provided in **Appendix 5**.

8.1 Assessment of Plans

The following Plans have been reviewed and taken into consideration as part of this assessment:

- Clare County Development Plan 2023-2029
- Regional Spatial and Economic Strategy 2020 – 2032
- Ireland's 4th National Biodiversity Action Plan 2023-2030
- Clare County Biodiversity Action Plan 2025 - 2031

The review focused on policies and objectives that relate primarily to European sites. Policies and objectives relating to the conservation of Annex I habitats were also reviewed. No potential for in-combination effects with the Proposed Development has been identified, and the Proposed Development is in compliance with the relevant objectives of the Plans.

In addition, the Appropriate Assessments carried out for these Plans have been reviewed where available. Relevant available reports for these plans, where available, can be found at the following locations:

- Clare County Development Plan 2023-2029

https://clarecdp2023-2029.clarecoco.ie/stage3-amendments/adoption/volume-10a-appropriate-assessment-natura-impact-report-clare-county-development-plan-2023-2029-51394.pdf

The Appropriate Assessment carried out for these plans have concluded that there is no potential for residual adverse effect as a result of implementation of the Plan. Furthermore, as per the assessment of residual adverse effects in Section 7 of this report, the Proposed Project will not adversely affect the Qualifying Interests/Special Conservation Interests associated with any European Site. Therefore, there is no potential for cumulative effect as a result of the Proposed Project in-combination with the Plan.

8.2 Assessments of Projects

For the purpose of this assessment of cumulative effects, the Cumulative Study Area is defined in Table 8-1.

Table 8-1 Cumulative Study Area for projects to inform this cumulative assessment

Individual Topic	Maximum Extent	Justification
Terrestrial European Sites and *ex-situ* QIs/SCIs	25 km from the Proposed Wind Farm site 150m from Proposed Grid Connection Route.	Using the precautionary approach and given the nature and scale of the Proposed Project, the geographical boundary for terrestrial QIs/SCIs, is 25 km for cumulative assessment

		for the Proposed Wind Farm, and 200 m from the Proposed Grid Connection route. In particular, this approach aligns with Nature Scot (2012) guidance: Assessing the cumulative impacts of onshore wind farms on birds. In line disturbance guidance for otter TII (2006), Guidelines for the Treatment of Otters prior to the construction of National Road Schemes, 150m from the from Proposed Grid Connection Route has been used to consider breeding or resting otter which maybe utilising watercourses along or adjacent to the Proposed Project.
Downstream European Site and aquatic QIs/SCIs	**Proposed Wind Farm:** Annageeragh_SC_010 and KiltumperStream_SC_010 sub-catchment for large infrastructural developments such as wind farms, energy and public transport developments. River Sub Basins for all smaller proposed, permitted or existing plans or projects (i.e. private and commercial type developments). **Proposed Grid Connection Route:** The KiltumperStream_SC_010, Doonbeg_SC_010, Wood_SC_010, and Cloon[Clare]_SC_010 sub-catchment for large infrastructural developments such as wind farms, energy and public transport developments.	Regional surface water catchments are used for cumulative impact assessment with regard large infrastructural developments such as wind farms, energy and public transport developments. The potential for cumulative effects for these developments likely exists on a regional catchment scale (i.e. significant works likely existing in several sub-basins). Therefore, other wind-farm developments are considered within these sub-catchments for cumulative effects. River Sub Basins are used for smaller developments (i.e. private & commercial type developments). These developments are not likely to present a significant cumulative impact risk on a regional catchment scale as any effects would likely be imperceptible as a result of the setback distances and localised nature of the associated works. Given the nature and scale of the proposed works and the lack of hydrological cumulative impact potential beyond the river sub basin scale, the Water Cumulative Study Area is defined by river sub basins in which the Proposed Project is located.

Assessment material for this in-combination impact assessment was compiled on the relevant developments within the Cumulative Study Area of the Proposed Project and was verified in February 2026. 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, layouts, drawings etc.) for all relevant projects where available.

The plans and projects considered include those listed in **Appendix 5**. 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 in closest proximity to the Proposed Project and those that could potentially result in impacts on SCI bird species, surface water, groundwater and QI habitats and species.

