Planning and Environmental Consultants

Appropriate Assessment Screening Report and Natura Impact Statement

Proposed Ballydermot Wind Farm, Co. Offaly and Co. Kildare



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GLOSSARY OF TERMS

Term	Definition
Biological Q-Rating	A scientific method used to assess water quality in rivers and streams in Ireland; developed by the EPA
Qualifying Interests	The specific habitats or species for which Special Areas of Conservation (SACs) are designated under the EU Habitats Directive
Natural Heritage Area	Areas considered important for the habitats present or areas which hold species whose habitats require protection
Potential Collision Height	The rotor-swept area of the Proposed Turbines
Proposed Natural Heritage Area	a site designated under non-statutory protection for its significant wildlife and habitats, representing the initial stage of becoming a fully designated Natural Heritage Area
Special Areas of Conservation	Designated for habitats (e.g., active raised bogs, reefs) and non-bird species listed under the EU Habitats Directive.
Special Conservation Interest	Specific species or habitats for which a site is designated as a Special Protection Area (SPA), primarily focusing on rare, vulnerable, or migratory birds, as well as wetlands
Special Protection Areas	Designated specifically for the protection of wild birds and their habitats under the Birds Directive.

GLOSSARY OF ACRONYMS

Acronym	Definition
AA	Appropriate Assessment
AASR	Appropriate Assessment Screening Report
ACP	An Coimisiún Pleanála
BTO	British Trust for Ornithology
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management

Acronym	Definition
CIRIA	Construction Industry Research and Information Association
CL	Conservation Limit
DAFM	Department of Agriculture, Food and the Marine
DAU	Development Applications Unit
DoEHLG	Department of the Environment, Heritage and Local Government
DTM	Digital Terrain Model
EC	European Commission
ECoW	Ecological Clerk of Works
eDNA	Environmental DNA
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EQS	Environmental Quality Standard
GIS	Gas-Insulated Substation
GSI	Geological Survey Ireland
GWB	Groundwater Body
HDD	Horizontal Directional Drilling
HGV	Heavy Goods Vehicle
IFI	Inland Fisheries Ireland
IPC	Integrated Pollution Control
IPP	Independent Power Producer
ITM	Irish Transverse Mercator
LFL	Limited Felling Licence
LVIA	Landscape and Visual Impact Assessment
MS	Microsoft
MV	Medium Voltage
NBDC	National Biodiversity Data Centre

Acronym	Definition
NIS	Natura Impact Statement
NHA	Natural Heritage Area
NPWS	National Parks and Wildlife Service
OHL	Overhead Line
OPR	Office of the Planning Regulator
OPW	Office of Public Works
OSI	Ordnance Survey Ireland
OTE	Over the Edge Drainage
PCAS	Peatlands Climate Action Scheme
PCH	Potential Collision Height
QI	Qualifying Interest
RED	Renewable Energy Directive
RPO	Regional Policy Objective
SAC	Special Area of Conservation
SCADA	Supervisory Control and Data Acquisition
SCI	Special Conservation Interest
SEA	Strategic Environmental Assessment
SID	Strategic Infrastructure Development
SNH	Scottish Natural Heritage (now NatureScot)
SPA	Special Protection Area
SSCO	Site-Specific Conservation Objective
SUDS	Sustainable Urban Drainage Systems
TII	Transport Infrastructure Ireland
TSO	Transmission System Operator
TSS	Total Suspended Solids
WEDG	Wind Energy Development Guidelines
WFD	Water Framework Directive
ZoI	Zone of Influence

1. INTRODUCTION

1.1 Background

MKO has been appointed by Bord na Móna Powergen Ltd. (BnM) (the Applicant) to prepare an Appropriate Assessment Screening and, if required, a Natura Impact Statement to allow the competent authority (An Coimisiún Pleanála) to conduct an Appropriate Assessment under Part XAB of the Planning and Development Acts 2000 (as amended) of a proposed wind energy development and all associated infrastructure located at Ballydermot, Co. Offaly, Lullybeg Co. Kildare and adjacent townlands.

Further detail on the Proposed Project is provided in Section 2 below.

1.1.1 Legislative Context

Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive), in conjunction with Directive 2009/147/EC on the conservation of wild birds (the Birds Directive), provides the legislative basis for the establishment and protection of the Natura 2000 network. The network comprises Special Areas of Conservation (SACs), designated for the conservation of natural habitat types listed in Annex I and species listed in Annex II of the Habitats Directive, and Special Protection Areas (SPAs), classified for the conservation of bird species listed in Annex I of the Birds Directive, regularly occurring migratory species and their habitats.

Each Natura 2000 site (hereafter referred to as 'European Sites'[1]) is selected on the basis of scientific criteria and its importance for the conservation of specified habitats or species. The Qualifying Interests (QIs) of an SAC comprise those Annex I habitats and Annex II species for which the site has been selected. The Special Conservation Interests (SCIs) of an SPA comprise those Annex I bird species, regularly occurring migratory bird species, bird assemblages and, where applicable, wetland habitat for which the site has been classified.

Conservation objectives for European Sites are prepared and published by the National Parks and Wildlife Service (NPWS), on behalf of the Minister of State with responsibility for Nature, Heritage and Biodiversity within the Department of Housing, Heritage and Local Government. These objectives are established for the QIs and SCIs of each site and generally prescribe the maintenance or restoration of their favourable conservation condition. Where detailed site-specific conservation objectives have been prepared, these are supported by defined attributes and targets. The conservation objectives provide the reference against which the potential effects of a plan or project for a European Site are assessed.

Under Article 6(3) of the Habitats Directive, a Screening for Appropriate Assessment of a draft land-use plan or application for consent for a proposed development shall be carried out by the competent authority to assess, in view of best scientific knowledge, if that land-use plan or proposed development, individually or in combination with another plan or project is likely to have a significant effect on any European Site. The competent authority shall determine that an Appropriate Assessment of a draft land-use plan or a proposed development, as the case may be, is required if it cannot be excluded, on the basis of objective information, that the draft land-use plan or proposed development, individually or in combination with other plans or projects, will have a significant effect on a European Site.

The Proposed Project is not directly connected with, or necessary for, the management of any European Site. Consequently, an Appropriate Assessment Screening Report (AASR) has been prepared and is provided in Section 4 of this document.

[1] *The term Natura 2000 network was replaced by 'European site' under the EU (Environmental Impact Assessment and Habitats) Regulations 2011 (S.I. 473 of 2011, as amended).*

A Natura Impact Statement (NIS) means a statement, for the purposes of Article 6 of the Habitats Directive, of the implications of a proposed development, on its own or in combination with other plans or projects, for one or more than one European Site, in view of the conservation objectives of the site or sites. Without prejudice to the generality of subsection (1), a Natura Impact Report or a NIS, as the case may be, shall include a report of a scientific examination of evidence and data, carried out by competent persons to identify and classify any implications for one or more than one European Site in view of the conservation objectives of the site or sites.

Article 6(4) of the Habitats Directive provides a limited derogation from the requirements of Article 6(3). Where adverse effects on the integrity of a European Site cannot be excluded within the NIS, a plan or project may proceed only in the absence of alternative solutions, where it is justified by imperative reasons of overriding public interest and where all necessary compensatory measures are undertaken to protect the overall coherence of the Natura 2000 network. More restrictive requirements apply where a priority natural habitat type or priority species would be affected.

The Habitats and Birds Directives have been transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011), as amended. Regulation 42 provides for screening for Appropriate Assessment and the undertaking of Appropriate Assessment, while Regulations 43–45 give effect to the derogation, consent and compensatory-measure provisions arising under Article 6(4). In respect of land-use plans and proposed developments falling within the planning system, the requirements of Articles 6(3) and 6(4) of the EU Habitats Directive are also given effect through Part XAB of the Planning and Development Act 2000 (as amended) (hereafter 'the Planning Act').

1.2 References to Proposed Project

The Proposed Project will be known as the Ballydermot Wind Farm, and for the purposes of this report:

- Where the '**Proposed Project**' is referred to, this encompasses the entirety of the project ('Proposed Wind Farm' and 'Proposed Grid Connection' as described below) for the purposes of this AASR and NIS in accordance with the EU Habitats Directive.
- The '**Proposed Enhancement Areas**' refers to the areas of the Project Site containing the proposed biodiversity and ornithology management areas for offsetting and enhancement as described in Section 2.3.4 of this AASR and NIS.
- The '**Proposed Construction Haul Routes**' refers to the construction material haul routes proposed to facilitate the construction of the Proposed Project as detailed in Section 2.3.3.2 of this AASR and NIS.
- The '**Proposed Turbine Delivery Route**' refers to the turbine delivery route and associated accommodation works areas as detailed in Section 2.3.3.2 of this AASR and NIS.
- Where the '**Project Site**' is referred to, this relates to the Planning Application Boundary, which identifies the area in which the Applicant is applying for planning permissions, as delineated in red in Figure 1-1 of this AASR and NIS and encompasses an area of approximately 5,157 hectares.
- Where the '**Proposed Wind Farm**' is referred to, this refers to the 46 no. turbines and associated foundations and hardstanding areas, including access roads, underground internal cabling, permanent meteorological masts, temporary construction compounds, peat and spoil areas, relay mast, tree felling, site drainage, operational stage signage, and all ancillary works and apparatus.
  - The '**Proposed Turbines**' refers to the 46 no. turbines associated with the Proposed Wind Farm as outlined above.
- Where the '**Proposed Grid Connection**' is referred to, this refers to the Proposed Onsite Substation (described below), the Proposed Offsite Substation (described below), the 13.1km 220kV underground cabling connection from the Proposed

Onsite Substation to the Proposed Offsite Substation, and overhead line (OHL) connecting to the existing Maynooth-Dunstown 220kV OHL, and all ancillary works and apparatus.

- The '**Proposed Onsite Substation**' refers to the new proposed onsite electricity infrastructure proposed within Lodge Bog, Co. Kildare comprising one 220kV Gas-Insulated Substation (GIS) building, and one 110kV GIS building, one control building, a 36m telecommunications tower, and the electrical components necessary to consolidate the electrical energy generated by each wind turbine and export that electricity from the wind farm to the national grid.
- The '**Proposed Offsite Substation**' refers to new proposed offsite electric infrastructure proposed within Killybegs, Co. Kildare comprising one 220kV GIS building, one 36m telecommunications tower, 2 no. steel masts, 2 no. new gantry structures and the associated outdoor electrical equipment necessary to consolidate the grid connection.

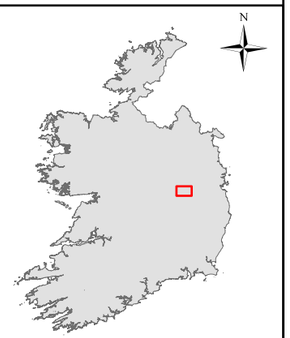
Where the '**Proposed Wind Farm site**' is referred to, this represents the area encompassing the Proposed Wind Farm, the Proposed Onsite Substation, 0.5km of the Proposed Grid Connection underground electrical cabling route, and the Proposed Enhancement Areas; this area spans a large suite of bogs, comprising of a total of 14 no, individual bog basins, which form part of the Allen Bog Group.



Map Legend

Project Site

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



SITE LOCATION - NOT TO SCALE

Drawing Title

Project Site

Project Title

Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	1-1	1:130,000
Drawn By	Checked By	Date
OM	KB	22/10/2026

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

1.3 Statement of Authority

This report has been prepared by Katy Beckett (B.A., M.Sc., MCIEEM) with assistance from Bea Jackson (B.A., M.Sc.) and Amy McDermott (B.Sc.) and has been reviewed by Sarah Mullen (B.Sc., M.Sc., Ph.D., ACIEEM) and Pat Roberts (B.Sc., MCIEEM).

With regard to ornithological surveys, the ornithological scope of works and survey methodology were devised by Padraig Cregg (M.Sc.), Principal Ornithologist of MKO. The ornithological assessments within this AASR and NIS were also prepared by Kathryn Sheridan (M.Sc.) and reviewed by Patrick Manley (B.Sc., MCIEEM), both of whom are suitably qualified ornithologists with experience in completing avifaunal assessments and competent experts for the purposes of the preparation of this AASR and NIS.

Katy is a Project Ecologist with MKO with over three years' experience in ecological consultancy. Katy holds a B.A. (Hons) in Environmental Science and an M.Sc. in Biodiversity and Conservation from Trinity College Dublin. During these academic studies she focused on conservation, gaining field and desk skills, and completing a thesis on the impact of wind farms on Irish pollinators with the Nature+ energy research group. Katy's main focus and expertise are in terrestrial ecology and conservation, largely focusing on renewable energy projects since joining MKO. Field skills are a key strength, from high-level constraints mapping to completing detailed multidisciplinary ecological walkover surveys, habitat mapping, mammal surveys and vegetation analyses, as well as specialist surveys for rare and threatened plant species, Annex I habitat condition assessments, marsh fritillary larval web and habitat condition assessments, Odonata surveys and both wintering and breeding bird surveys. Katy is also skilled in QGIS mapping, data analysis and scientific communication, preparing detailed Appropriate Assessment Screening Reports, Natura Impact Statements, Ecological Impact Assessments, EIAR Biodiversity and Ornithology Chapters, Biodiversity Management and Enhancement Plans and other site-specific ecological reporting. She is a Full member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and continues to upskill through internal training as well as external courses through the Botanical Society of Britain and Ireland, National Biodiversity Data Centre, Birdwatch Ireland and the British Trust for Ornithology.

Sarah is a Project Director (Ecology) with MKO with over 10 years' post graduate experience in ecology. Sarah holds a B.Sc. (Hons) in Botany, an M.Sc. in Biodiversity and Conservation and a Ph.D. in Botany. Since joining MKO Sarah has been responsible for the management, co-ordination and undertaking of flora, fauna and habitat surveys for a range of projects including large-scale energy infrastructure projects, residential and commercial developments, tourism projects and biodiversity monitoring and restoration projects. She has overseen the preparation of ecological reports to accompany planning applications including Ecological Impact Assessments, Stage 1 and Stage 2 Appropriate Assessment reports, Invasive Species Management Plans and Biodiversity/Habitat Management Plans. She currently oversees the general Ecology team at MKO. Sarah's key strengths and areas of expertise are in terrestrial flora and fauna ecology, including vegetation surveys, habitat mapping, invasive species surveys, mammal surveys, Appropriate Assessment and Ecological Impact Assessment. She holds membership with the CIEEM.

Pat is Principal Ecologist with MKO with over 21 years post graduate experience of providing ecological services in relation to a wide range of developments at the planning, construction and monitoring stages. Pat holds B.Sc.(Hons) in Environmental Science. Pat has extensive experience of providing ecological consultancy on large scale industrial and civil engineering projects. He is highly experienced in the completion of ecological baseline surveys, impact assessments and Appropriate Assessment reporting. He has worked closely with construction personnel at the set-up stage of numerous construction sites to implement and monitor any prescribed best practice measures. He has designed numerous Environmental Operating Plans and prepared many environmental method statements in close conjunction with project teams and contractors. He has worked extensively on the identification, control and management of invasive species on numerous construction sites. Pats key strengths include his depth of knowledge and experience of a wide range of ecological and biodiversity

topics and also in his ability to understand the requirements of the client in a wide range of situations. He is currently responsible for staff development, training and ensuring that the outputs from the ecology team are of a very high standard and meet the requirements of the clients and relevant legislation and guidelines. He is a full member of the CIEEM and Pat sits on the Irish Policy Group of the CIEEM and reviews and comments on Irish and European Policy and legislation in this capacity. He is also an assessor for CIEEM membership applications.Bea is an Ecologist Practitioner with MKO and has over two years' experience in ecological consultancy. Bea holds a B.A. (Hons) in Botany from Trinity College Dublin and a Master's degree in Botany from the same university. Bea has experience conducting a wide range of ecological surveys, including bat emergence and re-entry, newt surveys, terrestrial mammal surveys, breeding and wintering bird surveys, as well as habitat and botanical surveys. Bea has prepared Appropriate Assessment Screening Reports, Ecological Impact Assessments, Natura Impact Statements, Biodiversity Management Plans and contributed to other site-specific ecological reporting on a range of project types including renewable energy infrastructure projects, road developments and residential developments. Bea holds a Qualifying Membership with CIEEM.

Amy is a Graduate Ecologist at MKO with over one year of professional experience and holds a B.Sc. (Hons) in Environmental Science from the University of Galway. During her academic studies, Amy demonstrated a strong commitment to ecological research and conservation. In May 2024, Amy was awarded the Karzan d'Ahmed Research Bursary through the University of Galway and The Corncrake LIFE project, where she developed valuable skills in scientific research, ecological surveying techniques and technical report writing. Since joining MKO, Amy has contributed to a wide range of projects including large scale wind farms. She has experience in a wide range of surveys including habitat and vegetation surveys, mammal surveys, bird surveys and marsh fritillary surveys. She has gained experience in technical report writing, including Appropriate Assessment Screening Reports, Natura Impact Statements, Ecological Impact Assessments and EIAR Biodiversity Chapters during her time at MKO. Amy is a Qualifying member of CIEEM. In addition to her consultancy work, Amy participates in the annual voluntary Irish Wetland Bird Surveys (I-WeBS) to help grow her knowledge in ornithology and contribute to the monitoring and conservation of Ireland's wetland bird population.

Kathryn Sheridan is a Senior Ornithologist with MKO with over 8 years of experience in ornithological field surveys. Kathryn holds a BA (Hons) Zoology, and a MSc (Hons) in Wildlife Conservation and Management where she focused her studies on breeding hen harrier. Prior to joining MKO in November 2020, Kathryn has worked as a research assistant with UCD, in private consultancy as a sub-consultant with Scott Cawley, and has also worked with BirdWatch Ireland and the NPWS Curlew Conservation Programme. Kathryn's key strengths and expertise are bird identification, GIS, data collation and report writing. In her role as a project ornithologist, Kathryn has worked on wind farm projects, residential developments, county council projects and conservation projects including the preparation of EIAR chapters and seasonal reports.

Patrick Manley is a Project Director of Ornithology at MKO with over 10 years of experience in environmental consultancy. Patrick holds BSc (Hons) in Geology from University College Dublin. Since joining MKO, Patrick has worked on wind farm projects, solar farm projects, residential developments, data centres, county council projects and National Parks and Wildlife Service Projects. He specialises in ornithological consulting, including Environmental Impact Assessments and has specialist knowledge in designing, executing and project managing ornithological assessments, primarily in the renewable industry. Prior to joining MKO in August 2016, Patrick gained experience through his involvement in several bird conservation projects, including protected curlew, seabirds and waders. Within MKO, Patrick plays a large role in the management and confidence building of junior members of staff and works as part of a large multi-disciplinary team to produce EIAR chapters.

Padraig is a Principal Ornithologist with MKO and has over 11 years of experience working in environmental consultancies. The natural world has been a lifelong passion for Padraig. He has pursued this passion from boyhood through his academic study and career with MKO. In his role, he acts as technical advisor for the ornithology team, helping to take projects through their entire lifecycle,

from site selection through survey design, constraints studies, impact assessment and lodgement of the planning application. He is responsible for training the ornithology team and keeping his colleagues updated on all emerging guidance, legislation, policies, initiatives, industry best practices, emerging trends, and market opportunities.

The baseline terrestrial ecological surveys undertaken to inform the assessment within this report were conducted by MKO ecologists Amy McDermott (B.Sc.), Bea Jackson (B.A., M.Sc.), Brídín Foster (B.Sc.), Caití Farren (B.A.), Caoimhe Gillespie (B.Sc.), Caoimhe Myles (B.Sc., M.Sc.), Chandra Walter, Ciara Lynn Sheehan (B.Sc.), Cuan Feely (B.Sc.), Deepali Mooloo (B.Sc., M.Sc.), Diarmuid O'Leary (B.Sc.), Inga Reich (M.Sc., Ph.D.), Kate Johnson (B.Sc.), Kate Leahy (B.Sc.), Kate O'Donnell (B.Sc., ACIEEM), Katy Beckett (B.A., M.Sc., MCIEEM), Kevin McElduff (B.Sc.), Julie O'Sullivan (B.Sc., M.Sc.), Mairead Kavanagh (B.Sc.), Matthew Kieran (B.Sc.), Neil Campbell (B.Sc., M.Sc.), Niamh Leahy (B.Sc.), Ellen Tuck (B.Sc.), Padraig Desmond (B.Sc.), Rachel Walsh (B.Sc., MCIEEM), Rudraksh Gupta (B.Sc., M.Sc., ACIEEM) and Sarah Mullen (B.Sc., M.Sc., Ph.D., ACIEEM). Dedicated aquatic baseline and fisheries assessments were conducted by Triturus Environmental Ltd, as outlined in the Aquatic Baseline Report in Appendix 2. All surveyors have relevant academic qualifications and are competent in undertaking habitat, flora and faunal surveys and in undertaking ecological assessments.

Field ornithological surveys were undertaken by Alan Lauder, Bernard Burke, Conor Berney (B.A., M.Sc.), Cian Cahalin (B.Sc.), Cora Twomey, Declan Manley, Donnacha Woods (B.Sc., M.Sc.), Eamonn O'Brien (B.Sc., M.Sc.), Ellen Tuck (B.Sc.), Franck Le Moënner, Fionn O'Donoghue (B.Sc.), Hannah Keogh, Hannah O'Donoghue (B.Sc.), Ian Hynes (B.Sc.), James Corcoran Hodgins (B.A., M.Sc.), Jonah Gaine (B.Sc.), Kate Bismilla (B.Sc.), Kathryn Sheridan (B.A., M.Sc.), Katy Beckett (B.A., M.Sc.), Laura Gránicz (B.Sc., M.Sc.), Laura McEntegart, Louis de Vries (B.Sc., M.Sc.), Matthew Kieran (B.Sc.), Neil Bourke, Neil Campbell (B.Sc., M.Sc.), Niall Murray (B.Sc.), Niall McHugh (M.Sc.), Oisin Casasin (B.Sc.), Patrick Manley (B.Sc.), Padraig Webb, Sheriene Acun, Susan Doyle (B.A., M.Sc., Ph.D.), Shawn Dowdall (B.Sc., M.Sc.), Shay Fennelly (B.Sc.), Tom Ryan (B.Sc., M.Sc.) and Zuzana Erosova (B.Sc.). Surveyors are all experienced and competent field ornithologists.

A statement of authority for all surveyors is found in Appendix 1.

1.4 Structure and Format of this AASR and NIS

This report is structured as follows:

- **Section 2:** provides a description of all relevant elements of the Proposed Project;
- **Section 3:** describes the characteristics of the receiving environment;
- **Section 4:** describes the Stage 1 Appropriate Assessment Screening 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 on which the potential for likely significant effects have been identified during the Appropriate Assessment Screening, and identifies the relevant qualifying features and how they may be affected in view 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.
- **Section 8:** outline the potential in combination effects of the Proposed Project on European Sites, when considered in combination with other plans and projects
- **Section 9:** details the concluding statements.

1.5 Methodology

1.5.1 Appropriate Assessment Process

Stage 1 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, alone and in-combination with other plans or projects, could 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 (AA) 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 a Stage Two AA must be undertaken by the competent authority on the implications of the proposed development for the conservation objectives of a European site. Therefore, where significant effects are likely, uncertain or unknown at screening stage, a second stage AA will be required.

Stage 2 Appropriate Assessment - A Stage Two AA is a focused and detailed examination, analysis and evaluation carried out by the competent authority of the implications of the plan or project, alone and 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, in summary:

(i) must identify, in the light of the best scientific knowledge in the field, all aspects of the proposed development which can, by itself or in-combination with other plans or projects, affect the conservation objectives of the European site;
(ii) must 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 development 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 the identified potential 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 and, if necessary, stage four as described below. In the case of the Proposed Project, stages three and four have not been determined to be required, however the processes are outlined here for completeness.

Stage 3 Assessment of Alternatives

Stage 3 applies where an adverse effect on the integrity of a European Site has been identified or cannot be excluded beyond reasonable scientific doubt. All feasible alternatives capable of achieving the objectives of the plan or project must be assessed, including the do-nothing option and, where relevant, alternative locations, routes, designs, scales or methods.

The alternatives must be compared by reference to the QIs or SCIs, conservation objectives and integrity of the affected European Sites. Economic cost cannot, by itself, justify the rejection of a less damaging feasible alternative. Where a feasible alternative exists that would avoid an adverse effect, or would better protect the integrity of the European Site, the plan or project cannot proceed in its original form under Article 6(4). The alternative should instead be subject to the assessment required under Article 6(3).

Stage 4 Imperative Reasons of Overriding Public Interest

Where no feasible alternative solution exists, a plan or project may proceed only where it is necessary for imperative reasons of overriding public interest (IROPI). The interest must be public, imperative and of sufficient importance to outweigh the conservation interests protected by the Habitats Directive.

If these requirements are satisfied, compensatory measures must be secured to protect the overall coherence of the Natura 2000 network. Additional restrictions apply where priority habitats or species would be affected.

1.5.1.1 Guidance and Practice Notes

This Appropriate Assessment Screening Report and Natura Impact Statement has been prepared in accordance with the following guidance and practice notes:

- European Commission (EC) (2021) - Assessment of plans and projects in relation to Natura 2000 sites: Methodological guidance on provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC;
- EC (2020) Guidance document on wind energy developments and EU nature legislation;
- EC (2019) - Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC;
- EC (2013) - Interpretation Manual of European Union Habitats. Version EUR 28. European Commission.
- EC (2000) - Communication from the Commission on the precautionary principle;
- Office of the Planning Regulator (2021) - Appropriate Assessment Screening for Development Management. OPR Practice Note PN01.
- NPWS (2021) - Strict Protection of Animal Species: Guidance for Public authorities on the Application of Articles 12 and 16 of the EU Habitats Directive to development/works undertaken on or on behalf of a Public authority;
- NPWS (2010)- Circular NPW 1/10 & PSSP 2/10 - Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities;
- CIEEM (2018) - Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal v1.3. Chartered Institute of Ecology and Environmental Management;
- DoEHLG (2010) - Department of the Environment's Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities.