8.2.1 Other Projects within the Hydrological Sub catchment

As the Proposed Project is hydrologically connected to several European Sites, which have been considered in this NIS, the potential for cumulative impacts on hydrology has been considered.

Cumulative Effects with Agriculture

According to Corine land cover mapping (www.epa.ie) (2018) the catchments within which the Proposed Project is located are largely agricultural catchment.

Agricultural practices such as the movement of soil and the addition of fertilizers and pesticides can lead to nutrient losses and the entrainment of suspended solids in local surface watercourses. This can have a negative effect on local and downstream surface water quality.

In an unmitigated scenario the Proposed Project would have the potential to interact with these agricultural activities and contribute to a deterioration of downstream surface water quality through the emissions of elevated concentrations of suspended solids and ammonia.

However, the mitigation measures detailed in Section 6.2 and the CEMP in **Appendix 5** for the construction, operation and decommissioning phases of the Proposed Project will ensure the protection of downstream surface water quality.

For these reasons, there will not be a significant cumulative effect associated with agricultural activities.

Cumulative Effects with Forestry

The most common water quality problems arising from forestry relate to the release of sediment and nutrients to the aquatic environment, and impacts from acidification. Forestry works can also give rise to modified stream flow regimes caused by associated land drainage.

Given that most of the main forestry plantations are located a significant distance from the Proposed Project, the likelihood of significant potential effects occurring is very small.

However, the mitigation measures detailed for the construction, operation and decommissioning phases of the Proposed Project will ensure the protection of downstream surface water quality.

With regard non-wind farm related forestry activities within the Site and the potential for cumulative impacts, it is proposed that all scheduled tree felling or replanting will be planned around the construction phase in order to prevent hydrological cumulative impacts. No scheduled tree felling will occur in the same local catchment where the Proposed Project construction is taking place.

For these reasons, there will not be a significant cumulative effect associated with commercial forestry activities.

Cumulative Effects with Turbary Peat Cutting Activities

Private peat cutting on turbary plots will likely continue in the vicinity of the Proposed Project site and in the wider cumulative area. The construction phase of the Proposed Project is likely to interact with these turbary activities and result in a deterioration of downstream surface water quality through the emissions of elevated concentrations of suspended solids and ammonia.

However, the areas of private peat cutting will be small, significantly limiting the potential for cumulative effects to arise with the Proposed Project. Nevertheless, the mitigation measures detailed for the construction, operational, and decommissioning phases of the Proposed Project, as set out in Section 6.2

of this report and the CEMP in **Appendix 5**, will ensure the protection of downstream surface water quality.

For these reasons outlined above there will not be a significant cumulative effect associated with turbary activities.

Cumulative Effects with Local Developments

A detailed cumulative assessment has been carried out for all planning applications (granted and awaiting decisions) within the Cumulative Study Area.

There are applications are for new dwellings or renovations of existing dwellings, as well as for the erection of farm buildings. Based on the scale of the works, their proximity to the Site and the temporal period of likely works, no cumulative effects will occur as a result of the Proposed Project (construction, operation and decommissioning phases).

Cumulative Effects with Other Wind Farm Developments

A total of 7. existing / permitted wind farms have been identified within the Cumulative Study Area of the Proposed Wind Farm site and are listed in Table 8-2.

Table 8-2 List of Other Wind Farms within 25 km of the Proposed Wind farm site

Development (Status)	*Total Turbine No.*
Booltiagh I Wind Farm (Existing)	*12*
Booltiagh Wind Farm Extn (Existing)	*6*
Cahermurphy I Wind Farm (Existing)	*4*
Slievecallen Wind Farm (Existing)	*29*
Coor Shanavogh Wind Farm (Appealed)	*6*
Glenmore Wind Farm (Existing)	*12*
Kiltumper Wind Farm (Existing)	*2*
Letteragh Wind Farm (Existing)	6
Glenmore Wind Farm (Existing)	12
Crossmore Wind Farm (Existing)	7
Tullabrack Wind Farm (Existing)	6
Tullabrack Wind Farm (Existing)	6
Moanmore Wind Farm (Existing)	7
Ballykett Wind Farm (Appealed)	4
Moanmore Lower Wind Farm (Proposed)	3

With regards to the catchments relevant to the Proposed Wind Farm (i.e. Annageeragh and Creegh), all wind farm developments are existing and operational with the exception of Coor Shanavogh and Ballykett wind farms, which are under planning appeal. Therefore, there is no risk of a construction overlap with the operational wind farms and the Proposed Project.