1.5.1.2 Determining the Likely Zone of Influence (ZoI)

For the purposes of Appropriate Assessment, the Zone of Influence (ZoI) of a proposed development is considered to be the geographical area over which it could affect the receiving environment in a way that could have significant effects on the Qualifying Interests of a European Site (OPR 2021). As per OPR, this should be established on a case-by-case basis using the Source-Pathway-Receptor model.

The identification of relevant European Sites to be included in this report was based on the identification of the ZoI of the Proposed Project using a Source-Pathway-Receptor model where:

- A **'source'** is defined as the individual element of the proposed works that has the potential to impact on a European Site, its qualifying features, and its conservation objectives;
- A **'pathway'** is defined as the means or route (i.e. land, air, hydrological, hydrogeological pathways, etc.) by which a source can affect the ecological receptor; and

- A **'receptor'** is defined as the SCI of SPAs or the QI of SACs for which conservation objectives have been set for the European Sites being assessed.

This Source-Pathway-Receptor approach focuses on identifying potential impact pathways between a project and European Sites, rather than relying on arbitrary distances.

The ZoI for this project was identified through reviewing the project details, the types of impacts and effects that could arise as a result of the Proposed Project in the absence of mitigation, the distance between the Proposed Project and European Sites, as well as connectivity between the Proposed Project and any European Sites, considering the qualifying interests and features of conservation interest of those European Sites. Further detail is also provided in relation to the study area, which is defined in Section 1.5.2 below.

All European Sites located within the likely ZoI of the Proposed Project are shown in Figures 4-1 and 4-2 below, together with relative locations of the underlying surface water catchments and groundwater bodies, respectively.

1.5.1.3 Precautionary Principle

The evaluation of likely significant effects should always be based on the best available scientific evidence. Like all EU environmental legislation, the Habitats Directive is based on the precautionary principle, i.e. that absence of scientific evidence on the significant negative effect of an action cannot be used as justification for approval of this action (EC, 2021).

Per CIEEM (2018), the precautionary principle should be implemented in the scenario:

> *"If sufficient information is not available further survey or additional research may be required. In cases of reasonable doubt, where it is not possible to robustly justify a conclusion of no significant effect, a significant effect should be assumed."*

The need to apply the precautionary principle in making any key decisions in relation to the tests of Appropriate Assessment has been confirmed by European Court of Justice case law, and is applied within this AASR and NIS.

1.5.1.4 *Ex-situ* Effects

Where a development may have a potential effect on a population of a QI species where they may occur outside of the European Site, these are known as *ex-situ* effects (NPWS, 2010). These effects can include disturbance, habitat loss or collision risk of bird or bat species associated with an SAC or SPA within foraging range of a development site. The potential for such effects are fully considered within this Appropriate Assessment Screening Report and Natura Impact Statement.

1.5.1.5 Consideration of Mitigation Measures

As outlined within European Commission (2021) guidelines for Appropriate Assessment, as regards the assessment of mitigation measures in implementing the Article 6(3) procedure, the European Court of Justice has ruled that *"in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site"* (Case C-323/17 People over Wind v Coillte).

The Stage 1 Appropriate Assessment Screening stage of this report does not include consideration of any mitigation measures, including project design features or Sustainable Urban Drainage Systems (SUDs).

Within the Stage 2 Appropriate Assessment, the assessment of residual effects on the integrity of European Sites takes into account both mitigation which is inherent to the project design as well as mitigation which has been prescribed for the protection of qualifying features of European Sites on which the potential for adverse effects have been identified.

1.5.1.6 Cumulative and In-Combination Effects

The assessment of cumulative and in-combination effects was undertaken in accordance with the European Commission's *Assessment of Plans and Projects in Relation to Natura 2000 Sites—Methodological Guidance on Article 6(3) and (4)* (EC, 2021), *Appropriate Assessment of Plans and Projects in Ireland—Guidance for Planning Authorities* (DEHLG, 2009) and *OPR Practice Note PN01 - Appropriate Assessment Screening for Development Management* (OPR, 2021). In relation to ornithological receptors, NatureScot (2025) *Assessing the cumulative impacts of onshore wind farms on birds* was also consulted.

As per (NatureScot, 2025), cumulative effects arising from two or more developments may be:

- **Additive:** a multiple independent additive model;
- **Antagonistic:** the sum of impacts are less than in a multiple independent additive model;
- **Synergistic:** the cumulative impact is greater than the sum of the multiple individual effects.

Relevant plans and projects were identified through a review of online Planning Registers, Development Plans and other available information, as described in further detail in Section 8 of this report.

The assessment focused on plans and projects capable of affecting the same European Sites, QIs or SCIs identified within this AASR and NIS through a common impact pathway. Potential additive, antagonistic and/or synergistic effects were assessed for the construction, operational and decommissioning phases, having regard to the relevant conservation objectives. At Stage 1 Appropriate Assessment Screening, consideration was given to whether likely significant cumulative effects on European Sites could be excluded in the absence of mitigation. Where Stage 2 Appropriate Assessment was required, the potential in-combination effects were considered when determining whether adverse effects on the integrity of the relevant European Sites could be excluded.

1.5.1.6.1 *Plans and Projects Considered in the Cumulative Assessment*

Assessment material for the in-combination impact assessment was compiled on the relevant developments within the vicinity of the Project Site. These include planning applications in the vicinity of the Project Site, within the ZoI of all QI and SCI habitats and species considered in this report, and other wind energy applications within the wider area. The cumulative study areas considered within this AASR and NIS are outlined in Table 1-1 below. The study areas are considered sufficiently large for assessing the potential for in combination effects on European Sites.

Table 1-1 In Combination study areas in relation to ecological receptors

Individual Topic	Maximum Extent	Justification
Terrestrial habitats and species	10 km from the Proposed Wind Farm 200 m from Proposed Grid Connection underground electrical cable route.	Using the precautionary approach and given the nature and scale of the Proposed Project, the geographical boundary for terrestrial ecological aspects, i.e. habitats, and terrestrial species is 10 km for cumulative assessment for the Proposed Wind Farm and 200 m from the Proposed Grid Connection underground electrical cable route.

Individual Topic	Maximum Extent	Justification
Ornithological receptors	25 km from the nearest Proposed Turbines	NatureScot guidance (NatureScot, 2025) was consulted while undertaking the cumulative assessment. Following this guidance, the cumulative impact assessment has been carried out at the scale of the importance rating of the receptors. A 25km radius of the Proposed Turbines was considered a reasonable approximation of the size of a county and a 5km radius of the Proposed Turbines was considered a reasonable approximation for the local level. This 25km radius also allows a highly precautionary area for the consideration of cumulative effects of wind farms on SCI species of European Sites within the likely ZoI.
Water and aquatic habitats and species	WFD 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).	The Proposed Wind Farm is located primarily in the River Barrow Catchment and is drained by the Figile and Slate rivers. The catchments of the Slate and Figile rivers, as far downstream as the confluence with the Barrow River, form the main cumulative study area. A small area in the north of the Proposed Wind Farm lies within the River Boyne Catchment. However there is no outfall from Ticknevin Bog to the River Boyne or its tributaries. Nevertheless, the Boyne_010 and Boyne_020 WFD river sub-basins are included in the Study Area for the purposes of a conservative impact assessment. The Proposed Grid Connection is also predominantly drained by the Figile and Slate rivers and therefore falls within the main Hydrological (Surface Water) Study Area. A small section of the Proposed Grid Connection underground electrical cabling route and the Proposed Offsite Substation are located in the Liffey and Dublin Bay Catchment. These elements of the Proposed Project are mapped in the Awillyinish Stream_010 WFD river sub-basin which has also been included in the Hydrological (Surface Water) Study Area. The WFD river sub-basins within which the proposed temporary accommodation works along the Proposed Turbine Delivery Route are located have been included in the Study Area. Given the limited scale and nature of the works, inclusion of the wider catchments is not considered to be necessary.

Once the cumulative study areas were identified and justified, a search was conducted across various spatial databases in order to compile a list of projects and ongoing activities in the area. The sources used to establish the cumulative project list are provided in Table 1-2 below. The data was first

compiled spatially through a Geographic Information System (GIS). The spatialised data was then exported into a long list for further scrutiny and review, which is included as Appendix 8.

Table 1-2 Data sources used for cumulative project list compilation

Title	Description	Author
National Planning Application Database	https://housinggovie.maps.arcgis.com/apps/webappviewer/index.html?id=9cf2a09799d74d8e9316a3d3a4d3a8de	Department of Housing, Local Government and Heritage
An Coimisiún Pleanála Cases	https://www.pleanala.ie/en-ie/map-search	An Coimisiún Pleanála
EIA Portal Points	https://housinggovie.maps.arcgis.com/apps/webappviewer/index.html?id=d7d5a3d48f104ecbb206e7e5f84b71f1	Department of Housing, Local Government and Heritage
Licenced Facilities	https://gis.epa.ie/EPAMaps/	EPA
Waste Schemes	https://gis.epa.ie/EPAMaps/ & MKO's internal database	EPA & MKO

Expired planning applications were excluded from the cumulative assessment as it is considered that such development has either been constructed and therefore forms part of the existing baseline or they have not been constructed and the planning permission has expired. Invalid or refused planning applications were also excluded from the cumulative impact assessment. Planning applications (including Local Authority and ACP cases) were then categorised by development description into development categories, and large-scale/EIA developments were identified.

All projects included within the cumulative project list (Appendix 8) have been considered within the in-combination assessment presented in this report.

1.5.2 Study Area

Stage 1 Appropriate Assessment Screening

Initially, the Study Area for the purposes of the Stage 1 AA Screening was considered to be the likely ZoI of the Proposed Project as defined in Section 1.5.1.2 above.

The Study Area allows for the consideration of all European Sites that could potentially be affected by the Proposed Project. This includes any European Sites geographically overlapping with or adjacent to any elements of the Proposed Project, European Sites located in the wider surroundings of the Proposed Project that could be indirectly affected by aspects of the project, including those with potential surface or groundwater connectivity, and European Sites whose connectivity or ecological continuity could be affected by the Proposed Project. It also allows for European Sites upon which there could be potential pathways for *ex-situ* effects on mobile QI or SCI species.

Stage 2 Natura Impact Statement

The Study Area for the NIS is the area from which it was deemed necessary to collect ecological information (i.e. through the desktop study and ecological surveys) to inform the assessment of potential

adverse effects on the integrity of those European Sites on which pathways for likely significant effects were identified at Stage 1 AA Screening. The Study Area takes into consideration the relevant QIs and SCIs for those European Sites.

Taking the above into consideration, the primary study area for the purposes of the NIS is the Project Site. The Project Site is the area within which the majority of ecological surveys were undertaken (i.e. multi-disciplinary walkover surveys, habitat surveys, terrestrial mammal surveys, marsh fritillary surveys where areas of suitable habitat were identified) and which is assessed for potential effects on most terrestrial QI and SCI habitats and species. For some receptors (i.e. otter, aquatic receptors and ornithological receptors) the Study Area extends beyond the Project Site. For mobile aquatic QI receptors, including otter and QI fish species of SACs, all freshwater watercourses which could be affected directly or indirectly by the Proposed Project given their location and downstream distance from the Project Site are considered as part of the Study Area. Dedicated surveys of these watercourses were undertaken at the locations outlined in Section 1.5.5.4 below. These surveys included sites within, in the vicinity of, as well as downstream of the Proposed Wind Farm and watercourses crossed by the Proposed Grid Connection underground electrical cabling route. Additionally, the Study Area for ornithological receptors also extended beyond the Project Site. For avian receptors relevant to the NIS, surveys were undertaken both within and outside of the Project Site, within a buffer of up to 5km depending on the receptor. This is outlined fully in Section 1.5.5.5 below.

1.5.3 Scoping and Consultation

As part of the Proposed Project, MKO undertook a EIA scoping exercise as part of its non-statutory consultation. In May 2021 a scoping document, providing details of the Proposed Wind Farm, was prepared by MKO and circulated to statutory consultees. An updated scoping document was issued to consultees in December 2025 due to updates in local and national policy and legislation, updates in relevant guidance, changes in the environmental baseline and refinement of the Proposed Project layout and design.

This section captures the responses relevant to the AA Screening and NIS that were received as part of this element of the consultation process. Table 1-3 provides a list of the organisations with relevance to biodiversity, European Sites and Appropriate Assessment that were consulted during the scoping process, and notes where scoping responses were received. The table below only includes scoping responses that are specifically relevant to Appropriate Assessment. Any responses that are more generally relevant to biodiversity are included within Chapter 6 Biodiversity of the EIAR submitted as part of this planning application. The recommendations of the consultees have informed the preparation and contents of this AASR and NIS. Responses received in relation to the first round of scoping in 2021 and the second round of scoping undertaken in 2025 are included in the table below.

Table 1-3 Scoping Responses

Consultee	Date Received	Response Summary	Addressed within AASR and NIS
An Taisce	5th of May 2021	A response was received acknowledging receipt of the scoping request. No further response was received in relation to Scoping Round 1 - 2021.	N/A
	14th of April 2026	An automatic response was received acknowledging receipt of the scoping request, stating that An Taisce are unable to respond to every query due to limited resources. No further response has been received to Scoping Round 2 – 2025 at the time of writing.	
Bat Conservation Ireland	2nd of February 2021	No issues were raised in relation to Appropriate Assessment. A response was received stating that Bat Conservation Ireland does not have the administrative capacity to comment on individual planning proposals. However, they emphasised that bat surveys, mitigation and monitoring should adhere to best practice guidance and noted desktop sources of bat data.	No issues raised in relation to Appropriate Assessment; any issues relating to bats, and more generally to biodiversity are addressed in full in Appendix 6-1 Bat Report and Chapter 6 Biodiversity of the EIAR.

Consultee	Date Received	Response Summary	Addressed within AASR and NIS
	N/A	No response has been received in relation to Scoping Round 2 - 2025 of scoping at the time of writing.	N/A
BirdWatch Ireland	N/A	No response has been received from BirdWatch Ireland to either Scoping Round 1 – 2021 or Scoping Round 2 - 2025 at the time of writing.	N/A
Butterfly Conservation Ireland	N/A	No response was received from Butterfly Conservation Ireland to Scoping Round 1 – 2021.	N/A
	18th of December 2025	A response was received which highlighted concerns relating to the known importance of the area for marsh fritillary, the accuracy of collision risk models in relation to predicting bird mortality, and the location of the Proposed Wind Farm.	A comprehensive suite of ecological surveys were undertaken to inform the AASR and NIS, including, but not limited to, surveys for marsh fritillary and specific ornithological surveys.
Coillte	N/A	Coillte were not included in Scoping Round 1 – 2021.	N/A
	14th of April 2026	An automatic response was received acknowledging receipt of the scoping request. No further response has been received at the time of writing.	
Department of Agriculture, Food and the Marine	5th of May 2021	The following observations were made that are relevant to Appropriate Assessment: › A Felling License must be obtained from this Department before trees are felled or removed. › The factors considered by the Forest Service when assessing applications to fell trees was outlined, including the interaction of these proposed works with the environment locally and more widely, in addition to potential direct and indirect impacts on designated sites and water. Consultation with relevant environmental and planning authorities may be required where specific sensitivities arise (e.g. local authorities, National Parks &	As outlined in Section 2.3.1.8 below, the 60.7ha of forestry felling and any other tree felling required as part of the Proposed Project will be the subject of a Limited Felling Licence (LFL) application to the Forest Service in accordance with the Forestry Act 2014 and the Forestry Regulations 2017 (SI 191/2017) and as per the Forest Service's policy on granting felling licenses for wind farm developments. An overall assessment of the potential effects of the Proposed Project, including any associated forestry and tree felling, on European Sites has been undertaken within this AASR and NIS.

Consultee	Date Received	Response Summary	Addressed within AASR and NIS
		Wildlife Service, Inland Fisheries Ireland, and the National Monuments Service). › It was highlighted that where developments are subject to an EIA procedure, Appropriate Assessment procedure or where the Proposed Project requires the felling and replanting of trees, deforestation for the purposes of conversion to another type of land use, or replacement of broadleaf high forest by conifer species, that there is a requirement inter alia under the EIA Directive for an overall assessment of the effects of the project or the alteration thereof on the environment to be undertaken, including the direct and indirect environmental impact of the project. › Additionally, pursuant to Article 2(3) of the EIA Directive, the Department of Agriculture, Food and the Marine strongly recommends that, notwithstanding the fact that a parallel consent in the form of felling licence may also have to be applied for, any EIAR and/or NIS produced in connection with the application for planning permission to the Local Planning Authority or An Bord Pleanála, should include an assessment of the impact of and measures, as appropriate, to prevent, mitigate or compensate for any significant adverse effects direct or indirect identified on the environment arising from such felling and replanting of trees, deforestation for the purposes of conversion to another type of land use, or replacement of broadleaf high forest by conifer species.	
	19th of January 2026	The same response was provided during Scoping Round 2 - 2025 in relation to proposed felling of commercial forestry, and as such no additional issues were raised in relation to biodiversity, flora or fauna.	
Department of Climate, Energy and the Environment	N/A	No response has been received by the Department of Climate, Energy and the Environment during either Scoping Round 1 – 2021 or Scoping round 2 – 2025 at the time of writing.	N/A

Consultee	Date Received	Response Summary	Addressed within AASR and NIS
		The response received from Geological Survey Ireland, the national earth science agency which is part of the Department of Climate, Energy and the Environment, is outlined below.	
Department of Housing, Local Government and Heritage (includes National Parks & Wildlife Service)	4th of August 2021	The following comments were received in relation to Nature Conservation: › During the desk study include a search of records from the NBDC, for both common and rare species which occur in the area. › Include a month-long, static bat detector deployment during the month of August, following the findings of Scottish Power research into bat usage on their windfarms. › Have a detailed look at invasive species and the means which will be taken to control them. › Detail any restoration conditions attached to IPC licences for these sites and how they will be fulfilled during this development. › Add a section on how this site can be enhanced for the provision of ecosystem services (climate change mitigation, provision of clean water, nature-based amenity etc.) during the operational phase of the development. › Examine amenity use versus conservation interests e.g. ground-nesting birds. › Include survey for marsh fritillary in any suitable habitat Examine the effects of any necessary lighting on wildlife during construction as well as operation phases and include mitigation to reduce or eliminate it.	A comprehensive desk study has been undertaken as part of this AASR and NIS, including a search of records from the NBDC, as outlined in Section 1.5.4 of this report. Detailed baseline ecological surveys were undertaken as part of the preparation of this AASR and NIS, including surveys for invasive species, marsh fritillary and bats as outlined within this scoping response. All surveys have been undertaken in line with best practice guidelines, as described in Section 1.5.4 below. All potential effects arising from the construction and operation phases of the Proposed Project have been considered within this report, encompassing all aspects of the Proposed Project. Additionally, opportunities for biodiversity enhancement have been incorporated and are described in Section 2.3.4 below. The interaction of the Proposed Project with IPC Licence (P0503-01) is outlined in detail in Chapters 1 Introduction, 2 Background and 4 Description of the EIAR submitted as part of this planning application.
	21st January 2026 Meeting held on 26th of May 2026,	The following observations were made that are relevant to Appropriate Assessment: **Nature Conservation Visibility analysis for vantage point surveys**	A viewshed analysis was completed at the start of the project to inform the number and location of the vantage point surveys. This analysis used DTM (digital terrain model) data which was overlaid with vegetation heights collected during a site visit.

Consultee	Date Received	Response Summary	Addressed within AASR and NIS
	see Section 1.5.3.1.1 below for details	The Project Site is characterised by industrial cut-over bog that is both predominantly flat and revegetating with scrub and secondary woodland. Consequently, it is important to site vantage point surveys to ensure adequate visibility. The Department recommends that a visibility analysis is undertaken that includes the surface of the vegetation such as scrub or emergent woodland. This is best undertaken using a digital surface model (DSM), i.e. a model that includes the height and surface of the vegetation relative to the viewing point. This analysis should then be used to determine the number and location of the vantage point surveys necessary to ensure appropriate coverage of the Project Site and its zone of influence. This analysis will ensure that the flight data produced to inform the collision mortality model is accurate and that there is sufficient confidence in its results. **Potential for Biodiversity Enhancement measures within the Project Site** The Department notes that the Long Derries, Edenderry SAC is located within the application and predominantly owned by both the applicant, Bord na Móna, and Coillte. Consequently, there may be an opportunity to consider appropriate conservation measures at this site to help deliver the conservation objectives within the context of any biodiversity enhancement measures being proposed for the current application (should there be no such measures currently in place). The qualifying interest of the Long Derries, Edenderry SAC, the Annex I habitat [6210] Orchid-rich Calcareous Grassland*, was considered by the National Parks and Wildlife Service of this Department to be under threat from scrub encroachment and undergrazing. Consequently, there may be some potential for appropriate scrub management and/or the establishment of an appropriate grazing regime, should these measures not already occur at the site	Viewsheds were updated in late 2025, with up-to-date vegetation heights to ensure the current vantage point survey locations remain adequate. While the Long Derries, Edenderry SAC was located partially within the Project Site at the time of consultation (December 2025), this European Site no longer comprises part of the Project Site as design was refined to avoid this SAC. The potential conservation management of this SAC was discussed during the meeting with DAU/NPWS on 26th of May 2026. Separate to this application, the Applicant have been consulting with the NPWS about management of the part of the Long Derries, Edenderry SAC within their ownership. This consultation is ongoing and has been decoupled from this planning application and therefore does not form part of the Proposed Project.

Consultee	Date Received	Response Summary	Addressed within AASR and NIS
Environmental Protection Agency (EPA)	15th of March 2021	No response relevant to Appropriate Assessment.	N/A
	14th of April 2026	An automatic response was received acknowledging receipt of the scoping request. No further response has been received at the time of writing.	
Fáilte Ireland	16th of February 2021	No response relevant to Appropriate Assessment.	No issues raised in relation to Appropriate Assessment; any issues relating more generally to biodiversity are addressed in full in Chapter 6 Biodiversity of the EIAR.
	23rd December 2025		
Geological Survey of Ireland	10th of February 2021	Geological Survey of Ireland (GSI) provided a number of comments in relation to the Proposed Project, of which the following are relevant to biodiversity, flora and fauna: <u>Geoheritage</u> Geological Survey Ireland is in partnership with the National Parks and Wildlife Service to identify and select important geological and geomorphological sites throughout the country for designation as geological NHAs (Natural Heritage Areas). County Geological Sites (CGS), as adopted under the National Heritage Plan, include additional sites that may also be of national importance, but which were not selected as the very best examples for NHA designation. GSI records show that there are no CGSs in the vicinity of the Proposed Wind Farm.	The GSI online datasets were consulted for the preparation of this NIS, where relevant.
	16th December 2025	Geological Survey Ireland is the national earth science agency and is part of the Department of Climate, Energy and the Environment.	

Consultee	Date Received	Response Summary	Addressed within AASR and NIS
		› It was recommended to use the various data sets available on the Geological Survey Ireland website when conducting the EIAR, SEA, planning and scoping processes for developments, plans and policies. No issues were raised in relation to Appropriate Assessment.	
Inland Fisheries Ireland	10th of March 2021	The site of the Proposed Project is located primarily within the upper reaches of the Figile River system with smaller sections located within the Slate catchment. The IFI provided the following information in relation to these watercourses: › The Figile and Slate Rivers are two of the four Barrow tributaries, draining large peatland areas in the 14 no. Allen Bog Group bogs which form the Proposed Wind Farm site which, combined, are known as the Black River system. The Black River, which joins the Barrow immediately upstream of Monasterevin, is by far the largest tributary of the Barrow system draining, 622km^2 and represents 21% of the entire Barrow catchment. › Salmon spawning/recruitment within the Black River is currently limited to small sections of the four tributaries referred to above, relatively recently reducing from a far wider range throughout the tributaries. › Adult salmon spawn in shallow waters during the Winter months and the adult salmon that spawn in systems such as the Figile and Slate will have resided in deeper sections of the Barrow main channel prior to entering the Black River system to spawn. Conversely the progeny of the salmon that spawn in the Figile and Slate system as they grow older and larger will travel downstream to the deeper waters of the Barrow main channel, before smoltifying and migrating to sea. IFI would like to stress that the populations of salmon (and other Habitats Directive species) in these rivers/streams are an important/integral	A comprehensive suite of ecological surveys were undertaken to inform the AASR and NIS, including dedicated aquatic surveys in watercourses within and downstream of the Project Site. Aquatic receptors relevant to Appropriate Assessment have been fully considered and assessed in this AASR and NIS, including potential effects on *ex situ* QI species. Where the potential for adverse effects has been identified mitigation measures have been prescribed to block/ameliorate such effects. The Proposed Project has been designed in order to maintain potential to restore the watercourses within the Proposed Wind Farm site. The following measures have been embedded as part of the Proposed Project: › Crossings of the river corridor minimised where possible; › Size and position of crossings will have consideration for likely future restored channel, rather than solely the existing modified drain/channel; › Clear-span structures preferred. Depending on the detailed design at the construction phase, pipe or box culverts may be installed at 4 no. watercourse crossings within the Proposed Wind Farm site (see Section 2.3.1.11 below), these will be suitable oversized and embedded with the base of the culvert below the invert of the channel in order to maintain bed continuity and avoid barriers to fish passage.