Also, the likelihood of a construction phase overlap with the Coor Shanavogh and Ballykett wind farms (if permitted) is unlikely given the different stages of the planning process the wind farms are at. Nonetheless, the Coor Shanavogh WF is located in the Annageeragh River catchment where there is only 2 no. proposed turbines from the proposed Cahermurphy West Wind Farm. Therefore, even in the worst-case scenario of a construction phase overlap, significant cumulative effects are not likely.

The operation of the Proposed Project is not expected to result in any significant cumulative effects with the already operational wind farm developments.

Therefore, it can be concluded with high confidence (based on the information available to date) that that there is no potential for adverse effects on any downstream European Sites as a result of in-combination effects of the project and other wind farm developments.

8.2.2 Proposed Grid Connection route

A desk-based planning search was undertaken to identify permitted developments within 150m vicinity of the Proposed Grid Connection Route. Projects identified within this area consisted predominantly of the construction of individual private dwellings, extensions to existing dwellings, as well as agriculture and energy and telecoms. The following additional projects were reviewed:

- Permission to construct an additional 280m uncovered running track on to the existing 120m covered running track and to develop a grass training pitch to include flood lights and all associated site works and services (**Planning Reference: 2360324**)
- Permission to erect 5 No dwellings & foul sewer treatment systems & percolation areas, to connect to ancillary services and to develop service road and new site entrance(**Planning Reference: 2360554**)
- Permission to construct spectator toilets, referees room, store and connect to exiting water and sewage system on site and all a ancillary site works (**Planning Reference: 1935**)
- Permission for development within the Moneypoint Generating Station, Carrowdotia North and Carrowdotia South, Kilimer, County Clare (Eircode V15 R963) which is licenced by the Environmental Protection Agency (EPA) under an Industrial Emissions (IE) Licence (Ref P0605-04) and and Upper tier COMAH site and therefore falls under the requirements of the Control of Major Accident Hazard Regulations (COMAH) Regulations, 2015. The development, which will be located at various locations within the station complex, will consist of land based site Investigation (SI) works comprising of boreholes and trial pits across the site (**Planning Reference: 2332**)

As per the assessment of residual adverse effects in Section 7 of this report, the Proposed Project will not adversely affect the Qualifying Interests/Special Conservation Interests associated with any European Site. Therefore, there is no potential for cumulative effect as a result of the Proposed Project in-combination with these projects.

8.2.3 Other Wind Farm Projects

For the purposes of this cumulative assessment, wind farms within a 25-kilometre radius of the Proposed Project area were considered in further detail below. Details of wind farm projects within 25km of the Proposed Project are provided in **Appendix 5** and are summarised below. Twenty wind farms were identified within the cumulative study boundary.

Table 8-3 Wind farm projects within 25k of the Proposed Project

Wind Farm	Planning Status	Number of Turbines	Approx. Separation Distance (turbine to turbine)	County
Booltiagh Extension Wind Farm	Existing	6	6.13 km	Co. Clare
Booltiagh I Wind Farm	Existing	12	5.31 km	Co. Clare
Boolynagleragh Wind Farm	Existing	9	12.55 km	Co. Clare
Boolynagleragh Extension Wind Farm	Existing	7	13.19 km	Co. Clare
Cahermurphy Wind Farm	Existing	4	Partially within the Proposed Project site	Co. Clare