Consultee	Date Received	Response Summary	Addressed within AASR and NIS
		component of the salmon populations of the River Barrow and River Nore SAC even though those waters are not SAC designated. IFI's main concerns relating to the Proposed Project relate to: <u>The potential that the Proposed Project may consolidate the water quality and habitat/hydro-morphological issues that persist throughout the Figile and Slate River system linked to peat extraction operations by Bord na Móna:</u> › The WFD Ecological Status/Potential for numerous waters draining Bord na Móna peatland areas throughout the Black River system is "Poor", while for many the WFD Risk calculation is that they are "At Risk". › The WFD Characterisation Reports for numerous waters throughout the Black River system draining peatland areas identifies peat extraction as a significant pressure, with organic pollution the main impact associated with peat extraction. › To facilitate peat harvesting deep drainage channels were constructed throughout peatland sites. Deepening of fisheries watercourses adjacent to and downstream of peatlands was also undertaken to facilitate this peat harvesting. These significant alterations lowered the water table within surrounding peat deposits and result in the associated peat being exposed to air, facilitating the rapid breakdown of this organic matter, releasing nutrients, principally ammonia to waters. › The drying out of the peats exacerbates the washout of peat solids to surface waters. The potential for peat particles to become windblown is exacerbated by drying out also. › A number of comments were relayed in relation to the silt settlement ponds within the Project Site and their efficacy in relation to retention of suspended solids and dissolved nutrients	› The road/culvert levels will be set to avoid fixing an artificial longitudinal profile or preventing future channel adjustment. The Proposed Project drainage will not rely on the river (existing or restored) as an online treatment feature.

Consultee	Date Received	Response Summary	Addressed within AASR and NIS
		› The potential for direct run-off from haul roads and stockpiles of peat, wind-blown peat and the potential for suspended solids generation from excavations in subsoils below peat deposits should also be considered. › IFI also provided comments in relation to the potential for drainage waters to be significantly elevated in temperature at certain times of year when compared to typical groundwater recharge and/or the surface waters to which it is being discharged. Given the important link between water temperature and biological/biochemical reactions, the temperature of drainage waters being discharged to fisheries streams/rivers is critical in that some key constituents of water, either change their form (ionization of ammonia) or alter their concentration, as with dissolved oxygen. › An examination of OSI 6 & 25 inch sheets highlight significant modifications to watercourses flowing through, adjacent to and downstream of the peatland sites in the Black River catchment. The modifications noted (through both desktop checks and on-site visits) included realignment/straightening, deepening, widening, culverting/piping of waters, construction of on-line silt ponds to facilitate commercial peat extraction and differences in height where waters are lifted to facilitate drainage The effects of these hydromorphological changes on fisheries habitats was outlined, concluding that Significant human intervention is likely to be necessary to facilitate recovery of the fisheries habitat on long stretches of watercourses draining peatland areas in the Black River catchment. <u>Direct impacts upon water quality/quantity related to the construction/operation phase:</u> › The Proposed Project is likely to include the clearance of large areas of peatland habitat/peat. The clearance of this material will act to increase the rate at which water is drawn toward these	

Consultee	Date Received	Response Summary	Addressed within AASR and NIS
		excavations and will also further dry out surrounding peat-lands thereby increasing ammonia run-off. › A number of pollution control and mitigation measures were recommended in relation to ammonia, cementitious materials, silt/suspended solids, hydrocarbons and any other deleterious materials during the construction phase. › No in-stream works shall be carried out without the written approval of Inland Fisheries Ireland. IFI believe that the restoration of salmon spawning recruitment throughout the Black River is integral to improving salmon stocks in the River Barrow and River Nore SAC however significant human intervention is likely to be necessary to facilitate recovery of the fisheries habitat on long stretches of these watercourses. IFI is keen to build on recent water quality improvements in the Black River, which drains 21% of the Barrow River catchment and to restore and increase populations of salmon and other native fish species over large sections of this system. Existing populations within the Black River are an integral component of the Barrow River SAC populations of these species and as these populations expand in numbers and range their importance will increase significantly. IFI believe that the implementation of restoration plan/plans, throughout the Figile/Black River catchment to address the water quality & hydro-morphological issues referred to above, is integral to the restoration of populations of salmon & other species for which the Barrow River was SAC designated.	
	9th December 2025	During the second round of scoping, IFI reiterated several of the points outlined above in relation to salmonids, in addition to the following comments:	

Consultee	Date Received	Response Summary	Addressed within AASR and NIS
		› Regarding Atlantic Salmon, a Qualifying Interest of the River Barrow and River Nore SAC, the Barrow consistently fails to reach its Salmon Conservation Limit (CL). › The reason that the Barrow CL numbers are so low relates mainly to extensive hydro-morphological damage to the upper/mid catchment of the Barrow where significant loss and degradation of habitat occurred due to extensive widening and deepening of watercourses by the Barrow Drainage Board/Bord na Mona. Because of this damage most of the system now produces little or no salmon and other important native fish species. › IFI believe that the restoration of salmon spawning recruitment throughout the Black River is integral to improving salmon stocks in the SAC. › IFI have recorded salmon spawning at several locations along the Cushaling River within the Project Site. Turbine development is proposed near sections of channel that represent excellent salmonid spawning/nursery habitat. IFI then highlighted a number of opportunities for river restoration within the Project Site: › Checks throughout the Crabapple River system have highlighted excellent salmonid habitat on sections of channel, specifically the Lugherra tributary where habitat restoration has occurred naturally. Inspections of the Lugherra highlight that it was previously subject to very significant deepening and widening but unlike most other channels here, maintenance dredging/cleaning ceased decades ago. As a result significant terrestrial woodland on the lands bordering the River has developed and the river here has recruited gravels from the bank/subsoils back to this river. IFI believe the Lugherra River highlights the potential for river/riparian habitat restoration throughout the entire study area. › Checks by IFI have highlighted significant loss of fisheries habitat linked to the previous land use, where long sections were subject	

Consultee	Date Received	Response Summary	Addressed within AASR and NIS
		to hydro-morphological damage because of over-deepening and over-widening. IFI have noted multiple on-line silt traps on watercourses flowing throughout the study area, the purpose of which was to settle out the very fine peat solids associated with commercial peat harvesting. The scale of deepening and widening on these on-line silt ponds is such that there is no realistic potential for natural habitat restoration and for this to happen human intervention will be necessary. › IFI inspections have noted significant fisheries habitat loss within the study area on the Crabapple River system where all flows from the upper reaches of the Crabapple River were diverted across Lullybeg bog to the lower reaches of the Lugherra river. The net result of this is a significant loss of fisheries habitat wetted area and deterioration of the habitat of most of the Crabapple River, with no potential for this habitat to restore naturally. IFI believe that in addition to habit restoration of the Crabapple River, restoring these waters to their original channel could provide significant flood storage. › Inspections have also highlighted habitat loss relating to the culverting of watercourses. In many cases, the extent of habitat loss linked to culverting is relatively short linked to culverts which facilitate wide access roads and light industrial rail. › IFI checks of the Glashabaun River (Cushaling tributary) highlighted that almost all this tributary had been lost through culverting through the cut-over peatland, with only a few short openings along the entire channel of this watercourse. A long section of the Duke's River (Crabapple tributary) was also noted to have been piped. Given the scale of this project there is a unique opportunity to showcase multiple river and terrestrial habitat restoration techniques focusing upon the watercourses within the study area and to make this restoration a central pillar of the project.	

Consultee	Date Received	Response Summary	Addressed within AASR and NIS
		The expansion of spawning Atlantic Salmon within the study area is critical to Ireland achieving its requirements under the European Habitats Directive and the Water Framework Directive.	
Irish Peatland Conservation Council	18th of January 2021	The following observations were made that are relevant to Appropriate Assessment: The response noted a number of local biodiversity hotspots in the surrounding area of the Proposed Project, including The Long Derries, Edenderry SAC [000925], Mouds Bog SAC [002331], and Pollardstown Fen SAC [000396]. The importance of each area was detailed, including the presence of intact raised bog, fens, calcareous grasslands, Annex II marsh fritillary butterflies and other Red-Listed species such as the large heath butterfly. The full response can be found in Chapter 6 Biodiversity of the EIAR.	A comprehensive suite of ecological surveys were undertaken to inform the AASR and NIS, including, but not limited to, surveys for marsh fritillary. This species has been fully considered and assessed in this AASR and NIS.
	26th January 2026	The comments outlined within the IPCC response to the first round of scoping were repeated in regard of observations made relevant to Appropriate Assessment.	
Irish Red Grouse Association	N/A	No response has been received by the Irish Red Grouse Association during either Scoping Round 1 – 2021 or Scoping round 2 – 2025 at the time of writing.	N/A
Irish Raptor Study Group	N/A	No response has been received by the Irish Raptor Study Group during either Scoping Round 1 – 2021 or Scoping round 2 – 2025 at the time of writing.	N/A
Irish Wildlife Trust	N/A	No response has been received by the Irish Wildlife Trust during either Scoping Round 1 – 2021 or Scoping round 2 – 2025 at the time of writing.	N/A

Consultee	Date Received	Response Summary	Addressed within AASR and NIS
Kildare County Council Environment Department	N/A	Kildare County Council Environment Department was not scoped with in Scoping Round 1 – 2021. No response has been received by Kildare County Council Environment Department during Scoping round 2 – 2025 at the time of writing.	N/A
Offaly County Council Environment Department	N/A	Offaly County Council Environment Department was not scoped with in Scoping Round 1 – 2021. No response has been received by Offaly County Council Environment Department during Scoping round 2 – 2025 at the time of writing.	N/A
Office of Public Works (OPW)	N/A	No response received during Scoping Round 1 – 2021.	N/A
	23rd of March 2026	No issues raised in relation to biodiversity, flora or fauna.	
The Heritage Council	N/A	No response has been received by the Heritage Council during either Scoping Round 1 – 2021 or Scoping round 2 – 2025 at the time of writing.	N/A
Uisce Éireann	N/A	No response received during Scoping Round 1 – 2021.	N/A
	21st April 2026	No response relevant to Appropriate Assessment. Detailed data on the Uisce Éireann water network was shared.	
Waterways Ireland	12th of February 2021	Waterways Ireland responded saying they had no comments or suggestions on the Proposed Project.	N/A

Consultee	Date Received	Response Summary	Addressed within AASR and NIS
	4th of December 2025	An automatic response was received acknowledging receipt of the scoping request. No further response has been received at the time of writing.	

1.5.3.1 Pre-Planning Meetings

1.5.3.1.1 *Development Applications Unit (DAU)/National Parks and Wildlife Service (NPWS)*

In addition to the above consultation, members of the Proposed Project Team, including Environmental Scientists, Ecologists and Ornithologists met with the NPWS on 26th of May 2026 to discuss the Proposed Project.

Those in attendance were:

On behalf of Development Applications Unit (DAU)/National Parks and Wildlife Service (NPWS):

- Eoin Connolly (Ecologist Grade II)

On behalf of Agent and Applicant:

- Ellen Costello (MKO Environmental)
- Catherine Johnson (MKO Environmental)
- Sarah Mullen (MKO Ecology)
- Kate O'Donnell (MKO Ecology)
- Katy Beckett (MKO Ecology)
- Padraig Cregg (MKO Ornithology)
- Patrick Manley (MKO Ornithology)
- Aoife Joyce (MKO Bats)
- Molly O'Hare (MKO Bats)
- Julie Larkin (BnM)
- Ellen Hilliard (BnM)
- Muriel Ennis (BnM)
- Chris Cullen (BnM)

The main topics discussed in the meeting included the following:

- An overview of the Proposed Project.
- Ecological surveys which have been undertaken to date and their findings.
- Ornithology surveys which have been undertaken to date and their findings.
- Proposed plans for habitat enhancement and management measures.
- The interaction between IPC rehabilitation proposals and enhancement and mitigation measures associated with the Proposed Project.

Following this presentation, there was a discussion held between the project team and the NPWS representative. Matters relevant to Appropriate Assessment that were raised included:

- The requirement for consideration of future trends for the site and the potential impact of vegetation succession on suitable marsh fritillary habitat
- The requirement for a robust approach to bird collision risk assessment and the provision of appropriate mitigation, where necessary
- The requirement for comprehensive monitoring of the efficacy of mitigation measures
- BnM outlined that in previous scoping responses, the NPWS have pointed out the Long Derries, Edenderry SAC and queried if the Applicant owns this land. It was clarified that the Applicant does own part of the land in which the SAC is situated. Separate to this application, the Applicant has been consulting with the NPWS about management of this area, and this consultation is ongoing and has been decoupled

from this Planning Application and therefore does not form part of the Proposed Project.

The matters raised during the consultation have been considered and addressed where relevant within this report.

1.5.3.1.2 *Inland Fisheries Ireland*

Members of the Project Team, including Environmental Scientists, Ecologists and Aquatic Ecologists, met with Inland Fisheries Ireland (IFI) on 5th of October 2026 to discuss the Proposed Project.

Those in attendance were:

On behalf of IFI:

- Donnachadh Byrne (Environmental Officer for the area)
- Lonan O'Farrell (Development Inspector for the Southeast)

On behalf of Agent and Applicant:

- Ellen Costello (MKO Environmental)
- Catherine Johnson (MKO Environmental)
- Ciarán Fitzgerald (MKO Environmental)
- Kate O'Donnell (MKO Ecology)
- Katy Beckett (MKO Ecology)
- Bill Brazier (Triturus Environmental Ltd)
- Ross Macklin (Triturus Environmental Ltd.)
- Julie Larkin (BnM)
- Ellen Hilliard (BnM)
- Anna Perdue (BnM)
- Muriel Ennis (BnM)
- Enda McDonagh (BnM)

The project team gave an overview of the Proposed Project in the form of a PowerPoint presentation which set out the following information:

- An overview of the Proposed Project.
- Ecological and aquatic surveys undertaken to date and their findings.
- The existing condition of watercourses within the Project Site.
- Proposed measures to avoid and mitigate potential impacts on watercourses and aquatic ecology.
- Opportunities for future watercourse and riparian habitat restoration.

Following this presentation, a discussion was held between the project team and IFI representatives. Matters relevant to Appropriate Assessment that were raised included:

- IFI highlighted the existing degraded condition of watercourses within the Project Site, associated with historical peat extraction, low gradients and underlying geology, and the potential requirement for active riparian restoration to improve aquatic habitat and water quality.
- IFI suggested that opportunities for riparian restoration should be considered as part of the Proposed Project, including targeted measures in the vicinity of proposed watercourse crossings.
- IFI emphasised the importance of ensuring that the Proposed Project does not exacerbate existing environmental pressures on watercourses or constrain opportunities for future river restoration.

- The project team outlined the measures incorporated into the Proposed Project design to avoid and minimise impacts on watercourses, including setbacks from water features, appropriate water quality mitigation measures and the use of clear-span crossings where feasible and oversized embedded culverts to maintain fish passage and facilitate potential future restoration works.
- BnM outlined that separate engagement with IFI is ongoing regarding potential river restoration initiatives under a Memorandum of Understanding. BnM are happy to continue engagement with IFI.
- The project team clarified that the mitigation and enhancement measures incorporated into the Proposed Project have been developed to address potential effects arising from the development itself, while wider river restoration opportunities are being considered separately.

The matters raised during the consultation have been considered and addressed, where relevant, within this report.

1.5.3.1.3 *An Coimisiún Pleanála*

Section 37B Consultation

The Applicant engaged with An Coimisiún Pleanála (ACP), under the provisions of Section 37B of the Planning Act, as to whether the Proposed Project would meet the thresholds of the Seventh Schedule of the Planning Act. The Applicant opened consultations with ACP in September 2021 in relation to a Proposed Project of 50-55 no. wind turbines with a maximum height of 220 metres, a 220kV substation and underground cabling, with a total output of circa. 240MW, with the potential for the wind farm to generate greater than 50 Megawatts (MW) of electricity to the National Grid.

A SID meeting under the provisions of Section 37B was held with the ACP on the 26th of July 2021. Those in attendance were:

On behalf of ACP:

- Ciara Kellett (Assistant Director of Planning)
- Donal Donnelly (Senior Planning Inspector)
- Niamh Thornton (Executive Officer)

On behalf of Agent and Applicant:

- Jimmy Green (MKO)
- Karen Mulryan (MKO Environmental)
- Paul Sweeney (MKO Planning)
- Sean Creedon (BnM)
- Caitríona Carter (BnM)
- Muriel Ennis (BnM)

The design team gave an overview of the Proposed Project in the form of a PowerPoint presentation which set out the following information:

- A high-level overview of the Proposed Project and the Project Site.
- Introduction to the applicant.
- Overview of planning policy including compliance with local wind energy policy.
- Provided specific details of the scheme relating to LVIA, Ecology and Aviation.
- Set out the scope of the Environmental Impact Assessment Report to be undertaken.
- Discussed scoping & pre-application/public consultation undertaken to date.
- Set out the projected project timelines.

- Discussed the relevant Strategic Infrastructure Development criteria as set out in the 7th Schedule of the Planning and Development Act 2000 (as amended).

Following this presentation, there was further discussion held between the project team and the representatives of ACP at this meeting. Matters discussed included:

- Noted that the turbine number and output mean the Proposed Project exceeds the 7th Schedule threshold.
- LVIA viewpoints to be chosen carefully, taking into account worst-case scenarios.
- Focus on cumulative impacts and ecological surveys.
- Condition of local roads to be considered when assessing haul routes.
- Recommended recent windfarm cases brought for Judicial review be looked at.

Second Meeting

A Second pre-application meeting was held with ACP via MS Teams on the 10th of March 2026. Those in attendance were:

On behalf of ACP:

- Lauren Murphy (ACP - Admin)
- Una Crosse (ACP - Assistant Director of Planning)
- Donal Donnelly (ACP – Senior Planning Inspector)
- Emmet Smyth (ACP – Senior Environmental Scientist)
- Paula Kearney (ACP – Senior Ecologist)
- Ian Boyle (ACP – Senior Planning Inspector)
- Adrian Ornsby (ACP – Planning Inspector)

On behalf of Agent and Applicant:

- Ronan Dunne (MKO Planning)
- Shikha Gajula (MKO Planning)
- Ellen Costello (MKO Environmental)
- Catherine Johnson (MKO Environmental)
- Ciaran Fitzgerald (MKO Environmental)
- Kate O'Donnell (MKO Ecology)
- Patrick Manley (MKO Ornithology)
- Caitríona Carter (BnM)
- Anna Perdue (BnM)
- Ellen Hilliard (BnM)
- Muriel Ennis (BnM)
- Julie Larkin (BnM)

The design team gave an overview of the Proposed Project in the form of a PowerPoint presentation which set out the following information:

- Introduction to the Applicant.
- A High-level overview of the Proposed Project and the Project Site.
- Updates on Constraint Assessment & Design Process.
- Overview of the Proposed Project.
- Set out the scope of the Environmental Impact Assessment Report to be undertaken.
- Overview of planning policy including compliance with local wind energy policy.
- Scoping & pre-application/public consultation undertaken to date.
- Discussed the relevant Strategic Infrastructure Development criteria as set out in the 7th Schedule of the Planning Act.
- Set out the projected project timelines.

Following this presentation, there was further discussion held between the project team and the representatives of ACP at this meeting. Matters discussed included:

- Evolution of the Proposed Project to be assessed along with the proposed turbine and substation locations and alternative considerations.
- EIA and AA to employ most up to date guidance for survey and assessment with clear and concise reporting.
- Lessons learnt from other windfarm developments to be included.
- Forward baseline assessment and future trends.
- Engagement with statutory bodies recommended.
- Ecological survey requirements discussed including receptor identification, buffer zones, vegetation management, baseline surveys, and ensuring IPC licence conditions align with biodiversity enhancement measures.
- Substitute consent application to be submitted.
- Water crossings to be agreed with IFI prior to submission of the planning application.
- Assessment of internal road network to be included.
- Recommended consultation with NPWS in relation to derogation licences, if required.
- Visual impact assessment to be undertaken.
- Haul route and turbine delivery route to be assessed for vegetation removal.
- Importance of cumulative impact assessment emphasised.
- Robust noise assessment to be undertaken, including mapping of distance from proposed turbines to residential dwellings.

Third Meeting

A Third pre-application meeting was held with ACP via MS Teams on the 12th of June 2026. Those in attendance were:

On behalf of ACP:

- Lauren Murphy (ACP - Admin)
- Una Crosse (ACP - Assistant Director of Planning)
- Donal Donnelly (ACP – Senior Planning Inspector)
- Emmet Smyth (ACP – Senior Environmental Scientist)
- Paula Kearney (ACP – Senior Ecologist)
- Maeve Maher McWilliams (ACP – Ecologist)

On behalf of Agent and Applicant:

- Ronan Dunne (MKO Planning)
- Shikha Gajula (MKO Planning)
- Ellen Costello (MKO Environmental)
- Catherine Johnson (MKO Environmental)
- Ciaran Fitzgerald (MKO Environmental)
- Kate O'Donnell (MKO Ecology)
- Patrick Manley (MKO Ornithology)
- Aoife Joyce (MKO Bats)
- Molly O'Hare (MKO Bats)
- Michael Gill (HES)
- Conor McGettigan (HES)
- Ian Higgins (FTC)
- Caitriona Carter (BnM)
- Anna Perdue (BnM)
- Julie Larkin (BnM)
- Chris Cullen (BnM)

The design team gave an overview of the Proposed Project in the form of a PowerPoint presentation which set out the following information:

- Update on the Proposed Project
- Update on the baseline environment
- Hydrology and Hydrogeology
- Land, soils and peat
- Biodiversity
- Ornithology
- Proposed Project timelines

Following this presentation, there was further discussion held between the project team and the representatives of ACP at this meeting. Matters discussed included:

- Forward baseline assessment and future trends.
- Confirmed that PCAS is substantially complete at Lodge Bog.
- Trim GWB and groundwater contribution of phosphorus to surface waters to be addressed as part of the WFD assessment in the EIAR.
- Clarification on the assessment of water resources, surface water bodies and groundwater conditions along the Proposed Grid Connection and within the Proposed Wind Farm site.
- Overall peat stability risk considered to be low to negligible.
- Approach to assessing biodiversity impacts over the project lifecycle.
- Potential presence of badger setts within the area of The Long Derries, Edenderry SAC, importance of outlining sett status for all identified badger setts and discussion on potential mitigation requirements.
- Consideration of future habitat condition and suitability following proposed enhancement measures.
- Prioritise retention of existing vegetation corridors, with trimming considered where possible instead of removal, and account for these impacts within the cumulative effects assessment and mitigation measures.
- Habitat loss calculations to be included within the Biodiversity Chapter of the EIAR, clearly explaining the approach taken, and identifying potential net biodiversity gain.
- The differentiation between mitigation, compensation/offsetting and enhancement measures within the EIAR.
- Calculations of habitat loss to be provided within the application along with calculations in relation to habitat loss from the deterrent measures with detail on how this is offset by the enhancement measures.
- Finalisation of habitat loss calculations and enhancement measures.
- Discussion on Whooper Swan and Hen Harrier and consultation with NPWS
- Consideration of Lodge Bog enhancement measures, including the expansion of breeding wader habitat, scrub management and use of protective measures such as predator-proof fencing.
- Golden Plover mitigation, deterrent measures and enhancement proposals. Collision risk modelling, habitat loss calculations, deterrent habitat design, mitigation hierarchy and effectiveness of proposed measures.
- Consideration of cumulative impacts with Cloncreen Wind Farm and potential further design optimisation.
- Discussion on calculation methodologies, habitat size, vegetation growth and relevant guidance.

Fourth Meeting

A Fourth pre-application meeting was held with ACP via MS Teams on the 28th of August 2026. Those in attendance were:

On behalf of ACP:

- Lauren Murphy (ACP - Admin)
- Una Crosse (ACP - Assistant Director of Planning)
- Donal Donnelly (ACP – Senior Planner Inspector)
- Emmet Smyth (ACP - Senior Environmental Scientist)
- Paula Kearney (ACP – Senior Ecologist)
- Maeve Maher McWilliams (ACP – Ecologist)

On behalf of Agent and Applicant:

- Ronan Dunne (MKO Planning)
- Shikha Gajula (MKO Planning)
- Ellen Costello (MKO Environmental)
- Catherine Johnson (MKO Environmental)
- Ciaran Fitzgerald (MKO Environmental)
- Jack Workman (MKO LVIA)
- Dija Mazonaite (MKO LVIA)
- Kate O'Donnell (MKO Ecology)
- Katy Beckett (MKO Ecology)
- Padraig Cregg (MKO Ornithology)
- Patrick Manley (MKO Ornithology)
- Alan Lipscombe (Alan Lipscombe Traffic and Transport Consultants Ltd.)
- Miguel Cartyuvels (AWN Consulting)
- Dermot Blunnie (AWN Consulting)
- Miriam Carroll (Tobar Archaeology)
- Peter Foulsham (Cyrrus)
- Kevin Hayes (AI Bridges)
- Chris Cullen (BnM)
- Anna Perdue (BnM)
- Ellen Hilliard (BnM)
- Muriel Ennis (BnM)
- Julie Larkin (BnM)
- Catriona Carter (BnM)

The design team gave an overview of the Proposed Project in the form of a PowerPoint presentation which set out the following information:

- Overview of IPC licence and substitute consent application.
- Relevant Strategic Infrastructure Development criteria as set out in the 7th Schedule of the Planning Act.
- Overview of planning policy including national and regional planning context, the local policy context and local wind energy zoning.
- Clarifications from the third pre-application consultation relating to likely future receiving environment, timelines on baseline assessments, and other particular considerations including biodiversity, ornithology, geology, water and climate.
- Discussions on key EIAR topics: noise and vibration. shadow flicker, Landscape and Visual Impact Assessment (LVIA), and cultural heritage
- A high-level overview of traffic and transport including traffic counts, Proposed Turbine Delivery Route, Proposed Construction Haul Routes, junction design and capacity and site entrances.
- Other material assets including telecommunication and aviation assessment, telecom impacts and built services.
- Discussed consultation with statutory and public bodies undertaken.
- Set out the application contents including planning documents and planning drawing scales and the scope of the Environmental Impact Assessment Report.

Following this presentation, there was further discussion held between the project team and the representatives of ACP at this meeting. Matters discussed included:

- Transitional arrangements under the Planning and Development Act 2024 and RED III provisions to be incorporated via the New Regulations.
- Discussed the importance of distinguishing the current baseline from the likely future receiving environment, including natural revegetation and the cutaway bog rehabilitation measures. Recommended a clear comparison of the proposed measures and IPC measures.
- The use of 'offsetting' rather than 'compensation' in the EIAR terminology and keep mitigation, offsetting and enhancement clearly separated.
- The intact bog area excluded from deterrent planting to be clearly shown and verified against bird requirements.
- Discussion in relation to breeding curlew, vantage point surveys and associated feedback loop.
- Searcher proficiency and scavenger-removal trials with respect to carcass searches to be included in the EIAR.
- Discussion on cumulative effects, collision risk for golden plover, displacement and habitat loss.
- Discussion on cumulative noise effects, revised UK wind turbine noise guidance, baseline surveys and protocol for dealing with operational noise complaints.
- Different types of sensitive receptors in relation to shadow flicker to be clearly identified.
- Discussion on zero shadow flicker being technical best practice, to be included as embedded mitigation or otherwise justified.
- Future receiving environment to be considered with respect to LVIA. Implications of the revised Nature Corridor designation as per the OCDP Variation No. 1 be considered.
- Recommended clarifying the scope and locations of archaeological versus geotechnical investigations and determine whether additional pre-application archaeological testing is required.
- Discussion on the potential impacts on the Virgin Media link. If it remains operational following consent, the pre-agreed mitigation option will be selected, funded by the developer.
- Discussion on the Military Operating Area 4 and the potential impacts of the Proposed Project being located in low-flying area for helicopters.
- Consideration of red aviation lights on turbines impacting birds such as the use of flashing instead of static light.
- Drawing scaled to be agreed with ACP ahead of the application being lodged.
- A standalone schedule of significant effects, similar to the mitigation schedule to be included.
- Final description of the proposed project be forwarded to ACP.
- Consideration be given to orientation, spacing, etc in relation to wind farms in the vicinity of the Proposed Project.
- Brief credential, and relevant experience of ornithology surveyors be included.

SID Determination

A letter received from ACP dated the 12th of October 2026 stated that under Section 37B (4)(A), it is the opinion of the Commission that the Proposed Project falls within the scope of the paragraphs 37A(2)(a) and (b) of the Planning Act. This confirmed that the Proposed Project constitutes SID and therefore the planning application should be made directly to ACP.

1.5.4 Desk Study

The desk study undertaken for this assessment included a thorough review of available data pertaining to the Project Site and surrounding area, as well as information pertaining to the European Sites identified in Section 4 below. The desk study was completed in order to identify relevant European Sites and information regarding their QI or SCI and conservation objectives. In addition, while the distributions of the QI habitats for which the European Sites are selected are typically restricted to the individual site, QI/ SCI species can range well beyond the boundaries of the Project Site e.g., bird species or otter, as outlined in Section 1.5.1.4 above. The desk study established, from available publications and other publicly available resources, the known distributions and potential presence of such species beyond the defined boundaries of the European Sites for which they are listed as QIs/SCIs. Sources of information included the following:

- Existing information on the part of the Project Site located within the BnM landbank (i.e., 14 no. bogs of the Allen Bog Group) provided by BnM, in particular ecological data including habitat data and bird survey data provided by the BnM Ecology team.
- Review of NPWS Site Synopses and Conservation Objectives documents for relevant European Sites[2]
- Review of EU Habitats Directive (Article 17) Reports (NPWS, 2025a; NPWS, 2025b; NPWS 2025c).
- Review of online web-mappers: National Parks and Wildlife Service (NPWS)[3], Inland Fisheries Ireland (IFI)[4], Environmental Protection Agency (EPA)[5], EPA (Envision)[6] and Water Framework Directive (WFD)[7].
- Review of OS maps and aerial photographs of the Project Site.
- Review of relevant available Plans, including the Kildare County Development Plan 2023-2029, the Offaly County Development Plan 2021-2027, the Offaly Biodiversity action Plan 2025-2030, the Kildare County Council DRAFT Biodiversity Action Plan 2026-2031 and National Biodiversity Action Plan 2023-2030.
- Integrated Pollution Control Licence (IPC) Licence Allen Bog Group (IPC licence P0503-01) Environmental Protection Agency, including the Draft Cutaway Bog Decommissioning and Rehabilitation Plans (hereafter referred to as 'Draft Rehabilitation Plans') for the 14 no. Allen Bog Group bogs which form part of the Project Site (included in Appendix 3).
- Review of the relevant chapters of the Environmental Impact Assessment Report (EIAR) accompanying the planning application.

1.5.5 Ecological Surveys

Comprehensive surveys of the Project Site and, where appropriate/necessary to gather data to inform the assessment, outside of the Project Site (see Section 1.5.2), were undertaken on various dates between 2020 and 2026. Table 1-4 lists all surveys undertaken which are relevant to European Sites and their Qualifying Interests (QIs) and Special Conservation Interests (SCIs), the survey area for each survey type and the dates on which they were carried out. The sections following Table 1-4 fully describe the ecological surveys that have been undertaken to inform this AASR and NIS and provide details of the methodologies and guidance followed.

[2] *Available at https://www.npws.ie/protected-sites*
[3] *Available at https://www.npws.ie/maps-and-data*
[4] *Available at https://opendata-ifigeo.hub.arcgis.com/*
[5] *Available at https://gis.epa.ie/EPAMaps/*
[6] *Available at https://gis.epa.ie/envision*
[7] *Available at https://www.catchments.ie/*

Table 1-4 Summary of surveys that inform the AASR and NIS

Survey	Dates	Survey Area	Guidance
Multi-disciplinary ecological walkover surveys *(including habitats, mammals, invasive species etc.)*	› 1st and 2nd of September 2026 › 6th of July 2026 › 13th, 14th, 19th, 20th, 26th and 27th of May 2026 › 11th and 18th of September 2025 › 16th, 18th, 23rd, 25th and 29th of July and 13th of August 2024 › 22nd and 23rd of March and 18th of April 2023 › 5th, 6th and 26th of May, 1st, 8th, 14th and 22nd of June, 22nd of July and 19th of July 2022 › 16th and 24th of June and 11th and 12th of August 2021	Areas within the likely ZoI of the Proposed Project infrastructure footprint (see Section 1.5.5.1 below for detail)	› Smith *et al.* (2011) › TII (2008a) › TII (2020)
Marsh fritillary survey	› 4th, 8th, 11th and 18th of September 2025 › 21st of August and 4th of September 2024	Areas identified as potential suitable habitat for marsh fritillary within the Project Site	› TII (2008a) › NBDC Marsh Fritillary Monitoring Scheme (online)
Otter surveys	› 6th of July 2026 › 13th, 14th, 19th, 20th, 26th and 27th of May 2026 › 11th and 18th of September 2025 › 17th of December 2025 › 13th of August 2024 › 16th, 18th, 23rd, 25th and 29th of July 2024 › 18th of April 2023 › 22nd and 23rd of March 2023 › 19th of July 2022 › 1st, 8th, 14th and 22nd of June 2022 › 5th, 6th and 26th of May 2022 › 11th and 12th of August 2021 › 16th of June 2021	150m upstream and downstream of watercourse crossings associated with the Proposed Wind Farm were surveyed for otter signs. Triturus Environmental Ltd. also undertook otter surveys in all freshwater watercourses that could be directly or indirectly affected by the Proposed Project during the dedicated aquatic surveys undertaken on the dates outlined in the row below.	› TII (2008a) › TII (2006) › CIEEM (2013)
Aquatic surveys (including otter)	› 25th - 30th of August 2026 › 1st, 2nd and 3rd of August 2024 › 31st of July 2024 › 1st, 2nd and 3rd of July 2021	Freshwater watercourses which could be affected directly or indirectly by the Proposed Project. This included aquatic sites within and in downstream of the Proposed Wind	› CEN (2003) › CFB (2008) › EA (2003) › Toner *et al.* (2005) › TII (2008a) › Reynolds *et al.* (2010)

Survey	Dates	Survey Area	Guidance
		Farm and watercourses crossed by the Proposed Grid Connection (see Appendix 2 Aquatic Baseline Report for full details)	› Gammell *et al.* (2021) › IFI (2010)
Bird surveys	A program of bird surveys were undertaken between April 2020 and March 2026 to inform this assessment, capturing both winter and breeding season survey efforts. Due to the number of dates on which bird surveys were undertaken between April 2020 to March 2026, these are not listed in this table. A full list of survey dates is provided in Appendix 4, Ornithology Survey Effort, of this AASR and NIS.	The survey areas for each ornithological survey type are described in detail in Section 1.5.5.5 below.	› SNH (2017; revised in NatureScot, 2025) › Brown and Shepherd (1993) › Calladine *et al.* (2009) › British Trust for Ornithology (2021) › BirdWatch Ireland (2021) › Gilbert *et al.* (1998) › SNH (2016) › O'Donoghue (2019) › Hardey *et al.* (2013)

1.5.5.1 Multi-disciplinary Ecological Walkover Surveys

BnM produced habitat maps between 2009 and 2016 for the entire Allen Bog Group, which comprises 14 no. bogs in Counties Kildare and Offaly – Ballydermot North, Ballydermot South, Barnaran, Blackriver, Codd 1, Codd 2, Derrybrennan, Glashabaun North, Glashabaun South, Killina, Lodge, Lullybeg, Lullymore and Ticknevin Bogs. This habitat mapping and assessment was undertaken following the BnM habitat classification scheme (see Appendix II of the Bord na Móna Biodiversity Action Plan 2016-2021[8]) and was cross referenced with '*A Guide to Habitats in Ireland*' (Fossitt, 2000).

Between 2021 and 2026, MKO ecologists visited the Project Site to ground-truth BnM habitat mapping and to evaluate the baseline habitat conditions within the Project Site and produce up to date, detailed habitat maps. Detailed surveys were also undertaken of the Proposed Grid Connection and the Proposed Turbine Delivery Route accommodation areas. Multi-disciplinary ecological walkover surveys were undertaken within the Project Site on a number of dates (refer to Table 1-4 above). These surveys were carried out in accordance with best practice TII *Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna* on National Road Schemes (TII, 2008a).

The multi-disciplinary ecological walkover surveys were designed to detect the presence, or likely presence, of a range of protected habitats and species. All habitats recorded within the Project Site and described within this AASR and NIS have been classified in accordance with '*A Guide to Habitats in Ireland*' (Fossitt, 2000), which classifies habitats based on the vegetation present and management history. The extent of each habitat within the Project Site was mapped using aerial photography, handheld GPS and smartphone technology. A representative photograph was also taken for each of the habitats recorded on site, including all relevés (see Section 3.1 below). Plant nomenclature for vascular plants follows '*New Flora of the British Isles*' (Stace, 2019), while mosses and liverworts nomenclature

[8] *BnM (2016) Bord na Móna Biodiversity Action Plan 2016-2021. Available at: https://www.bnm.ie/wp-content/uploads/2021/03/Biodiversity-Action-Plan-2016-2021-1.pdf [Accessed 13/10/2026]*

follows '*Mosses and Liverworts of Britain and Ireland - a field guide'* (British Bryological Society, 2010). Habitat/vegetation survey timings fall within the recognised optimum period for vegetation surveys/habitat mapping, i.e. April to September (Smith *et al.*, 2011).

The multi-disciplinary ecological walkover surveys included a search for evidence of or suitable habitat for a range of protected species. These surveys comprehensively covered all habitat areas within the likely ZoI of the Proposed Project. As outlined in Section 1.5.1.2 above, the extent of the likely ZoI can vary depending on the ecological feature in question, its sensitivity to environmental change and the nature of the proposed works or development. As such, the extent of the survey area correspondingly varied in accordance with the habitats within the vicinity of the Proposed Project footprint. For example, areas of remnant raised bog within 150m of the Proposed Project infrastructure were surveyed in detail to allow a robust assessment of potential hydrological impacts, while less sensitive habitats such as those dominated by bare peat were surveyed to a 50m buffer, allowing for a search for mammal signs and invasive species without the requirement for detailed habitat assessments.

During the multi-disciplinary ecological walkover surveys, a search for non-native invasive species was also undertaken. The survey focused on the identification of invasive species listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011, as amended) and the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024).

Based on the multi-disciplinary ecological walkover survey findings, further detailed targeted surveys were carried out for a number of ecological receptors and these survey methodologies are described in the following subsections. The results of the desk study and scoping replies were also used to inform the scope of targeted ecological surveys required. Additionally, incidental records of fauna observed during the extensive ornithological surveys and other dedicated species/habitat specific surveys carried out within the Project Site were also recorded.

1.5.5.2 Otter Surveys

Otter are a QI of both the River Barrow and River Nore SAC and the River Boyne and River Blackwater SAC, which have been identified as being located within the likely ZoI of the Proposed Project, following the methodology outlined in Section 1.5.1.2 above.

All EPA mapped watercourses within the Project Site were identified as providing potential habitat for otter. Specialist targeted surveys for the species were therefore carried out at the location of each proposed watercourse crossing within the Project Site on the dates outlined above in Table 1-4.

Otter surveys were conducted as per TII (2008a) guidelines (*Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes*). This involved a search for all otter signs (e.g. spraints, scat, prints, slides, trails, couches and holts) 150m upstream and downstream of each survey site. In addition to the width of the rivers/watercourses, a 10m riparian buffer was considered to comprise part of the otter habitat (NPWS 2009). Where otter signs were observed these were mapped. The dedicated otter survey also followed the guidance as set out in TII (2008b) *'Guidelines for the Treatment of Otters Prior to the Construction of National Roads Schemes'* and CIEEM best practice competencies for species surveys (CIEEM, 2013).

Additional otter surveys were conducted by Triturus Environmental Ltd. on the dates set out in Table 1-4 above, as part of the aquatic baseline surveys, recording all otter signs within 150m radius of each survey site. Freshwater watercourses which could be affected directly or indirectly by the Proposed Project infrastructure were included within these surveys. This included aquatic sites within and downstream of the Project Site.

1.5.5.3 Marsh Fritillary Surveys

Marsh fritillary are a QI of Ballynafagh Lake SAC, which is crossed by the Proposed Grid Connection underground electrical cabling route and as such has been identified as being located within the likely ZoI of the Proposed Project, following the methodology outlined in Section 1.5.1.2 above.

During the multi-disciplinary ecological walkover surveys, areas of suitable marsh fritillary habitat (i.e. abundance of devil's-bit scabious) within the Project Site were mapped as part of the survey effort and were used to inform the layout of the Proposed Project.

Given the presence of suitable habitat within the Proposed Wind Farm site, targeted larval web surveys for the species were undertaken in areas of suitable habitat within or in close proximity to the Proposed Project infrastructure footprint. The surveys were undertaken within the optimal period i.e. August – September, on the dates outlined in Table 1-4 above, on dry days, with no rain and little wind. The survey methodology followed best practice TII (2008a) guidelines.

The NBDC methodology entitled '*Habitat Condition Assessment For Marsh Fritillary'* [9] was also followed in order to assess the condition of each habitat parcel, classifying the habitats as *Good Condition*, *Suitable (Under-grazed), Suitable (Over-grazed)* or *Unsuitable* based on the frequency of devil's-bit scabious (*Succisa pratensis*), the larval foodplant, sward height and cover of scrub.

1.5.5.4 Fisheries and Aquatic Surveys

There are a number of aquatic QIs associated with both the River Barrow and River Nore SAC and the River Boyne and River Blackwater SAC, which have been identified as being located within the likely ZoI of the Proposed Project, following the methodology outlined in Section 1.5.1.2 above. River lamprey (*Lampetra fluviatilis*) and Atlantic salmon (*Salmo salar*) are associated with both the River Barrow and River Nore SAC and the River Boyne and River Blackwater SAC, and the River Barrow and River Nore SAC is also designated for brook lamprey (*Lampetra planeri*), twaite shad (*Alosa fallax fallax*), freshwater pearl mussel (*Margaritifera margaritifera*) and white-clawed crayfish (*Austropotamobius pallipes*).

Dedicated aquatic baseline surveys of the watercourses draining the Project Site were undertaken by Triturus Environmental Ltd. in 2026, on the dates outlined in Table 1-4 above. Previous aquatic baseline surveys were also undertaken by Triturus in relation to the Project Site in July 2021 and July-August 2024, and the results of these surveys are used to supplement the findings of the 2026 surveys, where relevant.

All freshwater watercourses which could be affected directly or indirectly by the Proposed Project were considered as part of this assessment. This included sites within and downstream of the Proposed Wind Farm and watercourses crossed by the Proposed Grid Connection underground electrical cabling route. Thus, a total of n=42 sites (41 no. riverine sites and 1 no. canal site) were selected for detailed aquatic assessment. All aquatic survey locations (labelled as sites A1-18, B1-2, C1-2, G1-11) are shown in Figure 2.1 of the Aquatic Baseline Report, which is included as Appendix 2. In relation to the Proposed Wind Farm, these survey sites (A1-18, B1-2, C1-2) were located on the Codd River (EPA code: 14C44) and two of its unnamed tributaries, the Cloncant Stream (14C41), Abbeylough Stream (14A01), Figile River (14F01), Lullybeg Stream (14L13), Lullymore East River (14L11) and an unnamed tributary (14C32), Clonbrown River (14C32), Ballykilleen Stream (14B25, Clonbullogue River (14C53), Ballygarrett River (14B30), Clonkeen Stream (07C36), River Boyne (07B04), Drumsru Stream (14D19) and the Slate River (14S01).

[9] *National Biodiversity Data Centre [online]. Available at: https://biodiversityireland.ie/app/uploads/2021/11/Marsh-Fritillary-Habitat-Condition-Form.pdf [Accessed 04/062026]*

In relation to the Proposed Grid Connection, these survey sites (G1-11) were located on the Slate River (14S01) and unnamed tributaries of the Slate River, the Killinagh Upper Stream (14K17), Upper Ballynakill River (14U01), Brockagh River (14B73), the Blackwood Feeder line and main line of the Grand Canal. These survey locations are detailed in Table 1-5 below. and shown in Figure 2.1 of the Aquatic Baseline Report, which is included as Appendix 2.

Survey effort focused on both in-stream and riparian habitats at each aquatic sampling location. Surveys undertaken at each of the survey sites included a fisheries assessment (electro-fishing and/or fisheries habitat appraisal), white-clawed crayfish survey, macrophyte and aquatic bryophyte survey and (where suitable) biological water quality sampling (Q-sampling) and macro-invertebrate sweep netting.

To further validate site surveys and to detect potentially cryptically low populations of high conservation value aquatic species, protected and or rare aquatic species within the Study Area, composite water samples were collected from the Figile River (sites A15a & A18), River Boyne (B2) and Slate River (C2) and analysed for freshwater pearl mussel (*Margaritifera margaritifera*), Atlantic salmon (*Salmo salar*), white-clawed crayfish (*Austropotamobius pallipes*) and lamprey (*Lampetra* spp.) environmental DNA (eDNA). Crayfish plague (*Aphanomyces astaci*) eDNA was also tested for during the 2024 surveys at survey sites A18, B2, C2, and at a survey site approximately 0.8km downstream of the 2026 survey site A15a.

Dedicated white-clawed crayfish surveys were also undertaken at all aquatic survey sites in August 2026.

Full details of the methodology followed for the aquatic surveys as well as details of the locations of survey sites and dates of surveys are provided in the Aquatic Baseline Report, Appendix 2.

Table 1-5 Locations of n=42 aquatic survey sites in the vicinity of the Proposed Project

Site no.	Watercourse	EPA code	Townland	X (ITM)	Y (ITM)	Distance Downstream of the Project Site
A1	Unnamed stream	n/a	Derries	665752	729939	0km – within the Proposed Wind Farm site
A2	Unnamed stream	n/a	Derries	666710	729706	0km – within the Proposed Wind Farm site
A3	Codd River	14C44	Derries	666119	729187	0km – within the Proposed Wind Farm site
A4	Codd River	14C44	Codd	664647	728006	0.1km
A5	Cloncant Stream	14C41	Derries	666402	729057	0km – within the Proposed Wind Farm site
A6	Cloncant Stream	14C41	Cushaling	663787	727511	0km – within the Proposed Wind Farm site
A7	Abbeylough Stream	14A01	Ballybrack	670827	728735	0km – within the Proposed Wind Farm site
A8	Figile River	14F01	Ticknevin	666719	727796	0km – Proposed Wind Farm watercourse crossing (WC-WF-07)
A9	Unnamed stream	n/a	Lullybeg	667604	725885	0km – within the Proposed Wind Farm site
A10a	Lullybeg Stream	14L13	Lullybeg	668325	724418	0km – Proposed Wind Farm watercourse crossing (WC-WF-13)
A10b	Lullymore East River	14L11	Lullybeg	667752	724098	0km – Proposed Wind Farm watercourse crossing (WC-WF-12)
A10c	Lullybeg Stream	14L13	Lullybeg	667103	725094	0km – Proposed Wind Farm watercourse crossing (WC-WF-11)
A11a	Lullymore East River	14L11	Lullybeg	667683	725577	0km – Proposed Wind Farm watercourse crossing (WC-WF-10)
A11b	Lullymore East River	14L11	Lullybeg	666815	725833	0km – Proposed Wind Farm watercourse crossing (WC-WF-08)
A12a	Lullybeg Stream	14L33	Cushaling	666165	724787	0km – Proposed Wind Farm watercourse crossing (WC-WF-15)
A12b	Clonbrown River	14L33	Cushaling	666087	724946	0km – Proposed Wind Farm watercourse crossing (WC-WF-14)

Site no.	Watercourse	EPA code	Townland	X (ITM)	Y (ITM)	Distance Downstream of the Project Site
A13a	Clonbrown River	14C32	Killinthomas	665802	723269	0km – Proposed Wind Farm watercourse crossing (WC-WF-01)
A13b	Clonbrown River	14C32	Killinthomas	665761	723345	0km – Proposed Wind Farm watercourse crossing (WC-WF-02)
A13c	Clonbrown River	14C32	Killinthomas	665583	723926	0km – Proposed Wind Farm watercourse crossing (WC-WF-03)
A13d	Clonbrown River	14C32	Cushaling	665055	725590	0km – within the Proposed Wind Farm site
A14a	Figile River	14F01	Cushaling	665011	725882	0km – within the Proposed Wind Farm site
A14b	Figile River	14F01	Cloncant	663529	726766	0km – Proposed Wind Farm watercourse crossing (WC-WF-04)
A15a	Figile River	14F01	Shean	661438	727522	0km – Proposed Wind Farm watercourse crossing (WC-WF-06)
A15b	Ballykilleen Stream	14B25	Shean	661272	727619	0km – Proposed Wind Farm watercourse crossing (WC-WF-05)
A16	Clonbullogue River	14C53	Clonbullogue	661405	723666	1.6km
A17	Ballygarrett River	14B30	Clonbrown	662374	723087	1.0km
A18	Figile River	14F01	Nahana	659896	719047	4.9km
B1	Clonkeen Stream	07C36	Cloncanon	665410	731179	0.2km
B2	River Boyne	07B04	Kishawanny Upper	664528	733464	2.6km
C1	Drumsru Stream	14D19	Barnaran	670840	724189	0.2km
C2	Slate River	14S01	Cloncurry	670272	721700	1.2km

Site no.	Watercourse	EPA code	Townland	X (ITM)	Y (ITM)	Distance Downstream of the Project Site
G1	Killinagh Upper Stream	14K17	Allenwood South	673402	726368	0km – Proposed Grid Connection underground electrical cabling route watercourse crossing (WC-GCR-01)
G2	Grand Canal	n/a	Allenwood South	674633	726464	0km – Proposed Grid Connection underground electrical cabling route watercourse crossing (WC-GCR-02)
G3	Upper Ballynakill River	14U01	Derrymullen	676233	726584	0km – Proposed Grid Connection underground electrical cabling route watercourse crossing (WC-GCR-03)
G4	Unmapped Channel	n/a	Derrymullen	676949	726639	0km – Proposed Grid Connection underground electrical cabling route watercourse crossing (WC-GCR-04)
G5	Slate River	14S01	Graigues	678787	726784	0km – Proposed Grid Connection underground electrical cabling route watercourse crossing (WC-GCR-05)
G6	Slate River	14S01	Blackwood	679415	726846	0km – Proposed Grid Connection underground electrical cabling route watercourse crossing (WC-GCR-06)
G7	Blackwood Feeder (Grand Canal)	n/a	Blackwood	679499	726854	0km – Proposed Grid Connection underground electrical cabling route watercourse crossing (WC-GCR-07)
G8	Slate River	14S01	Blackwood	679608	726864	0km – Proposed Grid Connection underground electrical cabling route watercourse crossing (WC-GCR-08)
G9	Brockagh River	14B73	Coolree	680021	726896	0km – Proposed Grid Connection underground electrical cabling route watercourse crossing (WC-GCR-09)
G10	Unmapped Channel	n/a	Downings North	680640	726952	0km – Proposed Grid Connection underground electrical cabling route watercourse crossing (WC-GCR-11)
G11	Unnamed stream	n/a	Downings North	682652	727121	0km – Proposed Grid Connection underground electrical cabling route watercourse crossing (WC-GCR-10)

1.5.5.5 Bird Surveys

Within this assessment, the '**Core Ornithology Survey Area**' refers to the focal area during on-site field ornithological surveys. This is defined as the Proposed Wind Farm site, inclusive of the Proposed Wind Farm, the Proposed Enhancement Areas and the Proposed Onsite Substation. The remaining elements of the Proposed Grid Connection, Proposed Construction Haul Routes and Proposed Turbine Delivery Route are not included as these were surveyed as part of multidisciplinary ecological walkover surveys and not subject to dedicated bird surveys It is noted that surveys extended beyond this core area when targeting specific species as per NatureScot (2025) recommendations.