Wind Farm	Planning Status	Number of Turbines	Approx. Separation Distance (turbine to turbine)	County
Tullabrack Wind Farm	Existing	6	4.64 km	Co. Clare
Moneypoint Wind Farm	Existing	5	0.56 km	Co. Clare
Crossmore Wind Farm	Constructed - Operation April 2025	7	5.53 km	Co. Clare
Moanmore Wind Farm	Existing	7	4.71 km	Co. Clare
Moanmore Lower Wind Farm	Proposed	3	6.69 km	Co. Clare
Kiltumper Wind Farm	Existing	2	1.59 km	Co. Clare
Ballykett Wind Farm	Under Appeal	4	2.56 km	Co. Clare
Coor Shanavogh Wind Farm	Under Appeal	6	4.17 km	Co. Clare
Leanamore Wind Farm	Existing	8	5.74 km	Co. Clare
Glenmore Wind Farm	Existing	12	3.96 km	Co. Clare
Letteragh Wind Farm	Existing	6	8.54 km	Co. Clare
Slieve Callan Wind Farm	Existing	29	6.27 km	Co. Clare
Sleveacurry Wind Farm	Pre-planning	9	9.55 km	Co. Clare
Illaunbaun Wind Farm	Proposed	6	11.54 km	Co. Clare
Coolkett Wind Farm	Proposed	14	10.14 km	Co. Clare

Booltiagh Extension Wind Farm

This wind farm consists of 6 no. turbines and is approx. 6.13 km from the Proposed Project site. The site of the Booltiagh Extension Wind Farm and that of the Proposed Project are both hydrologically linked to the Carrowmore Point to Spanish Point and Islands SAC and Mid-Clare Coast SPA. The NIS for this project was reviewed as part of this assessment. The AA Screening for the project identified potential for likely significant effects on the Carrowmore Point to Spanish Point and Islands SAC and Mid-Clare Coast SPA (reduction in water quality from release of suspended solids and/or other pollutants into the surface water system). As such the potential for in-combination effects with the Proposed Project specifically in relation to the Carrowmore Point to Spanish Point and Islands SAC and Mid-Clare Coast SPA were initially identified (construction related impacts on water quality). However, with the implementation of mitigation measures outlined within this NIS and the mitigation measures outlined within the NIS for the Booltiagh Extension Wind Farm **no potential for in-combination effects were identified.**

Booltiagh I Wind Farm

This wind farm consists of 12 no. turbines and is approx. 5.31 km from the Proposed Project site. The site of the Booltiagh I Wind Farm and that of the Proposed Project are both hydrologically linked to the Carrowmore Point to Spanish Point and Islands SAC and Mid-Clare Coast SPA. The NIS for this project was reviewed as part of this assessment. The AA Screening for the project identified potential for likely significant effects on the Carrowmore Point to Spanish Point and Islands SAC and Mid-Clare Coast SPA (reduction in water quality from release of suspended solids and/or other pollutants into the surface water system). As such the potential for in-combination effects with the Proposed Project specifically in relation to the Carrowmore Point to Spanish Point and Islands SAC and Mid-Clare Coast SPA were initially identified (construction related impacts on water quality). However, with the implementation of mitigation measures outlined within this NIS and the mitigation measures outlined within the NIS for the Booltiagh I Wind Farm **no potential for in-combination effects were identified.**

Boolynagleragh Wind Farm

This wind farm consists of 9 no. turbines and is approx. 12.55 km from the Proposed Project site. The site of the Boolynagleragh Wind Farm and that of the Proposed Project are located in separate hydrological catchments. Given the distance between these projects, and that they are in located in separate catchments, **no potential for in-combination effects were identified.**

Boolynagleragh Extension Wind Farm

This wind farm consists of 7 no. turbines and is approx. 13.19 km from the Proposed Project site. The site of the Boolynagleragh Extension Wind Farm and that of the Proposed Project are located in separate hydrological catchments. Given the distance between these projects, and that they are in located in separate catchments, **no potential for in-combination effects were identified.**