For the purposes of this AASR and NIS, '**target species**' include SCIs of SPAs within the likely ZoI. Adopting a precautionary approach, a site-specific scope for ornithological surveys was devised. These were specifically designed to survey for these target species. Following the methodology outlined in Section 1.5.1.2 above, on a precautionary basis, SPAs identified within the likely ZoI are listed below:

- Slieve Bloom Mountains SPA [004160]
- River Boyne and River Blackwater SPA [004232]
- Poulaphouca Reservoir SPA [004063]
- Lough Ennell SPA [004044]
- Wicklow Mountains SPA [004040]
- River Nore SPA [004233]
- Lough Owel SPA [004047]

Bird surveys were undertaken during the period April 2020 to March 2026, consisting of six breeding seasons (April to September inclusive) and six winter seasons (October to March inclusive). This survey work forms the core dataset for the assessment of impacts on ornithology. Survey dates for each survey type are outlined in Appendix 4. The data provided in the field surveys is robust and allows clear, precise and definitive conclusions to be made on the ornithological receptors identified. In the absence of specific national bird survey guidelines, the ornithological surveys were designed and undertaken in full accordance with the guidance document '*Recommended bird survey methods to inform impact assessment of onshore wind farms'* from NatureScot (formerly Scottish Natural Heritage [SNH]) outlined in SNH (2017), which was revised in NatureScot (2025). Surveys remain in accordance with the updated guidance.

The various field surveys undertaken are described in detail below including a description of the area surveyed and its radius from the Core Ornithology Survey Area (as defined in Section 1.5.2 above), which depended on the methodology and focal species. The Core Ornithology Survey Area was defined for the purposes of bird surveys and covers the Proposed Wind Farm whilst the site boundary evolved to account for ancillary infrastructure (i.e. site entrances and grid connections etc). As the Proposed Project design progressed, the core of the Proposed Wind Farm and fundamentally the Proposed Turbines were reviewed against the Core Ornithology Survey Area to ensure appropriate coverage throughout the survey period. All survey effort and location maps are presented in Appendix 4.

1.5.5.5.1 *Vantage Point Surveys*

Vantage point surveys were undertaken in accordance with SNH (2017; revised in NatureScot, 2025) to monitor flight activity. The area surveyed was the viewsheds within the Core Ornithology Survey Area, providing coverage to a 500m radius of the potential turbine positions. Surveys were conducted from 16 fixed vantage points. The vantage point locations were selected by undertaking a viewshed analysis (described below) and confirmed by a reconnaissance visit and initial field surveys to ensure that the Proposed Turbines were entirely covered.

Viewsheds were calculated using the Visibility Analysis plugin (Version 1.8) over a raster digital terrain model (DTM) in QGIS (Version 3.28). Note that while the relevance of being able to view as much of

the site to ground level is acknowledged, the NatureScot guidance emphasises the importance of visibility of the 'collision risk volume' when the data is to be used to estimate the risk of collision with turbines by birds. Therefore, the viewshed analysis aims to identify the most suitable locations to site vantage points such that the airspace of the turbine rotor swept area is in view using the fewest possible number of vantage points. As no specific turbine model was confirmed at the outset of surveys, the viewsheds were based on a notional layer suspended 20m above the ground. The vantage point locations were tested for visibility coverage by creating a point 1.75m in height (to represent the height of the surveyor) on a map using 10m contours terrain data. The relative height of any surrounding landscape features (e.g., trees) and their effects on visibility was also accounted for in the analysis. The software produced a 360° viewshed 20m from ground level up to a 2km radius around the vantage point. This viewshed was then cropped to a 180° arc representing the area visible to the surveyor. Once the turbine model was confirmed to have a lowest swept height of 30m or 50m, the viewsheds were recalculated using a notational layer suspended at 30m and 50m. The viewsheds provided adequate coverage of the Core Ornithology Survey Area for a collision risk assessment to be undertaken.

Survey methodology followed SNH (2017; revised in NatureScot, 2025). The surveyor collected data on bird observations and flight activity from the scanning arc of 180° to a 2km radius at the fixed vantage point locations for two 3 hour watches separated by a minimum 30 minute break (i.e., 6 hours total) per month. Surveys were conducted from April 2020 to March 2026 inclusive, and were scheduled to provide a minimum of 36 hours per winter or breeding season and spread over the full daylight period, including dawn and dusk watches, to coincide with the highest periods of bird activity (Table 1-6).

Table 1-6 Vantage point survey duration

Survey Season and Number of Vantage Points	Effort per Vantage Point
Breeding Season 2020 (16 vantage points)	36 hours per vantage point
Winter Season 2020/2021 (16 vantage points)	36 hours per vantage point
Breeding Season 2021 (16 vantage points)	36 hours per vantage point
Winter Season 2021/2022 (16 vantage points)	36 hours per vantage point
Breeding Season 2022 (16 vantage points)	36 hours per vantage point
Winter Season 2022/2023 (16 vantage points)	36 hours per vantage point
Breeding Season 2023 (16 vantage points)	36 hours per vantage point
Winter Season 2023/2024 (16 vantage points)	36 hours per vantage point
Breeding Season 2024 (16 vantage points)	36 hours per vantage point
Winter Season 2024/2025 (16 vantage points)	36 hours per vantage point
Breeding Season 2025 (16 vantage points)	36 hours per vantage point
Winter Season 2025/2026 (16 vantage points)	36 hours per vantage point

Flight activity of target species was mapped and recorded as per defined flight bands which were chosen in relation to the dimensions of potential turbine models at the outset of surveys. From April 2020 to February 2022 bands were split into 0-15m, 15-25m, 25-200m and >200m, then from February 2022 until March 2026 the bands were updated to include an additional height band as follows 0-15m, 15-25m, 25-50m, 50-200m, and >200m. All flight activity within height bands 25-50m, 25-200m and 50-200m were considered to be within the potential collision height with regard to the turbine swept area for the Proposed Turbines with a tip height of 200m and within height bands 25-200m, 50-200m and >200m were considered to be within the potential collision height with regard to the turbine swept area for the Proposed Turbines with a tip height of 220m. In addition, the presence of any non-target species was recorded to inform the evaluation of supporting habitat.

1.5.5.5.2 *Winter Walkover Surveys*

Winter walkover surveys were undertaken to record the presence of bird species within or in proximity to the Core Ornithology Study Area as well as areas between vantage point locations. The area surveyed covers a 500m radius of the majority of the Proposed Wind Farm. These transects covered the

extent of 13 of the 14 bog groups within the Proposed Wind Farm site, with the exception of Killina Bog which is largely closed forest habitat; the open habitat section of this bog was surveyed. The methodology was adapted from the walkover methodology outlined in Brown and Shepherd (1993) and Calladine *et al.* (2009), combined with Common Bird Census methods (British Trust for Ornithology, 2021). Winter walkover surveys were conducted in daylight hours over four visits between October and March (i.e., four visits in winter 2020/2021, four visits in winter 2021/2022, four visits in winter 2022/2023, four visits in winter 2023/2024, four visits in winter 2024/2025, and four visits in winter 2025/2026).

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

1.5.5.5.3 Breeding Walkover Surveys

Breeding walkover surveys were undertaken to determine possible, probable or confirmed breeding bird activity within or in proximity to the Core Ornithology Survey Area. The area surveyed covers a 500m radius of the majority of the Proposed Wind Farm. These transects covered the extent of 8 of the 14 bog groups within the Proposed Wind Farm site. The methodology was based on adapted Brown and Shepherd (1993) and Calladine *et al.* (2009), with a focus on breeding waders including curlew, combined with Common Bird Census methods (British Trust for Ornithology, 2021) for dense habitat. Breeding walkover surveys were conducted in daylight hours beginning at dawn and the majority finishing no later than 18:00, over four visits during the core breeding season months April to July.

Transect routes were walked across different habitat complexes within the Core Ornithology Survey Area where access allowed. Using binoculars, the surveyor regularly scanned the surroundings of each transect for target species. All target species were mapped and breeding status was assigned following British Trust for Ornithology breeding status codes[10]. In addition, the presence of any non-target species was recorded to inform the evaluation of supporting habitat.

1.5.5.5.4 Waterbird Distribution and Abundance Surveys

Waterbirds include: swans, geese and ducks; cormorant, shag, divers and grebes; auks and seabirds; gulls, terns and skuas; herons, egrets and crane; rails and crakes; waders; and kingfisher. Due to their strong association with aquatic habitats, the species chough, grey wagtail and dipper were also treated as waterbirds for the purposes of these surveys. Significant wetlands and waterbodies on and within 5km of the Core Ornithology Survey Area were surveyed for waterbirds during the 2020/2021, 2021/2022, 2022/2023, 2023/2024, 2024/2025, and 2025/2026 winter and passage seasons (August to May inclusive) to provide information on their distribution in relation to the Core Ornithology Survey Area. The area surveyed exceeds the 500m for foraging waterbirds and 1km for roosting waterbirds requirements of NatureScot (2025) and follows the recommendations of SNH (2016).

Survey methodology follows Gilbert *et al.* (1998) and the Irish Wetland Bird Survey (BirdWatch Ireland, 2021) with surveys carried out fortnightly (as per NatureScot, 2025). Surveys were undertaken during daylight hours from suitable vantage points or transects overlooking wetlands and waterbodies. All target waterbird species were recorded and mapped.

1.5.5.5.5 Hen Harrier Roost Surveys

Hen harrier roost surveys were undertaken on and within 2km of the Core Ornithology Survey Area . These surveys aimed to identify active winter hen harrier roosts near or within the Core Ornithology Survey Area. Survey methodology followed Gilbert *et al.* (1998) and O'Donoghue (2019). Each hen harrier vantage point was surveyed at potential roost habitats within the 2km radius once per month

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

during the winter season between October and March inclusive (in winter 2020/2021, 2021/2022, 2022/2023, 2023/2024, 2024/2025, and 2025/2026)

Roost watches of 2-3 hours were conducted at 18 hen harrier vantage point locations from dusk until last visible light. All hen harrier observations were recorded and mapped.

1.5.5.5.6 *Breeding Raptor Surveys*

For the purposes of this AASR and NIS, target raptor species include hen harrier, merlin and peregrine falcon. Breeding raptor surveys were undertaken within 2km of the Core Ornithology Survey Area to identify occupied territories and monitor their breeding success near or within the Core Ornithology Survey Area. Survey methodology followed Hardey *et al.* (2013). Each breeding raptor location was surveyed once per month during the core breeding season between April and July.

Breeding raptor watches of 3 hours (supplemented by transects if necessary) were conducted during daylight at 12 breeding raptor locations, consisting of seven vantage point locations and five transects. All raptor species observed were recorded and mapped and, in addition to species specific methodologies described by Hardey *et al.* (2013), breeding status was assigned following British Trust for Ornithology breeding status codes. Surveyors did not approach nest sites to avoid disturbance.

2. DESCRIPTION OF PROPOSED PROJECT

2.1 Site Location

The Proposed Wind Farm is located approximately 2.2km south-southeast of Edenderry Co. Offaly, 3.3km west of Allenwood Co. Kildare, 2km north of Rathangan Co. Kildare, and 1.7km east of Clonbullogue Village Co. Offaly. The Proposed Wind Farm, Proposed Onsite Substation, 0.5km of the Proposed Grid Connection underground electrical cabling route and Proposed Enhancement Areas will be located on part of the Allen Bog Group (i.e., the Proposed Wind Farm site). The 14no. bogs of the Allen Bog Group are located on the border of County Offaly and County Kildare. The bogs include: Ticknevin, Glashabaun North, Glashabaun South, Codd 1, Codd 2, Ballydermot North, Ballydermot South, Blackriver, Lullymore, Lullybeg, Barnaran, Killina, Derrybrennan and Lodge. The Proposed Grid Connection will traverse through Allenwood, Co. Kildare and Prosperous, Co. Kildare, with infrastructure proposed in the townland of Lullymore and Killybegs, Co. Kildare and adjacent townlands. The Proposed Turbine Delivery Route will exit south off the M6 Motorway at Junction 5 Kilbeggan / Tullamore and travel via national, regional and local roads, as well as the internal access roads of the existing Cloncreen Wind Farm, to access the Proposed Wind Farm.

Current land use within the Proposed Wind Farm site comprises natural revegetation of cutaway and degraded bog, a small area of active turbary, public road corridor, and existing wind energy infrastructure. Current land use on and along the Proposed Grid Connection comprises primarily public road corridor, degraded raised bog, and land principally used for agriculture. Land use associated with the Proposed Enhancement includes naturally-revegetating cutaway and degraded bog and forestry. Land-use in the wider landscape of the Project Site comprises of BnM landholdings, forestry, agricultural land, cutover and cutaway peatland, peatland rehabilitation, one-off rural housing, small village settlements, and existing energy infrastructure, including power plants, solar farms, and wind energy developments.

The nearest European Site to the Project Site, i.e., Special Area of Conservation (SAC) or Special Protection Area (SPA), is the Ballynafagh Lake SAC which is crossed by the Proposed Grid Connection underground electrical cabling route; the entirety of the interaction with the Ballynafagh Lake SAC is within the public road corridor. The Long Derries, Edenderry SAC is located directly adjacent to the Proposed Wind Farm site.

Elevations within the Proposed Wind Farm site range from 82mOD (metres above Ordance Datum) in the southwest to 68mOD in the northeast. The Project Site encompasses an area of approximately 5,157ha.

A figure showing the location of the Proposed Project is provided in Figure 2-1 below.

N

Mullingar
Dunshaughlin
Lough Ennell
N4
M4
N52
Kinnegad
Enfield
Kilcock
Maynooth
Moate
M6
Kilbeggan
Clara
Edenderry
Celbridge
Timahoe Bog
Prosperous
Clane
Tullamore
Sallins
Clonsast Bog
Naas
Rathangan
N80
Monettia Bog
Derrylea Bog
Newbridge
Kilcormac
Garryinch Bog
Portarlington
Kildare
County Kildare
Monasterevin
Kilcullen
Ballymore Eustace
Mountmellick
N81
E-20
M9
Portlaoise
Stradbally
N77
Athy
N78
Keadeen Hill
Baltinglass
Castledermot
Abbeyleix

0 6.5 13 km

Geashill
Edenderry
Newbridg
Kildare

Map Legend

Project Site

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

N

SITE LOCATION - NOT TO SCALE

Drawing Title

Site Location

Project Title

Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
220825	2-1	1:250,000
Drawn By	Checked By	Date
JG	KB	18/09/2026

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

2.2 Characteristics of the Proposed Project

This section of the AASR and NIS describes the Proposed Project and all of its component parts. The Proposed Project will have an estimated installed capacity of 322 MW and therefore the planning application meets the threshold for wind energy set out in the Seventh Schedule of the Planning Act on foot of a notice issued by ACP on 12th of October 2026 and is therefore being submitted directly to ACP as a Strategic Infrastructure Development (SID) in accordance with Section 37E of the Planning and Development Act 2000, as amended.

This AASR and NIS accompanies the planning application and assesses the proposed renewable energy development.

The development description for the current planning application as it appears in the public notices is as follows:

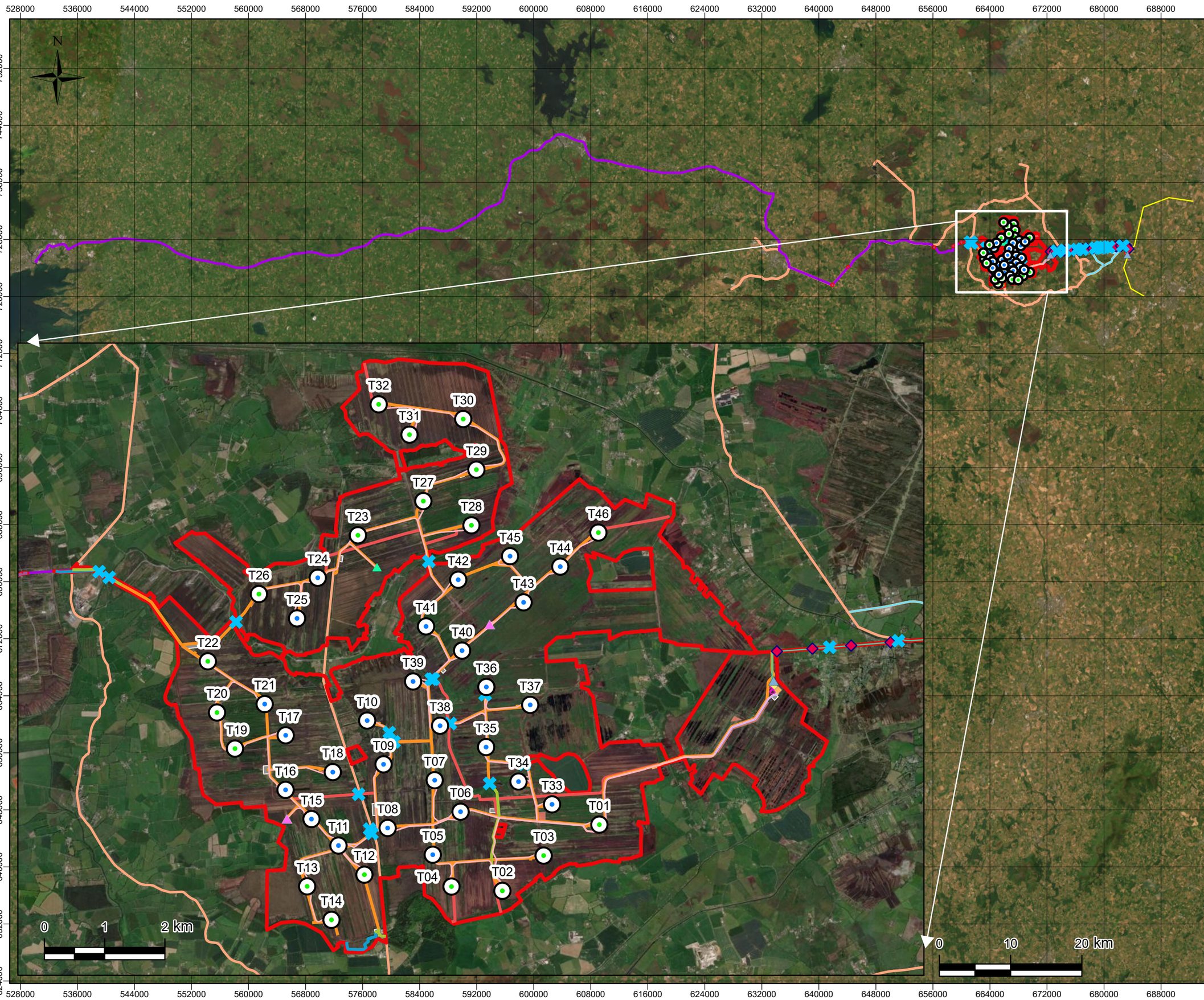
i. 46 no. wind turbines and 2 no. meteorological masts with a height of 40m, and subsequent decommissioning of the wind turbines and meteorological masts, following a thirty five-year operational life from the date of full commissioning of the wind turbines. The 46 no. wind turbines (18 no. located in Co. Offaly, 28 no. located in Co. Kildare) comprise:
    a. 19 no. wind turbines with turbine tip height of 200m, hub height of 115m, and blade rotor diameter of 170m; and
    b. 27 no. wind turbines with turbine tip height of 220m, hub height of 135m, and blade rotor diameter of 170m.
ii. Turbine and meteorological mast foundations, hard-standing and assembly areas;
iii. Underground electrical and communications cabling connecting the proposed turbines and meteorological mast to the proposed 220kV onsite electrical substation;
iv. An onsite electrical substation compound (c. 25,615m^2) in the townland of Lullymore East, Co. Kildare, consisting of 1 no. 220kV Gas-Insulated Substation (GIS) building (75m x 22m, with a height of 24m), 1 no. 110kV GIS building (51m x 15.88m, with a height of 16.5m), 1 no. Independent Power Producer (IPP) control building (44.4m x 12.8m, with a height of 7.1m), all associated electrical and communications plant and equipment, access roads, security fencing and gates, lightning masts, signage, landscaping, drainage infrastructure and all other ancillary works;
v. An offsite electrical substation compound (c. 9,307m^2) in the townland of Killybegs, Co. Kildare consisting of 1 no. 220kV GIS building (75m x 22m, with a height of 24m), 2 no. new gantry structures and ancillary apparatus, access roads, security fencing and gates, lightning masts, signage, landscaping, drainage infrastructure and all other ancillary works;
vi. All works associated with the connection of the wind farm to the national electricity grid, including underground electrical (220kV) grid connection cabling, c. 18 no. joint bays, communication chambers and earth sheath links extending for c. 13.1 km primarily located in the public road corridor connecting the proposed onsite substation to the proposed offsite substation, and all associated site development and reinstatement works;
vii. A 220kV loop-in grid connection at the offsite substation consisting of c. 120m of new overhead line (OHL) and the decommissioning / removal of 65m of existing OHL, 2 no. new steel masts, temporary tower build areas and crane pads, and associated hard-standing areas to facilitate the connection into the existing 220kV Maynooth–Dunstown 220kV OHL in the townland of Killybegs, Co. Kildare;
viii. 2 no. telecommunications towers with a height of 36m and 1 no. relay telecommunication mast with a height of 60m and associated foundation and hard-standing areas;
ix. The upgrade of c.2.8km of existing internal site roads/tracks and the provision of c.60 km of new internal site access roads, passing bays, layby areas and set down areas;

x. The provision of c.14.4km of new tracks and c. 844m of boardwalk for the purposes of amenity, seating areas, and amenity signage;
xi. Upgrade to 4 no. existing site entrances (1 no. site entrance on R401 regional road, 1 no. site entrance on L3001 local road, 2 no. site entrances on R414 regional road)
xii. 8 no. new site entrances (3 no. site entrances on L3001 local road, 3 no. site entrances on L1001 local road, 1 no. site entrance on R414 regional road, 1 no. site entrance on L6002 local road);
xiii. Widening and upgrade of wind farm access roads within the existing Cloncreen Wind Farm to facilitate the delivery of turbine components and other abnormal loads;
xiv. Temporary works between the R420 regional road to R402 regional road at Ballina Co. Offaly and along the R402 at Ballingar, Co. Offaly to facilitate the delivery of turbine components and other abnormal loads;
xv. 10 no. temporary construction compounds with temporary offices, containers and staff facilities;
xvi. 4 no. permanent amenity car parks comprising 132 no. spaces for private vehicles, 12 no. spaces for accessible parking, parking for buses and bicycle rack facilities;
xvii. 10 no. temporary Security Cabins;
xviii. Watercourse crossings;
xix. Peat and Spoil Areas;
xx. Site Drainage;
xxi. Tree felling and vegetation removal;
xxii. Biodiversity mitigation and enhancement measures;
xxiii. Operational stage site signage; and
xxiv. All ancillary apparatus and site development works above and below ground, including hard and soft landscaping and drainage infrastructure.

This application seeks a 10-year planning permission and 35-year operational life from the date of commissioning of the wind energy development.

The Proposed Project layout is illustrated on Figure 2-2, with the Proposed Construction Haul Routes and Proposed Turbine Delivery Route shown separately in Figure 2-7 and Figure 2-8 below, respectively. A full description of the Proposed Project is included in Chapter 4 Description of the Proposed Project of the Environmental Impact Assessment report (EIAR) submitted as part of the planning application.

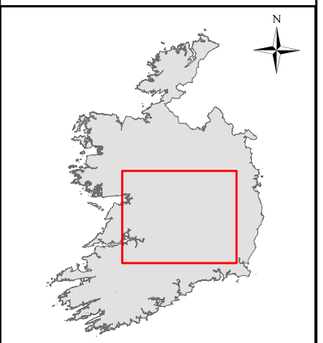
All elements of the Proposed Project have been assessed as part of this AASR and NIS.



Map Legend

- Project Site
- Turbine Layout
  - 220
  - 200
- Proposed Relay Mast
- Proposed Met Mast
- Proposed Telecommunications Tower
- Joint Bays
- Watercourse crossing
- Existing OHL
- Internal 33kV Cable Trench
- Proposed Internal 33kV Cabling
- Proposed OHL
- Proposed Grid Connection Underground 220KV electrical cabling
- Diversion Routs
- Proposed Construction Haul Routes
- Proposed Turbine Delivery Route
- New Road
- Upgrades to Existing Roads
- TDR Accommodation
- Proposed Amenity Links Centreline
- Proposed Pedestrian Amenity Boardwalk
- Turbine Hardstands
- Temporary Construction Compounds
- Proposed Peat and Spoil Areas
- Proposed Security Hut
- Proposed Car parking
- Proposed Set Down Area
- Proposed Onsite 110kV GIS Substation
- Proposed Onsite 220kV GIS Substation
- Proposed Offsite Substation Tower Build Area
- Proposed Offsite Substation Crane Pad
- Proposed Offsite 220kV GIS Substation

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



SITE LOCATION - NOT TO SCALE

Drawing Title

Proposed Project Layout

Project Title

Ballydermot Wind Farm

Project No.	Drawing No.	Scale
250708	2-2	1:490,000
Drawn By	Checked By	Date
OM	KB	22/10/2026

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

2.3 Proposed Project Components

The layout of the Proposed Project has been designed to minimise the potential environmental effects, while at the same time maximising the energy yield from the wind resource passing over the Project Site. Constraint studies have been carried out to ensure that turbines and all ancillary infrastructure are located in the most appropriate areas of the Project Site. Similarly, a route selection constraints study was undertaken to ensure that the most appropriate locations and route for the Proposed Grid Connection was selected.

2.3.1 Proposed Wind Farm

2.3.1.1 Wind Turbine Components

2.3.1.1.1 *Turbine Locations*

The Proposed Turbine layout has been optimised using wind farm design software (a combination of WAsP [wind resource assessment software]) and WindPro [Computational Fluid Dynamics and WindFarmer]) to maximise the energy yield from the Project Site, while maintaining sufficient distances between the Proposed Turbines to ensure turbulence and wake effects do not compromise turbine performance and to maintain the minimum setbacks from neighbouring properties as set out in the '*Wind Energy Development Guidelines for Planning Authorities'* (DoEHLG, 2006; hereafter referred to as the 'WEDG 2006') and the Draft Wind Energy Development Guidelines (December 2019) (hereafter referred to as the 'Draft WEDG 2019'). The Irish Transverse Mercator (ITM) Grid Reference coordinates of the Proposed Turbine locations are listed in Table 2-1 below.

There are 19 no. Proposed Turbines with a tip height of 200m and 27 no. Proposed Turbines with a tip height of 220m. Table 2-1 identifies the tip height for each Proposed Turbine. The turbines are shown on Figure 2-2, with the 19 no. Proposed Turbines with a tip height of 200m delineated by a green point and 27 no. Proposed Turbines with a tip height of 220m delineated by a blue point.

The final Top of Foundation Level of the turbine foundations will be determined by the actual ground conditions at each Proposed Turbine location and may differ slightly from those levels listed in Table 2-1.

Table 2-1 Proposed Wind Turbine Locations and Elevations

Turbine	ITM X	ITM Y	Turbine Tip Height	Top of Foundation Levels (mOD)
1	669577	723417	200	73.2
2	667966	722318	200	75.0
3	668652	722904	200	74.7
4	667122	722389	200	74.4
5	666811	722918	220	69.1
6	667272	723632	220	70.4
7	666843	724155	220	68.3
8	666062	723362	220	68.7
9	665993	724419	220	70.1
10	665722	725145	220	69.6
11	665245	723070	220	68.7
12	665675	722587	200	71.0
13	664725	722393	200	69.6
14	665129	721837	200	68.2

Turbine	ITM X	ITM Y	Turbine Tip Height	Top of Foundation Levels (mOD)
15	664797	723510	220	70.1
16	664366	723995	220	70.1
17	664368	724900	220	68.7
18	665151	724290	220	70.2
19	663527	724680	200	75.4
20	663228	725279	200	70.5
21	664020	725419	220	69.7
22	663076	726129	200	69.5
23	665568	728222	200	68.6
24	664901	727516	220	72.2
25	664557	726842	220	70.3
26	663924	727245	200	71.8
27	666654	728789	200	73.8
28	667453	728387	200	73.8
29	667535	729311	200	72.4
30	667317	730151	200	75.3
31	666424	729892	200	74.2
32	665913	730395	200	74.1
33	668791	723754	220	73.1
34	668234	724133	220	72.5
35	667696	724705	220	71.7
36	667700	725703	220	72.1
37	668428	725406	220	71.9
38	666932	725059	220	69.0
39	666484	725794	220	69.3
40	667297	726306	220	71.9
41	666699	726708	220	71.4
42	667233	727483	220	71.8
43	668319	727108	220	74.9
44	668927	727701	220	75.1
45	668094	727874	220	74.6
46	669561	728266	200	75.4

2.3.1.1.2 Site Investigation

As part of the design process for the Proposed Project, intrusive site investigations (SI) were undertaken within the Project Site and within the vicinity of the same, to detail and clarify the nature and extent of subsoils and bedrock as a means of characterising the Project Site. The site investigative works provided information relevant to the design and siting of turbines and associated infrastructure.

There were 5 no. rounds of intrusive SI carried out on the Project Site, as follows:

- The first round of SI consisting of 9 no. trial pits, was undertaken on the 25th of May 2021 by Fehily Timoney & Company Ltd. (FTC) with FTC further providing a supervisory role alongside Tobar Archaeological Services Ltd. (Tobar).

- The second round of SI, consisting of 53 no. trial pits and 1 no. rotary core borehole, commenced on the 8th of November 2021 and was completed on 7th of December 2021. Works were carried out by IDL under the supervision of FTC and Tobar.
- The third round of SI, consisting of 2 no. rotary-core boreholes, commenced on 21st of June 2022 and was completed on 23rd of June 2022. Works were carried out by IDL under the supervision of FTC.
- The fourth round of SI, consisting of 6 no. rotary-core boreholes, was completed by IDL over the time period 9th of September 2022 to 16th of September 2022 under the supervision FTC.
- The fifth and final round of SI was carried out between 30th November 2022 and 1st December 2022 and comprised 3 no. rotary-core boreholes. Works were carried out by IDL under the supervision of FTC. Please see Section 1.9.2 of Chapter 1 Introduction for detailed biographies of all involved persons in the SI.

The combined geological and hydrological dataset collected from the intrusive SI and from ground-truthing site walkovers completed by FTC, Tobar, Hydro-Environmental Services (HES) and MKO have been used in the preparation of Chapter 4: Description of the Proposed Project, as well as Chapter 8 Land Soils and Geology, Chapter 9 Water, and Chapter 14 Cultural Heritage.

The objectives of the intrusive SI included mapping the subsoil lithology for all Proposed Turbines and other key locations (i.e., internal access roads) and assessing the underlying bedrock. This data was used to inform the final layout of the Project Site. Please refer to Section 3.2.5.3.2 of Chapter 3 Site Selection and Reasonable Alternatives for further information on the evolution of the Proposed Project design.

In summary, a total of 62 no. trial pits and 12 no. rotary core boreholes, supervised by FTC, Tobar, and/or MKO were carried out at all Proposed Turbine locations and at other key locations (i.e., internal access roads, Proposed Onsite Substation, met mast locations) to investigate the underlying mineral soil lithology and subsoil/bedrock interface.

The complete geotechnical ground investigation campaign was carried out in accordance with IS EN 1997-2 and BS5930:2015+A1:2020 Code of Practice for Ground Investigations with precedence given to IS EN 1997-2 where applicable.

2.3.1.1.3 *Turbine Type*

Wind turbines use the energy from the wind to generate electricity. A wind turbine, as shown in Plate 2-1 below, consists of four main components:

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

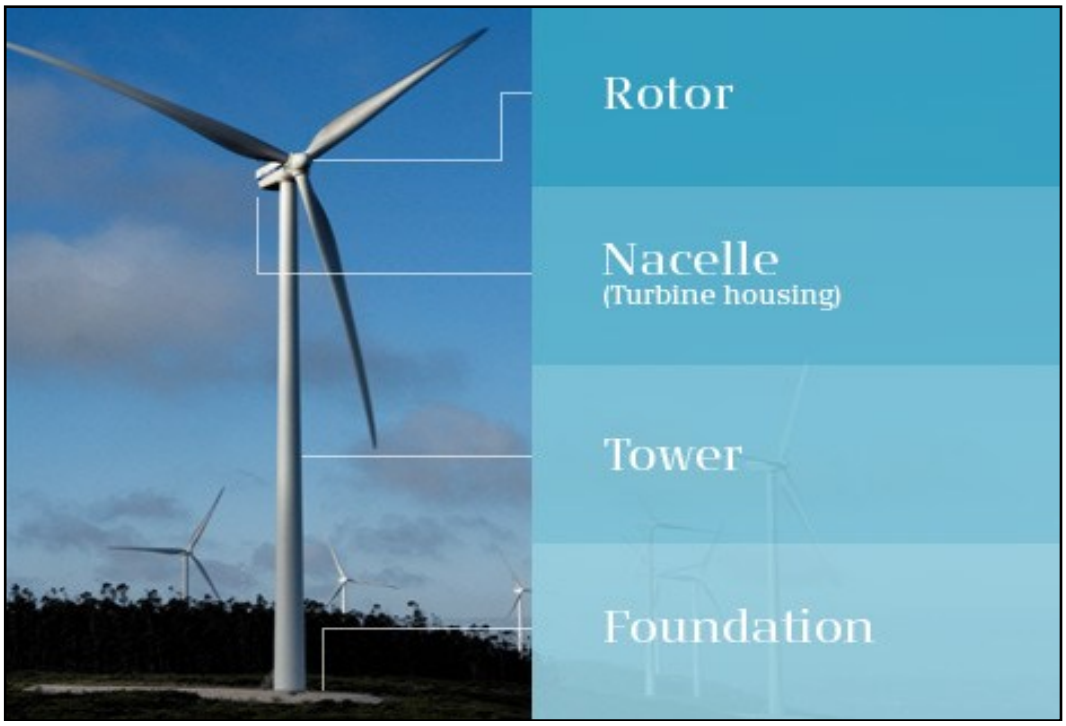


Plate 2-1 Wind Turbine Components

There will be 19 no. Proposed Turbines with the following dimensions:

- Turbine Tip Height – 200 metres
- Hub Height – 115 metres
- Blade Rotor Diameter – 170 metres

There will be 27 no. Proposed Turbines with the following dimensions:

- Turbine Tip Height – 220 metres
- Hub Height – 135 metres
- Blade Rotor Diameter – 170 metres

Details on each of the Proposed Turbines, their associated location and tip height are provided in Table 2-1 above. The 19 no. Proposed Turbines with a tip height of 200m are located on the outskirts of the Proposed Wind Farm, with the 27 no. Proposed Turbines with a tip height of 220m located centrally within the Proposed Wind Farm.

Modern wind turbines from turbine manufacturers have evolved to share a common appearance and other design characteristics, with minor cosmetic differences differentiating one from another. The wind turbines that will be installed on the Proposed Wind Farm will be conventional three-blade turbines, with all rotors rotating in the same direction.

The Proposed Turbines will be multi-ply coated to protect against corrosion. It is proposed that the turbines would be of a white, off-white or light grey colour to blend into the sky background. This minimises visual impact as recommended by the following guidelines on wind energy development:

- Wind Farm Development – Guidelines for Planning Authorities, (DoEHLG, 2006) (WEDG 2006)
- Draft Revised Wind Energy Development Guidelines (DoEHLG, 2019)
- The Influence of Colour on the Aesthetics of Wind Turbine Generators (ETSU, 1999)

For the purposes of this AASR and NIS, the above turbine dimensions have been selected and considered in the relevant sections of the AASR and NIS. Turbine design parameters have a bearing on the assessment of shadow flicker, noise, visual impact, traffic and transport and ecology (specifically birds), as addressed in this AASR and NIS.

The assessment of the development footprint of the Project Site, within this AASR and NIS, is based on the maximum potential footprint for all the infrastructural elements; for clarity, there are no unconfirmed details associated with this planning application relating to turbine dimensions. This precautionary approach is taken as the assessment of the maximum Proposed Project infrastructure footprint will, in the absence of mitigation measures, give rise to the greatest potential for significant effects. Any reduction in the final development footprint would, by definition, reduce the magnitude of the assessed effects.

2.3.1.1.4 Turbine Tower

The turbine tower will have a conical steel tube with triple paint finish. Modern tower design also provides for the use of concrete sections. Towers generally comprise a steel load distribution flange or plate at the base of the tower which is assembled on top of the concrete foundations using locally supplied concrete. The tower is delivered to the Project Site in three to six sections. The first tower section is bolted to the anchor cage, which is cast into the concrete foundation. The base of the tower will be approximately 4.8 m in diameter, tapering to approximately 4 m where it is attached to the nacelle. The tower is accessed by a galvanised steel hatch door, which will be kept locked during the operational phase except during maintenance.

2.3.1.1.5 Turbine Blade

Turbine blades are airfoil-shaped blades that harness wind energy and drive the rotor of a wind turbine. The airfoil-shaped-design (which provides lift in a fixed wing aircraft) is used to allow the blades to exert lift perpendicular to wind direction. The difference in air pressure across the two sides of the blade creates both lift and drag. The force of the lift is stronger than the drag and this causes the rotor to spin. The blades of modern turbines are generally made of fibreglass or carbon fibre reinforced polyester and are aerodynamically shaped to improve efficiency and lower noise production. The Proposed Wind Farm has been designed to accommodate turbines with a blade length of 85 m.

2.3.1.1.6 Turbine Foundations

Turbine foundations are constructed by excavating peat and spoil to suitable sub-formation level. Imported structural fill and blinding is placed and compacted to formation level. A reinforced concrete base is cast in-situ. The turbine foundation transmits any load on the wind turbine into the ground.

Each wind turbine will require either piled foundation or a gravity foundation of reinforced concrete bearing onto rock or other competent substrata with a central upstand to support the tower. The size of the foundation will be designed by the appointed Civil Designer and dictated by the turbine manufacturer, with the final turbine selection being the subject of a competitive tender process. Adopting a precautionary approach, however, a circular in plan foundation area large enough to accommodate modern turbine models has been assessed in this AASR and NIS. Piled and gravity foundation bases are generally ca. 30 m in diameter with the detailed foundation design being dictated by the local ground conditions. The vertical extent of the turbine foundation will be ca. 4 m. These turbine foundation parameters have been used as the purposes of this assessment.

The top of the base is referred to as ‘Top of Foundation Level’, please see Table 2-1 above for further detail on the Top of Foundation Level for the Proposed Turbines. Where ground conditions are unfavourable to excavate and replace, piles will be installed to a suitable bearing strata. After the piles are installed a working platform of leanmix concrete is established at the base or formation level of the foundation which is determined by its vertical extent. After the formation level has been established, the “anchor cage” (which anchors the first section of the turbine tower to the foundation) is levelled and

reinforcing steel is then built up around and through the anchor cage. The outside of the foundation is shuttered using either permanent lightweight formwork using corrugated sheeting or temporary demountable formwork to allow the pouring of concrete and is backfilled accordingly with appropriate granular fill to the finished surface level (Plate 2-2).



Plate 2-2 Turbine 'Anchor Cage' and finished turbine base

2.3.1.1.7 Hard Standing Areas and Assembly Areas

Hard standing areas consisting of levelled and compacted hardcore are required around each turbine base to facilitate access, turbine assembly and turbine erection. The hard-standing areas are used to accommodate cranes used in the assembly and erection of the turbine. The hardstands also allow for the offloading and storage of turbine components, and provide a safe, level working area around each turbine position. The hard-standing areas are extended to cover the turbine foundations once the turbine foundation is in place. All crane hardstand areas will be designed taking account of the loadings provided by the turbine manufacturer and will consist of a compacted stone structure. The crane hardstands will be constructed in a similar manner to the excavated site roads detailed in Section 2.3.1.2 below and will measure 51m by 108m, with ancillary crane pads measuring 15m by 13.1m, boom support pads of 7m by 7m and blade storage areas of 2m and 6m by 21m.

The precise size, arrangement and positioning of hard standing areas are informed by the turbine manufacturers. The extent of the required areas at each turbine location may be optimised on-site depending on topography, the position of the Project Site access roads, the Proposed Turbine position and the turbine supplier's exact requirements.

The proposed hard standing areas for each individual turbine are shown as part of the detailed layout drawings included in Appendix 6 and using the precautionary principle, represent the maximum sizes required. This AASR and NIS utilises this maximum size when assessing potential effects.

The assembly areas will be located on the hard-standing area. These assembly areas are required for offloading turbine blades, tower sections and hub from trucks until such time as they are ready to be lifted into position by cranes and to assist the main crane during turbine assembly. The extent of the area required for the assembly areas is shown in the detailed drawing in Appendix 6.

2.3.1.1.8 Power Output

Modern wind turbine generators have a typical generating capacity in the 6 to 7.2 megawatt (MW) range, with the generating capacity continuing to evolve upwards as technology improvements are achieved by turbine manufacturers. Turbines of the exact same make, model and dimensions can have different power outputs depending on the capacity of the electrical generator installed in the turbine nacelle. The exact power rating of the installed turbine will be designed to match the wind regime on the Project Site and will be determined by the selected manufacturer.

The MW output of the Proposed Project is considered to be a consequence of turbine design and not a physical attribute on which it is possible to measure or assess the impact of. For the purposes of this AASR and NIS, a rated output of 7MW has been chosen to calculate the power output of the proposed

46-turbine renewable energy development, which would result in an estimated installed capacity of 322 MW.

Assuming an installed capacity of 322 MW, the Proposed Project therefore has the potential to produce up to 823,650 MWh respectively 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 29.2%[11] is applied here.

C = Rated output of the wind farm: 322 MW

The 823,650MWh of electricity produced by the Proposed Project would be sufficient to supply approximately 257,390 Irish households with electricity per year, based on the average Irish household using 3.2 MWh of electricity[12] (this latest figure is available from the Central Statistics Office Metered Electricity Consumption 2025/2024).

The 2022 Census of Ireland Summary Results recorded a total of 28,923 occupied households in Co. Offaly and 82,793 occupied households in Co. Kildare[13]. Per annum, based on a capacity factor of 29.2%, the Proposed Project would therefore produce sufficient electricity for the equivalent of over 100% of all households in Co. Offaly and 100% of all houses in Co. Kildare.

2.3.1.2 Site Roads

To provide internal access within the Proposed Wind Farm and to connect the Proposed Turbines and associated infrastructure, existing roads and tracks will need to be upgraded, and new access roads will need to be constructed. The Proposed Project will have approximately 62.8 kilometres (km) of internal access roads.

The Proposed Wind Farm makes use of the existing access track network insofar as possible. It is proposed to upgrade approximately 2.8km of existing site road, and to construct approximately 60km of new internal access road for the Proposed Project.

The road construction preliminary design has taken into account the following key factors as stated in the Peat and Spoil Management Plan (full detail in Appendix 4-3 of the EIAR):

1. *Buildability considerations*
2. *Maximising use of existing infrastructure*
3. *Minimising excavation arisings*
4. *Peat Stability*
5. *Serviceability requirements for construction wind turbine delivery and maintenance vehicles*
6. *Requirement to minimise disruption to peat hydrology*

Whilst the above key factors are used to determine the road design at this stage, actual construction technique employed for a particular length of road will be determined on the prevailing ground

[11] *SEAI (2025) Energy In Ireland 2025 (https://www.seai.ie/sites/default/files/publications/Energy-in-Ireland-2025.pdf)*
[12] *Central Statistics Office (2026) Metered Electricity Consumption 2025/2024 https://www.cso.ie/en/releasesandpublications/ep/p-mec/meteredelectricityconsumption2025/*
[13] *Central Statistics Office (2022) https://data.cso.ie/table/F2005B*

conditions encountered along that length of road. It is proposed to construct 42 no. passing bays along the proposed road network. The proposed new internal roads will be approximately 6m in width.

The road construction techniques to be considered are as follows:

- Construction of New Floating Roads over peat;
- Construction of New Excavated Roads through peat, and;
- Upgrades to Existing Track – Floated Road.

The construction techniques proposed to be used for roads across the Project Site are shown in the Peat and Spoil Management Plan (Appendix 4-3 of the EIAR).

2.3.1.3 Site Underground 33kV Electrical and Communications Cabling

Each turbine will be connected to the Proposed Onsite Substation via underground 33kV (kilovolt) electricity cabling. Fibre-optic cables will also connect each Proposed Turbine, the proposed meteorological masts (met masts) (Section 2.3.1.4 below), and the proposed relay mast (Section 2.3.1.10 below) to the Proposed Onsite Substation. The electricity and fibre-optic cabling connecting to the Proposed Onsite Substation will be run in cable ducts adjacent to the proposed internal roads and buried directly alongside the internal roads at depths of approximately 1m below ground level to the top of the duct. After the ducts are laid the excavated material will be reinstated over the ducts. The cables will follow the access roads to each Proposed Turbine location and are illustrated on the site layout drawings included as Appendix 6; the exact number and configuration of cable may vary within the cabling trench. The exact configuration and exact location of the underground cabling will be set by the requirements of the electrical designers at detailed design stage.

Backfill material will be compacted in layers with engineer-approved specified material, which may be imported onto the Project Site should sufficient volumes of suitable material not be encountered during the construction phase of the Proposed Project.

2.3.1.4 Meteorological Masts

There are 2 no. permanent met masts proposed as part of the Proposed Project. The met masts will be equipped with wind monitoring equipment at various heights. The met masts will be located within the Proposed Wind Farm ITM X 664363, Y723502 (Met Mast 1) and at ITM X667735, Y726740 (Met Mast 2), as shown on the site layout in Figure 2-2 and will be a slender structure of 40 metres in height. Each mast will be a free-standing structure and will be constructed with a reinforced concrete gravity foundation measuring 10m by 10m, designed to cater for the mast loadings. A hard-standing area measuring 40m by 20m to accommodate the installation crane will be constructed adjacent to an existing internal road.

2.3.1.5 Temporary Construction Compounds

There are 10 no. temporary construction compounds proposed as part of the Proposed Project, of which 9 no. will be located within the Proposed Wind Farm and 1 no. within the Proposed Offsite Substation, listed in Table 2-2 below. The temporary construction compounds are strategically situated to facilitate works during the construction phase of the Proposed Project. The varying sizes of the temporary construction compounds are identified below in Table 2-2 and will be used over various durations during the Proposed Project construction phase. The locations of the proposed 10 no. temporary construction compounds are shown on the Proposed Project layout drawing in Figure 2-2 above.

Table 2-2 Proposed Temporary Construction Compounds

Compound No.	Location	Scale	Total Area
1	Codd 1 Bog (northwest), Co. Offaly	70m x 182.9m	12,803m^2
2	Ballydermot North Bog (south), Co. Offaly	100m x 134.9m	13,365m^2
3	Ballydermot South Bog (southeast), Co. Kildare	68.5m x 56.9m x 41.2m x 60.4m	3,000m^2
4	Blackriver Bog (west), Co. Kildare	60m x 200m	12,000m^2
5	Barnaran Bog (west), Co. Kildare	118m x 64.9m	7,670m^2
6	Glashabaun South Bog (southwest), Co. Offaly	65m x 70m	4,550m^2
7	Glashabaun North Bog (west), Co. Offaly	60m x 100m	6,000m^2
8	Glashabaun North Bog (northeast), Co. Offaly	65.6m x 23.9m	792m^2
9	Lodge Bog (substation), Co. Kildare	76.8m x 84.3m	6,468m^2
10	Killybegs, Co. Kildare	124.3m x 55m	6,765m^2

The proposed 10 no. temporary construction compounds will consist of bunded refuelling and containment area for the storage of lubricants, oils, and site generators, etc., temporary site offices, staff facilities, and car-parking areas for staff and visitors. Turbine components will be brought directly to the Proposed Turbine locations following their delivery to the Project Site.

Temporary toilets, located within staff portacabins, will be used during the construction phase. Wastewater from staff toilets will be directed to a sealed storage tank, with all wastewaters tankered off site by an appropriately permitted waste collector to wastewater treatment plants.

The 10 no. temporary construction compounds will be removed following construction and reinstated..

2.3.1.6 Temporary Security Cabins and Proposed Gates

During the construction phase, 10 no. temporary security cabins will be installed within the Project Site for the duration of the construction phase. The security cabins will be located close to the proposed construction site entrances and at crossing points on local roads from one bog to another.

The security cabins will be prefabricated structures of varying dimensions. The security cabins will serve as the check in and check out point for staff and visitors during the construction phase. At the end of the construction phase, the temporary security cabins will be removed from the Project Site, however the concrete foundation of these cabins will be left in situ as this is the most environmentally prudent option. These concrete foundations will be reinstated.

During the construction phase, each temporary security cabin will have gates installed which will be manned by security stationed within each temporary security compound. Upon completion of construction and commissioning, a permanent gate will be installed at all operational phase entrances. Each gate will be fitted with a locking mechanism and will be used in the operational phase for amenity, maintenance and monitoring activities.

2.3.1.7 Peat and Spoil Management Plan

2.3.1.7.1 *Quantities*

The approximate quantity of peat and non-peat material (spoil) requiring management on the Project Site has been calculated and is presented in Table 2-3 below. These quantities were calculated as part of the Peat and Spoil Management Plan in Appendix 4-3 of the EIAR.