Cahermurphy Wind Farm

This wind farm consists of 4 no. turbines and is partially located within the Proposed Project site. The site of the Cahermurphy Wind Farm and that of the Proposed Project are both hydrologically linked to the Carrowmore Point to Spanish Point and Islands SAC and Mid-Clare Coast SPA. The NIS for this project was reviewed as part of this assessment. The AA Screening for the project identified potential for likely significant effects on the Carrowmore Point to Spanish Point and Islands SAC and Mid-Clare Coast SPA (reduction in water quality from release of suspended solids and/or other pollutants into the surface water system). As such the potential for in-combination effects with the Proposed Project specifically in relation to the Carrowmore Point to Spanish Point and Islands SAC and Mid-Clare Coast SPA were initially identified (construction related impacts on water quality). However, with the implementation of mitigation measures outlined within this NIS and the mitigation measures outlined within the NIS for the Cahermurphy Wind Farm **no potential for in-combination effects were identified.**

Tullabrack Wind Farm

This wind farm consists of 6 no. turbines and is approx. 4.64 km from the Proposed Project site. The site of the Tullabrack Wind Farm and that of the Proposed Project are both hydrologically linked to the Carrowmore Dunes SAC and Mid-Clare Coast SPA. The NIS for this project was reviewed as part of this assessment. The AA Screening for the project identified potential for likely significant effects on the Carrowmore Dunes SAC and Mid-Clare Coast SPA (reduction in water quality from release of suspended solids and/or other pollutants into the surface water system). As such the potential for in-combination effects with the Proposed Project specifically in relation to the Carrowmore Dunes SAC and Mid-Clare Coast SPA were initially identified (construction related impacts on water quality). However, with the implementation of mitigation measures outlined within this NIS and the mitigation measures outlined within the NIS for the Tullabrack Wind Farm **no potential for in-combination effects were identified.**

Moneypoint Wind Farm

This wind farm consists of 5 no. turbines and is approx. 0.56 km from the Proposed Project site. The site of the Moneypoint Wind Farm and that of the Proposed Project are both hydrologically linked to the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA. The NIS for this project was reviewed as part of this assessment. The AA Screening for the project identified potential for likely significant effects on the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA (reduction in water quality from release of suspended solids and/or other pollutants into the surface water system, as well as disturbance). As such the potential for in-combination effects with the Proposed Project specifically in relation to the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA were initially identified (construction related impacts on water quality and disturbance). However, with the implementation of mitigation measures outlined within this NIS and

the mitigation measures outlined within the NIS for the Moneypoint Wind Farm, **no potential for in-combination effects were identified.**

Crossmore Wind Farm

This wind farm consists of 7 no. turbines and is approx. 5.53 km from the Proposed Project site. The site of the Crossmore Wind Farm and that of the Proposed Project are both hydrologically linked to the Carrowmore Dunes SAC and Mid-Clare Coast SPA. The NIS for this project was reviewed as part of this assessment. The AA Screening for the project identified potential for likely significant effects on the Carrowmore Dunes SAC and Mid-Clare Coast SPA (reduction in water quality from release of suspended solids and/or other pollutants into the surface water system). As such the potential for in-combination effects with the Proposed Project specifically in relation to the Carrowmore Dunes SAC and Mid-Clare Coast SPA were initially identified (construction related impacts on water quality). However, with the implementation of mitigation measures outlined within this NIS and the mitigation measures outlined within the NIS for the Crossmore Wind Farm **no potential for in-combination effects were identified.**

Moanmore Wind Farm

This wind farm consists of 7 no. turbines and is approx. 4.71 km from the Proposed Project site. The site of the Moanmore Wind Farm and that of the Proposed Project are both hydrologically linked to the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA. The NIS for this project was reviewed as part of this assessment. The AA Screening for the project identified potential for likely significant effects on the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA (reduction in water quality from release of suspended solids and/or other pollutants into the surface water system). As such the potential for in-combination effects with the Proposed Project specifically in relation to the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA were initially identified (construction related impacts on water quality and disturbance). However, with the implementation of mitigation measures outlined within this NIS and the mitigation measures outlined within the NIS for the Moanmore Wind Farm **no potential for in-combination effects were identified.**

Moanmore Lower Wind Farm

This wind farm consists of 3 no. turbines and is approx. 6.69 km from the Proposed Project site. The site of the Moanmore Lower Wind Farm and that of the Proposed Project are both hydrologically linked to the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA. The NIS for this project was reviewed as part of this assessment. The AA Screening for the project identified potential for likely significant effects on the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA (reduction in water quality from release of suspended solids and/or other pollutants into the surface water system). As such the potential for in-combination effects with the Proposed Project specifically in relation to the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA were initially identified (construction related impacts on water quality and disturbance). However, with the implementation of mitigation measures outlined within this NIS and the mitigation measures outlined within the NIS and the mitigation measures outlined within the NIS for the Moanmore Lower Wind Farm **no potential for in-combination effects were identified.**

Kiltumper Wind Farm

This wind farm consists of 2 no. turbines and is approx. 1.59 km from the Proposed Project site. The site of the Kiltumper Wind Farm and that of the Proposed Project are both hydrologically linked to the Carrowmore Dunes SAC and Mid-Clare Coast SPA. The NIS for this project was reviewed as part of this assessment. The AA Screening for the project identified potential for likely significant effects on the Carrowmore Dunes SAC and Mid-Clare Coast SPA (reduction in water quality from release of

suspended solids and/or other pollutants into the surface water system). As such the potential for in-combination effects with the Proposed Project specifically in relation to the Carrowmore Dunes SAC and Mid-Clare Coast SPA were initially identified (construction related impacts on water quality). However, with the implementation of mitigation measures outlined within this NIS and the mitigation measures outlined within the NIS for the Kiltumper Wind Farm **no potential for in-combination effects were identified.**

Ballykett Wind Farm

This wind farm consists of 4 no. turbines and is approx. 2.56 km from the Proposed Project site. The site of the Ballykett Wind Farm and that of the Proposed Project are both hydrologically linked to the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA. The NIS for this project was reviewed as part of this assessment. The AA Screening for the project identified potential for likely significant effects on the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA (reduction in water quality from release of suspended solids and/or other pollutants into the surface water system). As such the potential for in-combination effects with the Proposed Project specifically in relation to the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA were initially identified (construction related impacts on water quality and disturbance). However, with the implementation of mitigation measures outlined within this NIS and the mitigation measures outlined within the NIS and the mitigation measures outlined within the NIS for the Ballykett Wind Farm **no potential for in-combination effects were identified.**

Coor Shanavogh Wind Farm

This wind farm consists of 6 no. turbines and is approx. 4.17 km from the Proposed Project site. The site of the Coor Shanavogh Wind Farm and that of the Proposed Project are both hydrologically linked to the Carrowmore Point to Spanish Point and Islands SAC and Mid-Clare Coast SPA. The NIS for this project was reviewed as part of this assessment. The AA Screening for the project identified potential for likely significant effects on the Carrowmore Point to Spanish Point and Islands SAC and Mid-Clare Coast SPA (reduction in water quality from release of suspended solids and/or other pollutants into the surface water system). As such the potential for in-combination effects with the Proposed Project specifically in relation to the Carrowmore Point to Spanish Point and Islands SAC and Mid-Clare Coast SPA were initially identified (construction related impacts on water quality). However, with the implementation of mitigation measures outlined within this NIS and the mitigation measures outlined within the NIS for the Coor Shanavogh Wind Farm **no potential for in-combination effects were identified.**

Leanamore Wind Farm

This wind farm consists of 8 no. turbines and is approx. 5.74 km from the Proposed Project site. The site of the Leanamore Wind Farm and that of the Proposed Project are located in separate hydrological catchments. Given the distance between these projects, and that they are in located in separate catchments, **no potential for in-combination effects were identified.**

Glenmore Wind Farm

This wind farm consists of 12 no. turbines and is approx. 3.96 km from the Proposed Project site. The site of the Glenmore Wind Farm and that of the Proposed Project are both hydrologically linked to the Carrowmore Dunes SAC and Mid-Clare Coast SPA. The NIS for this project was reviewed as part of this assessment. The AA Screening for the project identified potential for likely significant effects on the Carrowmore Dunes SAC and Mid-Clare Coast SPA (reduction in water quality from release of suspended solids and/or other pollutants into the surface water system). As such the potential for in-combination effects with the Proposed Project specifically in relation to the Carrowmore Dunes SAC and Mid-Clare Coast SPA were initially identified (construction related impacts on water quality).