Table 2-3 Approximate Peat and Spoil Volumes Requiring Management

Proposed Project	Peat Volume (m^3)	Spoil Volume (m^3)
46 no. Turbines and Hardstands	636,200	112,200
Access Roads (inc. turning heads and passing bays)	25,300	-
2 no. Meteorological Masts and 1 no. Relay Masts	1,900	600
10 no. Temporary Construction Compounds/ 10 no. Security Huts	-	-
Proposed Onsite Substation (and associated infrastructure)	67,900	12,000
Proposed Offsite Substation (and associated infrastructure)	1,500	13,300
Total	**732,800m^3**	**138,100m^3**
Total Peat and Spoil to be managed (m^3)		**859,700m^3**

Note, a factor of 20% (bulking factor of 15% and contingency factor of 5%) has been applied to the excavated peat and spoil volumes above to allow for expected increase in volume upon excavation and to allow for a variation in ground conditions across the Project Site.

2.3.1.7.2 *Peat and Spoil Areas*

It is proposed to manage any excess overburden generated through construction activities within the Project Site, in peat and spoil areas, around hardstandings, along access roads as shown in Figure 2-2. A detailed breakdown of the capacity of the Project Site to store peat and spoil is shown in Table 2-4 below and is further detailed in the Peat and Spoil Management Plan (Appendix 4-3 of the EIAR).

Table 2-4 Project Site storage capacity

Location	Peat and Spoil Volume (m^3)	Comment
Peat placement adjacent to hardstand areas	864,000	Up to 1.5m in height and up to 50m wide corridor around all Proposed Turbine hardstands on the Proposed Wind Farm site. See drawings P2319-0600-0017 to 0020 for locations and extents.
Peat placement alongside designated access roads	135,500	Up to 1.5m in height and 20m wide corridor on both sides of proposed infrastructure elements onsite. See drawing P2319-0600-0024 for locations and extents.
Landscaping [1]	47,000	It is estimated that approximately 1,000m^3 of peat will be required for landscaping purposes at each of the 46 no. Proposed Turbine locations.

Location	Peat and Spoil Volume (m^3)	Comment
Total Volume	1,046,500m^3	

As identified in Table 2-4, the total volume of peat requiring management on site is estimated at 1,046,500m^3. Peat and spoil material will be excavated and deposited in the peat and spoil areas, with a total capacity volume of 864,000m^3. Peat and spoil material will also be placed within the dedicated peat and spoil areas, sidecast around hardstanding's and along access roads with gentle gradients. As such, there is enough capacity within the Project Site for the total volumes of peat and spoil requiring management for the Proposed Project as detailed in Table 2-4 above.

2.3.1.7.3 *Stone Requirements*

The volumes of stone required for the construction of the Proposed Project, outlined in Table 4-5 below, have been estimated based on the Proposed Project footprint, the anticipated excavation levels to suitable formation or suitable subgrade, and the proposed final levels for the infrastructure components. Construction grade granular fill and higher-quality, final surfacing fill will both be required for the construction of the Proposed Project:

Table 2-5 outlines the volumes of stone required for the construction of the Proposed Project.

Table 2-5 Granular Fill Volumes Required

Proposed Project	Stone Fill Required (m^3)
46 no. Turbines and Hardstands	637,200
Access Roads (including cabling)	454,000
Proposed Onsite Substation	163,900
Proposed Offsite Substation	55,250
2 no. Meteorological Masts and 1 no. Relay Masts	2,000
10 no. Temporary Construction Compounds/ 10 no. Security Huts	49,900
Car Parks	5,000
Totals (m^3) (including 10% contingency factor)	1,367,250m^3

A contingency factor of 10% has been applied and is included in the crushed stone requirements volumes above to allow for a variation in ground conditions across the Project Site.

It is anticipated that engineering fill and high quality, surfacing granular fill and sand will be sourced from local, authorised quarries. For the purposes of assessment within this AASR and NIS, 9 no. existing, authorised quarries, located within 20km of the Project Site have been selected. These are outlined in further detail in Section 2.3.3.2.1 below. The proposed routes for heavy goods vehicles (HGVs) from each of the above identified quarries are detailed in Section 2.3.3.2 below, and in Section 15.1 of Chapter 15 Material Assets of the EIAR which accompanies this planning application.

It is also envisaged that general construction traffic (including materials and staff) will travel to the Project Site via the public road network to the relevant site entrance.

2.3.1.8 Clear-Felled Forestry and Vegetation Removal with Associated Replanting

2.3.1.8.1 *Clear-Felled Forestry*

Clear-felled tree felling will be required within and around the Proposed Project footprint to allow for the construction of the turbine bases, access roads, underground cabling, and other ancillary infrastructure and Proposed Enhancement Areas.

A total of 60.3ha of forestry (comprising Conifer plantation (WD4; Fossitt, 2000) will be permanently clear-felled within and around the Proposed Wind Farm site.

The felling activities required as part of the Proposed Project will be the subject of a Limited Felling Licence (LFL) application to the Forest Service in accordance with the Forestry Act 2014 and the Forestry Regulations 2017 (SI 191/2017) and as per the Forest Service's policy on granting felling licenses for wind farm developments. The Forest Service policy requires that planning permission for the Proposed Project is available prior to determination of the associated felling licence application. Where replacement afforestation is required by the Forest Service as part of the felling licence process, the replacement afforestation lands will also be subject to the applicable statutory forestry consent process.

The Forestry Service's Felling and Reforestation Policy provides for circumstances in which permanent forest removal may be permitted without a requirement for alternative afforestation, including where deforestation is justified by overriding environmental considerations and conversion to open habitat is necessary to benefit the habitat or species concerned. In the case of the Proposed Project, 60.7ha of permanent forestry removal will be felled to accommodate the ornithological offsetting and biodiversity enhancement (i.e., the Proposed Enhancement Areas). The applicability of this provision to the Proposed Project will ultimately be a matter for determination by the Forestry Service through the relevant felling licence process. Accordingly, this AASR and NIS does not assume that an exemption will apply and, on a precautionary basis, assesses the position on the basis that replacement afforestation is required.

Replacement Afforestation

In line with the Forest Service's published policy on felling for wind farm developments, areas cleared of forestry for access roads, and any other wind farm-related uses will have to be replaced by replanting at an alternative site or sites.

The estimated 60.7ha that will be permanently clear-felled for the footprint of the Proposed Project will be replanted. Replanting is a requirement of the Forestry Act and is primarily a matter for the statutory licensing processes that are under the control of the Forest Service.

The replacement of the 60.7ha hectares of forestry can occur anywhere in the State subject to licence. The replacement of forestry, felled as part of the Proposed Project, may occur on any lands, within the state, benefitting from Forest Service Technical Approval[14] for afforestation, should the Proposed Project receive planning permission. Under the Forestry Regulations 2017, all applications for licences for afforestation require the prior written approval (technical approval) of the Minister for Agriculture, Food and the Marine. Before the Minister can grant approval, he/she must first determine if the project is likely to have significant effects on the environment (for EIA purposes) and assess if the development, individually or in combination with other plans or projects will have an adverse effect on the integrity of any European Sites, in light of their Conservation Objectives (for Appropriate Assessment purposes).

[14] *All proposed forestry developments where the area involved is greater than 0.1 hectare must receive the prior written approval of the Forest Service. The application for approval is known as Pre-Planting Approval – Form 1.*

The specific lands on which any such replacement afforestation would occur have not been identified at this stage. On a precautionary basis, the Applicant commits that, where replacement afforestation is required, the replacement afforestation lands will be located at least 10km from the Proposed Wind Farm and will not be located where there is a hydrological pathway through which the afforestation works could give rise to cumulative effects with the Proposed Project.

Further details in relation to clear-felled forestry replanting and cumulative assessment are included in Section 8.2.6 of this AASR and NIS.

2.3.1.8.2 *Vegetation Removal*

As part of the Proposed Project, Bog woodland (WN7) and Scrub (WS1) will be required to be removed (hereafter referred to as vegetation removal) within and around the footprint of the Proposed Wind Farm and Proposed Onsite Substation and other ancillary infrastructure and Proposed Enhancement Areas.

The estimated 176ha of vegetation (bog woodland and scrub) to be removed within and around the Proposed Project, along with existing treeline boundaries is not subject to a Felling Licence from the Forestry Service and will be replanted within the Proposed Wind Farm site as part of the Proposed Enhancement Areas.

2.3.1.9 Amenity Tracks and Carparks

The Proposed Project includes 55.2 km of amenity track. This includes:

- 13.4km of a new dedicated internal amenity access track
- 40km of proposed internal site access road
- 8.5km equestrian loop for equestrian users only – this loop will overlap with proposed internal site access road (40km) for approximately 7.5km
- 0.844km (844m) of amenity board walk

These amenity tracks will provide amenity access opportunities, facilitate a variety of walking loops, enhance connectivity with local roads and existing off-site amenities, and provide local access to the Proposed Wind Farm. The amenity track proposed will enable the Proposed Wind Farm to provide connectivity to the surrounding settlements and sites / areas of interest. These include the towns / villages of Edenderry, Allenwood, Lullymore, Rathangan and Clonbullogue.

Approximately 55.2km of amenity access track in total (inclusive of dedicated amenity track, internal access track, equestrian amenity track, and boardwalk), for walking, cycling and equestrian use is proposed within the Proposed Wind Farm.

The 13.4km of new dedicated internal amenity access track and 1km of dedicated equestrian amenity track will have a gravel/crushed stone finish surface and will be approximately 3m in width and will be constructed using a similar methodology to the proposed new excavated roads. The 0.844km of amenity boardwalk will be supported on timber piles and be approximately 3m in width.

In addition to the new dedicated internal amenity access tracks, 4 no. new permanent amenity car parks will be provided. The proposed car parks will be accessible via the site access junctions which are detailed in Table 2-6 below).

Table 2-6 Amenity Car Parks

Amenity Car Park	Location	Relevant Site Entrance	Configuration
Amenity Car Park 1	East of the L1001 within the Glashabaun North Bog	Site Entrance 4G	› 15 no. spaces for private vehicles ○ 3 no. spaces for accessible parking › 1 no. parking spaces for buses.
Amenity Car Park 2	Barnaran Bog off the R414	Site Entrance 5I	› 44 no. spaces for private vehicles ○ 3 no. spaces for accessible parking, › 1 no parking spaces for buses
Amenity Car Park 3	Ballydermot works to the southeast of the Ballydermot South Bog	Site Entrance 2B	› 58 no. spaces for private vehicles ○ 3 no. spaces for accessible parking › 1 no parking spaces for buses
Amenity Car Park 4	Barnaran Bog off the R414	Site Entrance 5I	› 15 no. spaces for private vehicles & horse boxes ○ 3 no. spaces for accessible parking, › 1 no parking spaces for buses

Each car park will also provide bicycle rack facilities for those who want to cycle to the area and then utilise the amenity track for walking.

2.3.1.10 Relay Mast

Chapter 15 of the accompanying EIAR provides a detailed impact assessment on traffic and transport, telecommunications, and other material assets. Section 15.2 in Chapter 15 Material Assets details the proposed telecommunication impacts associated with the Project Site. During detailed telecommunication scoping in July 2020 and March 2025, it was identified that there are 3 no. Virgin Media links traversing the Project Site, which would interact with the Proposed Turbine locations. A relay mast is proposed to mitigate for the impacts caused by the Proposed Turbines on Virgin Media radio links. The relay mast will be 60m in height and will have appropriately 2 no. antennae located on the relay mast. The proposed relay mast will relay 3 no. impacted Virgin Media links (detailed below) from Dunmurry Hill onwards to each of the B-End sites (customer sites). The radio links from Dunmurry Hill to the following B-End sites would be impacted by the Proposed Turbines:

- VM_L2
- VM_L5
- VM_L6

The path profiles and link budgets completed for each radio link indicates that a relay mast at the proposed location will be used to mitigate any impacts to the Virgin Media links.

2.3.1.11 Proposed Watercourse Crossings

Within the Proposed Wind Farm, there are a total of 15 no. watercourse crossing locations over natural watercourses (rivers and streams).

There are 5 no. new crossing points and 10 no. crossing points which will be upgraded as part of the Proposed Wind Farm. Of the 10 no. crossing points for upgrade, 5 no. will be upgraded with clear span bridges and 5 no. are culverts which will be upgraded via a box, bottomless or pipe culvert, see Section

2.3.1.11.1 below. The locations of these crossings are shown on the layout drawings included in Appendix 6 of this AASR and NIS with further detail provided in Table 2-7 below.

The clear-span watercourse crossings will be installed using the methodology outlined below. There are existing clear-span bridges present at 2 no. locations (WC-WF-04 and WC-WF-07) that will be demolished prior to the construction of the new proposed clear-span crossings.

The demolition methodology is as follows:

1. *Prior to any works commencing, Inland Fisheries Ireland (IFI) will be consulted to inform detailed design of the demolishing of the existing Clear-Span Watercourse Crossing structure.*
2. *These works will only be carried out during the period permitted by IFI for in-stream works according to the IFI (2016) guidance document "Guidelines on protection of fisheries during construction works in and adjacent to waters", i.e., July 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);*
3. *Timing of these works will be planned based on expected weather within the optimum period of July to September, ground conditions and current flow in the drainage ditch, to minimise construction period and disturbance to any potential downstream aquatic environment.*
4. *The Project Engineer will set out the works area and silt fencing will out erected at run-off areas adjacent to the works area.*
5. *The works area will be fenced off with post and rope to demarcate the works area. Prior to any works taking place, the area will be CAT scanned to identify any potential unknown underground services.*
6. *Oil booms will be established both upstream and downstream of the works and spill kits, inclusive of oil-only absorbent booms, will be required on both banks of the stream*
7. *The centre line of the new clear span crossing will be set out by the engineer on both upstream and downstream sides*
8. *The topography and ground conditions will be reviewed at the location. Safe access will be provided for all operatives. This may involve the creation of ramps, temporary walkways etc.*
9. *Pumping equipment will be set up at the upstream end of the works area. The hose will have a suction head fitted which will reduce the possibility of any aquatic species that may be present being sucked into the pump. Additionally, the hose will be positioned to one side of the channel and surrounded by clean stone offering further protection. The delivery hose shall be laid out across the road, which shall discharge, re-entering the watercourse downstream of the works area on the opposite side of the road.*
10. *The delivery line may need to be undergrounded across the access track to allow site traffic to access the works area.*
11. *A dam will be constructed at the upstream end by an excavator placing impermeable 1m^3 sandbags within the drainage channel. These can be supplemented with smaller sandbags to plug any gaps.*
12. *Water will be allowed to partially self-empty from the isolated section. If the drainage channel is deemed to be fisheries sensitive, a smaller dam will then be placed at the downstream end before the section completely empties out and further consultation with IFI in relation to electrofishing and determining the presence of fish will be carried out. Once the presence of fish has been ruled out, the section can be fully dewatered. A pump may be used to aid this if necessary.*
13. *Water will be over pumped and discharged to an approved location downstream.*
14. *Clean stone may be used at the discharge point to protect the drainage channel against scouring. It will also act to filter silty water arising from dam installation and removal afterwards.*

15. *The existing bridge deck, beams, and abutments will be dismantled using excavators and mechanical equipment positioned away from the watercourse.*
16. *Debris netting or sheeting will be placed near the bank to prevent material entering the channel.*
17. *Material will be segregated and transported to licensed disposal or recycling facilities.*
18. *The excavated bridge and associated structure will be loaded into a dumper and transported to a suitable disposal area.*
19. *Any suitable materials from the drainage channel bed will be removed and stockpiled for reinstatement in the new bed upon completion of the construction works.*

Following removal of existing infrastructure, Proposed Wind Farm Crossing 4 and Proposed Wind Farm Crossing 7, along with the 3 no. new clear span crossings will be installed using the methodology outlined below.

The standard construction methodology for the installation of a clear-span bridge watercourse crossing is as follows:

20. *The access road on the approach either side of the watercourse will be completed to a formation level which is suitable for the passing of plant and equipment required for the installation of each watercourse crossing.*
21. *All drainage measures along the proposed road will be installed in advance of the works.*
22. *A foundation base will be excavated to rock or competent ground with a mechanical excavator with the foundation formed in-situ using a semi-dry concrete lean mix. The base will be excavated along a 1m setback from the stream bank with no instream works required.*
23. *Access to the opposite side of the watercourse for excavation and foundation installation will require the installation of a temporary pre-cast concrete or metal bridge across the watercourse to provide temporary access for the excavator. Plant and equipment will not be permitted to track across the watercourse.*
24. *Once the foundation base has been completed, the pre-cast concrete box culvert will be installed using a crane which will be set up on the bank of the watercourse and will be lifted into place from the bank with no contact with the watercourse.*
25. *Where the bottomless box culvert is installed in sections, the joints will be sealed to prevent granular material entering the watercourse,*
26. *Once the crossing is in position stone backfill will be placed and compacted against the structure up to the required level above the foundations.*
27. *Underground cabling ducting will be contained within the road make-up of the proposed crossing.*
28. *Temporary works, bunds, and containment systems will be removed once approved by the ECoW.*
29. *Post-construction inspections will be carried out to confirm no sedimentation or pollution has occurred.*
30. *A final compliance report will be prepared and submitted as required by the regulatory authorities and the new bridge structure will be inspected annually by a competent civil engineer*

A standard design drawing of a pre-cast concrete, clear-span crossing is shown in Figure 2-3.

The clear-span watercourse crossing methodologies presented will ensure that no instream works are necessary as part of their construction.

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

2.3.1.11.1 Culvert Crossings

All new proposed culverts and proposed culvert upgrades at watercourse crossings and field drain crossings required for the Proposed Wind Farm will be suitably sized for the expected peak flows in the watercourse; refer to Table 2-7 below for further detail. Some culverts may be installed to manage drainage waters from works areas of the Proposed Wind Farm, particularly where the waters must be taken from one side of an existing roadway to the other for discharge. The size of culverts will be influenced by the depth of the track or road sub-base but will have a minimum 900mm diameter. In all cases, culverts will be oversized to allow mammals to pass through the culvert.

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 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. At minimum, the base of each culvert will be buried below the invert of its given channel to ensure no barriers to migrating fish are created.

All culverts will be inspected regularly to ensure they are not blocked by debris, vegetation or any other material that may impede conveyance.

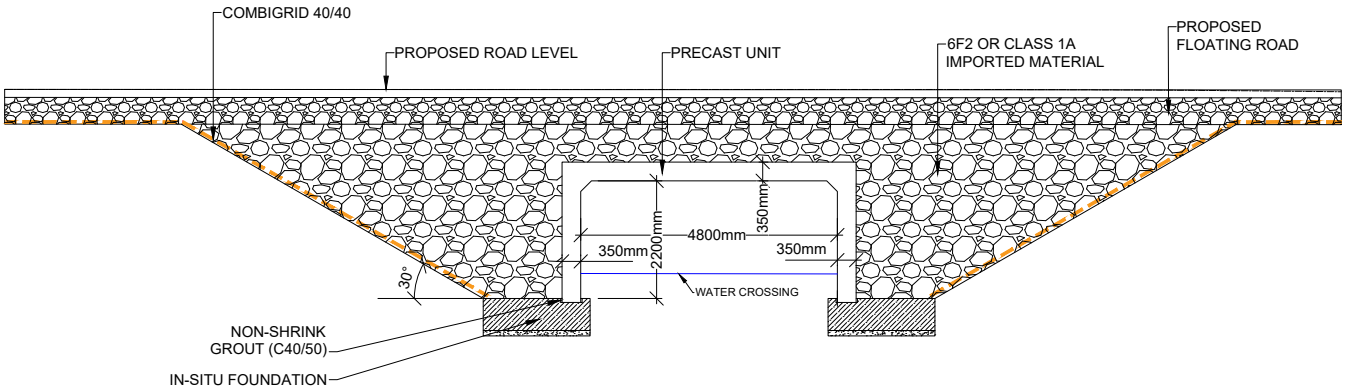
Drawings of the proposed bottomless, box and pipe culverts are presented in Figure 2-4, Figure 2-5 and Figure 2-6 below, respectively.

Table 2-7 Watercourse Crossing Types

Crossing No.	Watercourse Type	Crossing Type Description	Watercourse Crossing Type
WC-WF-01	Culvert Crossing	Existing Crossing to facilitate Site Entrance 3E located on the internal site access road between T08 and T11, consisting of a BnM piped drain, A new internal access road is to be constructed over the piped drain at this point adjacent to the L3001.The drain runs directly into the River Cushaling. The existing crossing will be removed, and new culvert will be constructed	Box culvert/ Bottomless culvert / Pipe
WC-WF-02	Culvert Crossing	New Crossing to facilitate Site Entrance 3C, a secondary entrance off the L-3001. The drain runs directly into the River Cushaling.	Box Culvert / Bottomless Culvert / Pipe.
WC –WF-03	Culvert Crossing	Existing Crossing to facilitate Site Entrance 3D – along proposed amenity track. No structural upgrade necessary to existing crossing. Floated track for amenity use only	Existing

Crossing No.	Watercourse Type	Crossing Type Description	Watercourse Crossing Type
WC -WF-04	Clear Span Bridge	Existing Crossing – The existing crossing will be demolished and replaced with a Clear span bridge to facilitate the internal site access road south west of T26 over the Figile River	Clear Span Bridge
WC -WF-05	Culvert Crossing	Existing Culvert Crossing – Facilitating Site Entrance 1A	Existing
WC -WF-06	Clear Span Bridge Crossing	Existing Clear Span Bridge Crossing – Facilitating Site Entrance 1A	Existing
WC -WF-07	Clear Span Bridge	Existing bridge to be demolished and replaced with a clear span bridge.	Clear Span Bridge
WC -WF-08	Culvert Crossing	Existing crossing to be used. Floated access track for amenity use only	Existing
WC-WF-09	New Proposed Crossing	No existing crossing, proposed new crossing	Clear Span Bridge / Bottomless Culvert
WC-WF-10	New Proposed Crossing	No existing crossing, proposed new crossing over the Figile River	Clear Span Bridge / Bottomless Culvert
WC-WF-11	New Proposed Crossing	No existing crossing, proposed new crossing over the Figile River	Clear Span Bridge / Bottomless Culvert
WC-WF-12	Existing	Existing Culvert Crossing – Upgrades to existing culvert crossing to facilitate internal site access road south of T35	Bottomless Culvert
WC-WF-13	Existing	Existing Culvert Crossing – Upgrades to existing culvert crossing to facilitate internal site access road north of T34	Bottomless Culvert
WC-WF-14	Existing	Existing Culvert Crossing – Upgrades to existing culvert crossing to facilitate internal site access road to T10	Box Culvert / Bottomless Culvert / Pipe
WC-WF-15	Culvert Crossing	New Crossing –crossing to facilitate proposed internal site access road to T10 and T09	Box Culvert / Bottomless Culvert / Pipe

As detailed in the methodology in Section 2.3.1.11 above, in-stream works will be required for the demolition of the existing clear-span bridges present at 2 no. locations (WC-WF-04 and WC-WF-07) as part of the Proposed Wind Farm. Depending on the detailed design at the construction phase, there may be additional in-stream works at 6 no. additional crossings within the Proposed Wind Farm site (WC-WF-01/02/12/13/14/15), therefore for the purposes of this AASR and NIS, on a precautionary basis it is assumed that in-stream works will occur at up to 8 no watercourse crossings associated with the Proposed Wind Farm.