However, with the implementation of mitigation measures outlined within this NIS and the mitigation measures outlined within the NIS and the mitigation measures outlined within the NIS for the Glenmore Wind Farm **no potential for in-combination effects were identified.**

Letteragh Wind Farm

This wind farm consists of 6 no. turbines and is approx. 8.54 km from the Proposed Project site. The site of the Letteragh Wind Farm and that of the Proposed Project are both hydrologically linked to the Carrowmore Dunes SAC and Mid-Clare Coast SPA. The NIS for this project was reviewed as part of this assessment. The AA Screening for the project identified potential for likely significant effects on the Carrowmore Dunes SAC and Mid-Clare Coast SPA (reduction in water quality from release of suspended solids and/or other pollutants into the surface water system). As such the potential for in-combination effects with the Proposed Project specifically in relation to the Carrowmore Dunes SAC and Mid-Clare Coast SPA were initially identified (construction related impacts on water quality). However, with the implementation of mitigation measures outlined within this NIS and the mitigation measures outlined within the NIS and the mitigation measures outlined within the NIS for the Letteragh Wind Farm **no potential for in-combination effects were identified.**

Slieve Callan Wind Farm

This wind farm consists of 29 no. turbines and is approx. 6.27 km from the Proposed Project site. The site of the Slieve Callan Wind Farm and that of the Proposed Project are both hydrologically linked to the Carrowmore Point to Spanish Point and Islands SAC, Carrowmore Dunes SAC, and Mid-Clare Coast SPA. The NIS for this project was reviewed as part of this assessment. The AA Screening for the project identified potential for likely significant effects on the Carrowmore Point to Spanish Point, Carrowmore Dunes SAC, and Islands SAC and Mid-Clare Coast SPA (reduction in water quality from release of suspended solids and/or other pollutants into the surface water system). As such the potential for in-combination effects with the Proposed Project specifically in relation to the Carrowmore Point to Spanish Point and Islands SAC, Carrowmore Dunes SAC, and Mid-Clare Coast SPA were initially identified (construction related impacts on water quality). However, with the implementation of mitigation measures outlined within this NIS and the mitigation measures outlined within the NIS for the Slieve Callan Wind Farm **no potential for in-combination effects were identified.**

Sleveacurry Wind Farm

This wind farm consists of 9 no. turbines and is approx. 9.55 km from the Proposed Project site. The site of the Proposed Sleveacurry Wind Farm and that of the Proposed Project are both hydrologically linked to the Carrowmore Point to Spanish Point and Islands SAC and Mid-Clare Coast SPA. This project is at preplanning so there are no available reports to consider. However, with the implementation of mitigation measures outlined within this report, which ensure that there will be no adverse effects on any European Site, **no potential for in-combination effects were identified.**

Illaunbaun Wind Farm

This wind farm consists of 6 no. turbines and is approx. 11.54 km from the Proposed Project site. The AA Screening for the project identified no potential for likely significant effects on any European Sites, as a result of its construction. Therefore, considering the available information on the Illaunbaun Wind Farm, **no potential for in-combination effects were identified.**

Coolkett Wind Farm

This wind farm consists of 14 no. turbines and is approx. 10.14 km from the Proposed Project site. The site of the Proposed Coolkett Wind Farm and that of the Proposed Project are both hydrologically linked to the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA. The NIS

for this project was reviewed as part of this assessment. The AA Screening for the project identified potential for likely significant effects on the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA (reduction in water quality from release of suspended solids and/or other pollutants into the surface water system). As such the potential for in-combination effects with the Proposed Project specifically in relation to the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA were initially identified (construction related impacts on water quality). However, with the implementation of mitigation measures outlined within this NIS and the mitigation measures outlined within the NIS for the Coolkett Wind Farm **no potential for in-combination effects were identified.**

9. CONCLUDING STATEMENT

This NIS has provided an assessment of all potential direct or indirect adverse effects on European Sites.

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, on the basis of the best available information, beyond reasonable scientific doubt, that the Proposed Project, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site, in view of its conservation objectives.