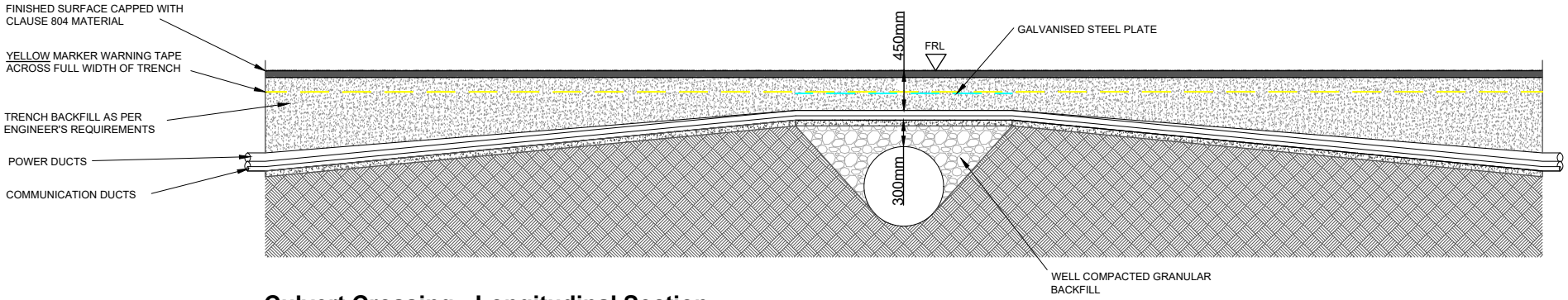


Clear Span Section

Scale 1:100

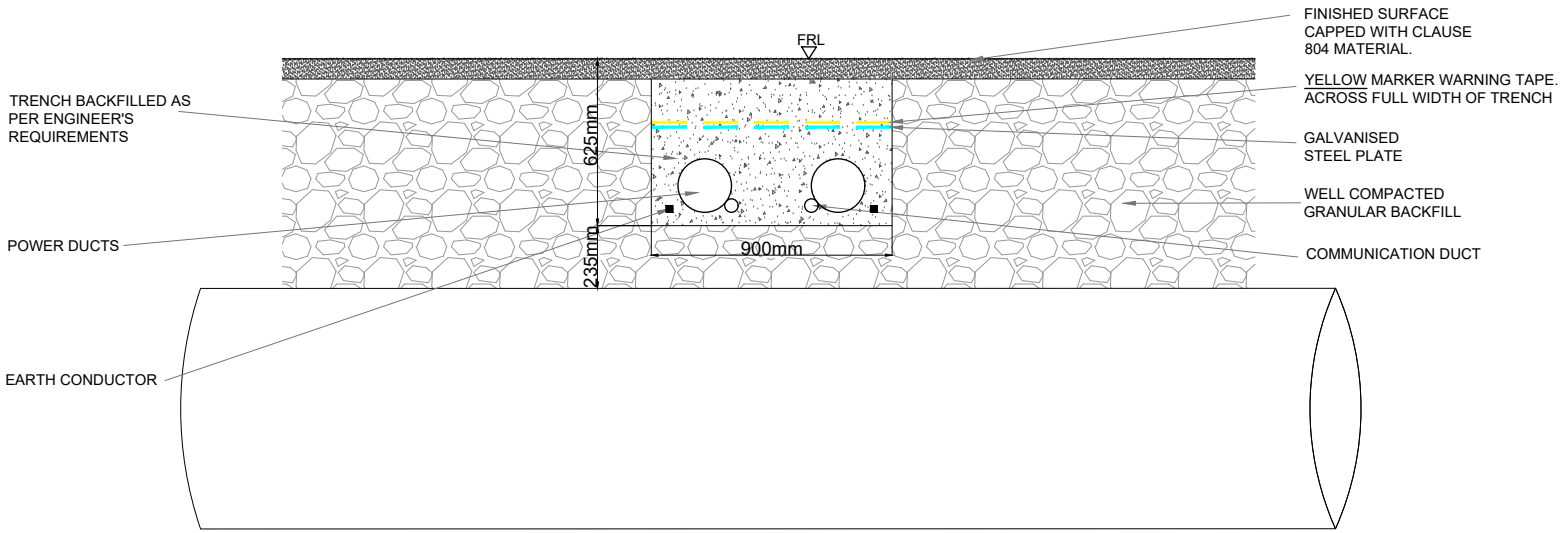
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DRAWING TITLE: **Clear Span Water Crossing Detail**			
PROJECT No.: **250708**		DRAWING No.: **Figure 2-3**	SCALE: **As Shown**
DRAWN BY: **GO**	CHECKED BY: **RD**	DATE: **23.10.2026**	REVISION.: P03

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Culvert Crossing - Longitudinal Section

SCALE 1:50

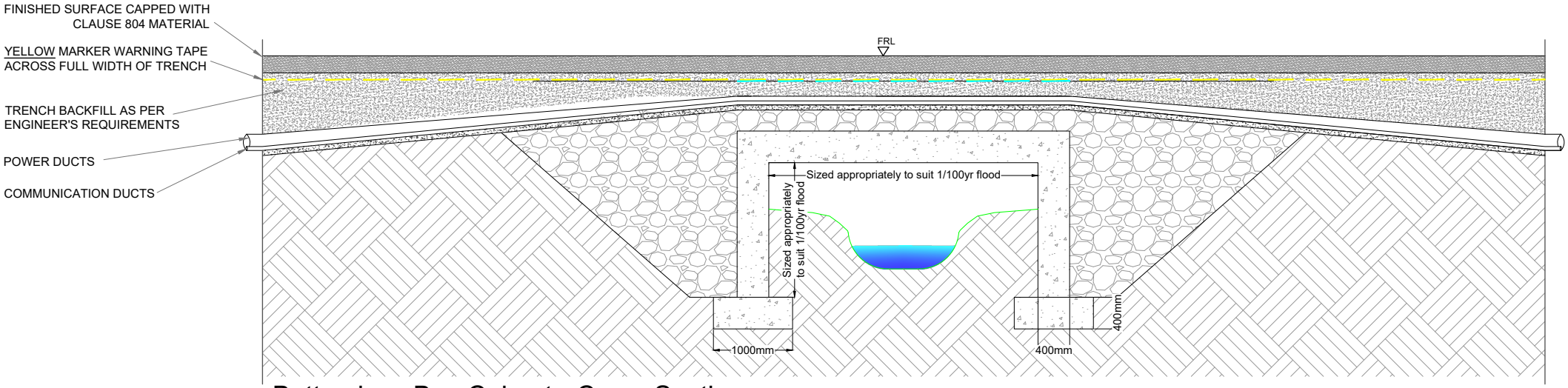


Culvert Crossing - 33kV - Cross Section

SCALE 1:20

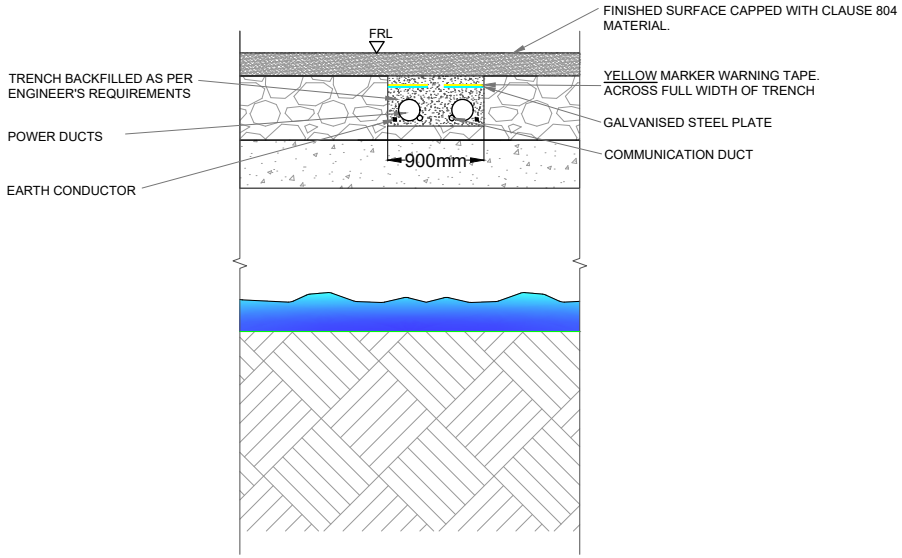
PROJECT TITLE: Ballydermot Wind Farm, Co. Offaly and Co. Kildare			
DRAWING TITLE: Culvert Crossing			
PROJECT No.: 250708		DRAWING No.: Figure 2-4	SCALE: As Shown
DRAWN BY: GO	CHECKED BY: RD	DATE: 23.10.2026	REVISION.: P03

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Bottomless Box Culvert - Cross Section

SCALE: 1:50

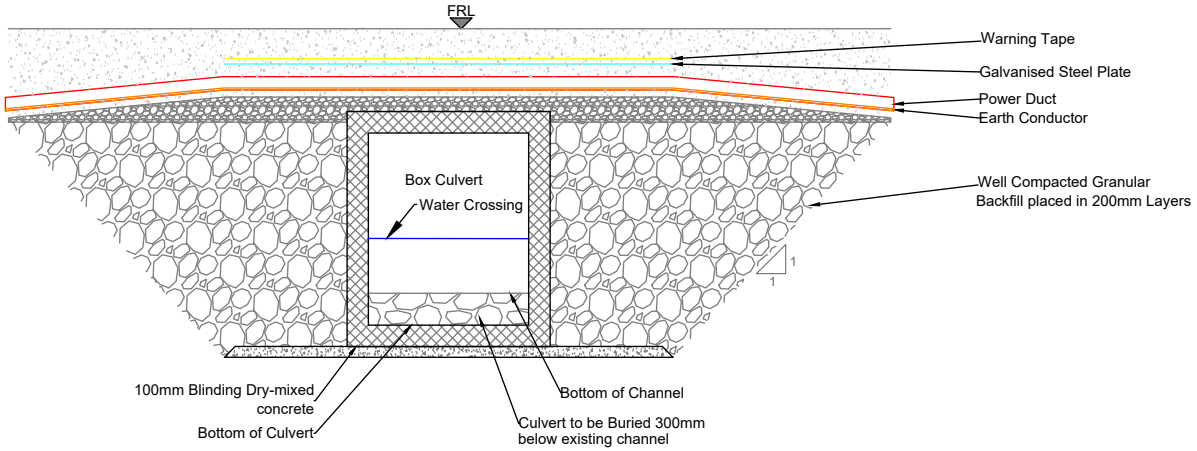


Bottomless Box Crossing - 33kV - Cross Section

SCALE: 1:50

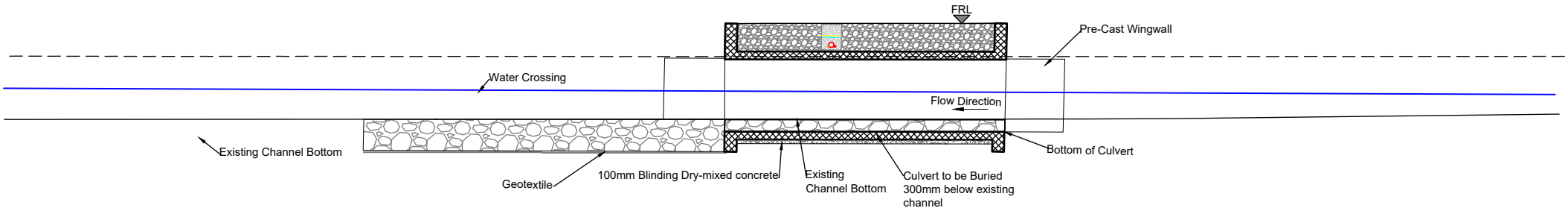
PROJECT TITLE: Ballydermot Wind Farm, Co. Offaly and Co. Kildare			
DRAWING TITLE: Bottomless Box Culvert Crossing			
PROJECT No.: 250708		DRAWING No.: Figure 2-5	SCALE: As Shown
DRAWN BY: GO	CHECKED BY: RD	DATE: 23.10.2026	REVISION.: P03

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Proposed Culvert Upgrade (PC2) - Cross Section

SCALE 1:50



Proposed Culvert Upgrade (PC2) - Longitudinal Section

SCALE 1:100

PROJECT TITLE:
Ballydermot Wind Farm, Co. Offaly and Co. Kildare

DRAWING TITLE:
Box Culvert Crossing

PROJECT No.:	DRAWING No.:	SCALE:
250708	Figure 2-6	As Shown

DRAWN BY:	CHECKED BY:	DATE:	REVISION.:
GO	RD	23.10.2026	P03

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2.3.2 Proposed Grid Connection

The Proposed Grid Connection will facilitate the connection of the Proposed Wind Farm to the national grid. The Proposed Grid Connection is comprised of the Proposed Onsite Substation, Proposed Offsite Substation, the 13.1km underground cabling connection from the Proposed Onsite Substation to the Proposed Offsite Substation, and overhead line (OHL) connecting to the existing Maynooth-Dunstown 220kV OHL, and all ancillary works and apparatus.

The Proposed Grid Connection underground 220kV electrical cabling route will exit the Proposed Onsite Substation via the proposed internal access track onto the R414, and will comprise then horizontal directional drilling (HDD) at 1 no. location, i.e., beneath the Grand Canal west of the Shee Bridge, before and continuing along the R403 through Allenwood, and turn south along the L6002 at Prosperous to connect to the Proposed Offsite Substation in the townland of Killybegs, Co. Kildare.

2.3.2.1 Electricity Substation

2.3.2.1.1 *Proposed Onsite Substation*

It is proposed to construct a 220 kV electricity substation within the Proposed Wind Farm, as shown in Figure 2-2. The Proposed Onsite Substation is located in the eastern section of the Proposed Wind Farm, in the northeast of Lodge Bog, Co. Kildare, in the townland of Lullymore East.

The Proposed Onsite Substation will be permanently connected to the Transmission System Network and will become a permanent ESB Network Asset. The construction and detailed design of electrical equipment in the Proposed Onsite Substation will be to ESB/EirGrid network specifications and will be under the operation and ownership of the Transmission System Operator (TSO) / Transmission Asset Owner (TAO) EirGrid or ESB Networks (ESBN).

Access to the Proposed Onsite Substation will be via a new entrance off the R414 regional road, Site Entrance 6L as delineated in Table 2-9 below. Access to the R414 regional road is via the R403 and R415 which run along the eastern boundary of the Project Site. Please see Section 2.3.3.1 below for detail on site entrances for the Proposed Project. This site entrance location will facilitate EirGrid/ESB access during the operational phase of the Proposed Project and beyond.

Upon decommissioning of the Proposed Wind Farm, the Proposed Grid Connection infrastructure, inclusive of the Proposed Onsite Substation, will form part of the national grid infrastructure and operate in perpetuity as part of Transmission System and ESBN assets and will remain in situ. The assets transferred to ESBN will not form part of the decommissioning works.

The footprint of the Proposed Onsite Substation compound measures approximately 25,615m^2. The Proposed Onsite Substation will include 1 no. 220kV Gas-Insulated Substation (GIS) building, 1 no. 110kV GIS building, one control building, a 36m telecom tower and the electrical components necessary to consolidate the electrical energy generated by each Proposed Turbine and export that electricity from the Proposed Wind Farm to the national grid. The building will consist of a two-storey modular building housed in the substation compound area enclosed within palisade fencing.

The Proposed Onsite Substation compound will be surrounded by an approximately 2.6m high steel palisade fence (or as otherwise required by ESB/EirGrid), and internal fences will also segregate different areas within the main substation. The construction and exact layout of electrical equipment in the onsite electricity substation will be to ESB/EirGrid networks specifications.

The Proposed Grid Connection underground electrical cabling will exit the Proposed Onsite Substation and connect into the Proposed Offsite Substation via 13.1km of underground cabling (220kV) primarily located within the public road corridor.

2.3.2.1.2 *Proposed Offsite Substation*

It is proposed to construct the Proposed Offsite Substation within the Project Site, as shown in Figure 2-2. The Proposed Offsite Substation is located within an agricultural field east of the Proposed Wind Farm, in the townland of Killybegs, Co. Kildare.

The Proposed Offsite Substation will be permanently connected to the Transmission System Network and will become a permanent ESB Network Asset. The construction and detailed design of electrical equipment in the Proposed Offsite Substation will be to ESB/EirGrid network specifications and will be under the operation and ownership of the TSO/ TAO EirGrid or ESBN. Access to the Proposed Offsite Substation will be from a new entrance off the L6002 local road (Site Entrance 7M). Access to the L6002 local road is via the R403 and R408 which run to the north of the Proposed Offsite Substation. This site entrance location will facilitate EirGrid/ESB access during the operational phase of the Proposed Project and beyond.

The footprint of the Proposed Offsite Substation compound measures approximately 9,307m^2. The Proposed Offsite Substation will include 1 no. 220kV GIS building, a 36m telecom tower, 2 no. steel masts, and 2 no. new gantry structures and all ancillary apparatus. The building will consist of a two-storey modular building housed in the substation compound area enclosed within palisade fencing.

Upon decommissioning of the Proposed Wind Farm, the Proposed Grid Connection infrastructure, inclusive of the Proposed Offsite Substation, will form part of the national grid infrastructure and operate in perpetuity as part of Transmission System and ESBN assets and will remain insitu. The assets transferred to ESBN will not form part of the decommissioning works..

The Proposed Offsite Substation compound will be surrounded by an approximately 2.6m high steel palisade fence (or as otherwise required by ESB/EirGrid), and internal fences will also segregate different areas within the main substation. The construction and exact layout of electrical equipment in the onsite electricity substation will be to ESB/EirGrid networks specifications.

As part of the works for the Proposed Offsite Substation, the existing Maynooth-Dunstown 220kV OHL will be broken between tower 46 and 47 and two loop-in towers will be built to turn the existing OHL into 2 no. new gantry structures within the footprint of the Proposed Offsite Substation. The existing Maynooth-Dunstown 220kV OHL is located approximately 0.05km southeast of the Proposed Offsite Substation at its closest point.

2.3.2.2 Wind Farm Control Buildings

The wind farm control buildings will include staff welfare facilities during the operational phase. 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 requirement for occasional toilet flushing and hand washing and therefore the water requirement of the Proposed Project is minimal and does not necessitate a potable source.

It is proposed to manage wastewater from the staff welfare facilities in the control buildings by means of a sealed storage tank, measuring 9m^2 in area, and approximately 2m in depth, with a holding capacity of 1,000 litres. All wastewater will be tankered off site by an appropriately licensed 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'* (EPA, 2009) and the EPA's 1999 manual on *'Treatment Systems for Small Communities, Business, Leisure Centres and Hotels'* does not apply.

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 ACP as an acceptable proposal.

The proposed wastewater storage tank will be fitted with an automated alarm system that will provide sufficient notice that the tank requires emptying. Full details of the proposed tank alarm system will be submitted to the Planning Authority in advance of any works commencing on site. The wastewater storage tank alarm will be part of a continuous stream of data from the wind turbines, wind measurement devices and electricity substations that will be monitored remotely 24 hours per 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 Project Site. When the final destination of the materials is known following the appointment of a permitted contractor, this information can be submitted to the Planning Authority if necessary.

2.3.2.3 Underground 220kV Electrical Cabling

It is proposed to connect the Proposed Onsite Substation to the Proposed Offsite Substation in the townland of Killybegs, Co. Kildare via 220kV underground electrical cabling. The underground electrical cabling route is approximately 13.1km in length and located primarily within the public road corridor, with two sections of the route (0.5km and 1km) located in private lands.

The underground electrical cabling route will originate at the Proposed Onsite Substation and travel approx. 0.5km north on internal site access roads to exit the Proposed Wind Farm via the R414. The underground electrical cabling route will travel east on the R414 for approximately 2km to approximately 0.2km west of the Shee Bridge. The Proposed Grid Connection underground electrical cabling route will utilise HDD to cross the Grand Canal and will not interact with the Shee Bridge. Following the HDD crossing of the Grand Canal, the route will merge onto the R403 and continue east for approx. 8.6km where the route will turn right onto the L6002 local road. The Proposed Grid Connection underground electrical cabling route will travel south on the L6002 for 0.8km before turning right into Site Entrance 7M and into private agricultural land. Approximately 1km of proposed new access road will enable the Proposed Grid Connection underground electrical cabling route to access the Proposed Offsite Substation in the townland of Killybegs, Co. Kildare.

The exact final detail and specifications of the Proposed Grid Connection underground electrical cabling route construction methodology for the Proposed Project will ultimately be decided by ESB/EirGrid.

2.3.2.4 Overhead Line 220kV Electrical Cabling Route

A 220kV connection between the Proposed Project and the national electricity grid will be necessary to export electricity from the Proposed Project. It is proposed to construct the Proposed Offsite Substation within the Project Site and to connect this to the existing Maynooth-Dunstown 220kV OHL via an OHL connection in the townland of Killybegs, Co. Kildare.

The Proposed Grid Connection will consist of approximately 0.12km of OHL (comprising 0.06km of OHL from the proposed 2 no. steel masts for the loop-in from the Proposed Offsite Substation to the existing OHL), consisting of 2 no. new steel masts, and 2 no. new gantry structures.

The proposed design for the Proposed Grid Connection will require two new mast structures which will be constructed under the existing Maynooth-Dunstown 220kV OHL. The existing transmission line will be broken between two existing towers (Tower 46 and Tower 47) into 2 no. new steel masts which will connect to the 2 no. new gantry structures located within the Proposed Offsite Substation. Please see the locations of the 2 no. new steel masts and 2 no. new gantry structures on Plate 2-3 below.

Each new steel mast will have a footprint of approximately 20m^2 and an overall height of approximately 28.5m. They will be steel masts with cross-arms which can extend over the base footprint and internal bracing. The exact final detail and specifications, height and size of the Proposed Grid

Connection will ultimately be decided by ESB or EirGrid. The indicative design of the proposed lattice masts to facilitate the Proposed Grid Connection is shown in Plate 2-4 below.

Each new gantry structure will have a footprint of approximately 20m^2 to be confirmed at detailed design stage to the acceptance of EirGrid/ESBN.



Plate 2-3 Indicative position of the masts and gantries (for visual purposed only). Source: BnM

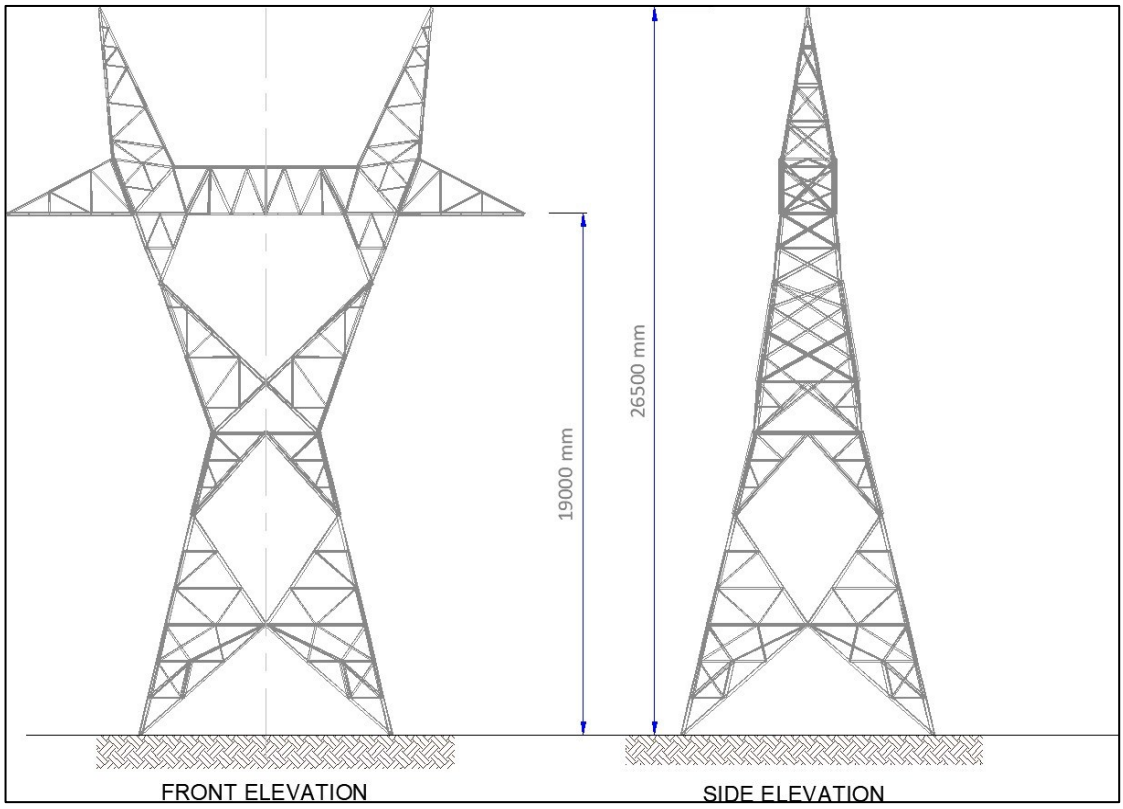


Plate 2-4 220kV Towers. Source: BnM

2.3.2.5 Joint Bays

There are approximately 18 no. joint bays proposed along the Proposed Grid Connection underground electrical cabling route, approximately 600 to 900 metres apart or as otherwise required by ESBN and electrical requirements, with the final number and type to be determined at detailed design stage.

The proposed joint bays and the associated location within the public road network are outlined below:

- 4 no. joint bays proposed within the R414 Regional Road;
- 13 no. joint bays proposed along the R403 Regional Road;
- 1 no. joint bay proposed along the L6002 Local Road.

2.3.2.6 Rural (Local) Electricity Supply

A rural/local electricity supply will be required as a back-up power supply to the proposed substations for light, heat and power purposes. The rural/local supply will be designed and constructed by ESB Networks. The exact source of supply is to be confirmed by ESB Networks; however, the supply will enter the Project Sites by either MV overhead line or MV cable. The rural/local supply will have an associated step-down transformer (i.e., MV to LV) and will enter the substation building by underground cable and terminate onto the control buildings AC distribution boards.

2.3.2.7 Telecommunications Towers

As part of the Proposed Grid Connection, there will be 1 no. telecommunication towers proposed at both the Proposed Onsite Substation and at the Proposed Offsite Substation and the telecommunications towers serve to provide as a communication link during the operational phase and to relay data between the Proposed Project and external monitoring/management stations. The towers will be free-standing structure of 36m in height and will be constructed on a hard-standing area measuring approximately 13m by 13m to accommodate the crane that will be used to erect the mast, adjacent to proposed roads.

2.3.2.8 Watercourse and Service Crossings

The Proposed Grid Connection underground cabling route includes a total of 11 no. crossings over watercourses (7 no. crossings over EPA mapped watercourses, 1 no. crossing under the Grand Canal and an additional 3 no. crossings over non-EPA mapped watercourses). These crossings are comprise predominantly of existing bridge/culvert crossings along the public road network. There is 1 no. new proposed crossing to the west of Shee Bridge under the Grand Canal.

The construction methodology for all Proposed Grid Connection underground electrical cabling route watercourse crossings has been designed to eliminate the requirement for in-stream works.

The various crossing methodologies to be employed along the Proposed Grid Connection include the following:

Type A: Crossing using standard trefoil formation

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

Type B Flatbed Formation Under

Where cable ducts are to be installed under an existing watercourse or service crossing where sufficient cover cannot be achieved by installing the ducts in a trefoil arrangement, the ducts will be laid in a much shallower trench, the depth of which will be determined by the location of the top of the obstacle or the depth of excavatable material under it. The ducts will be laid in this trench in a flatbed formation

under the existing watercourse/ service and will be encased in 6mm thick steel galvanized plate with a 35N concrete surround as per ESB Networks specification.

Type C: Flatbed Formation Over

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

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

Type D: Horizontal Directional Drilling (HDD)

The proposed HDD methodology is as follows:

1. *The drilling rig and fluid handling units located on one side of the crossing will be stored on double bunded 0.5mm PVC bunds which will contain any accidental fluid spills and storm water run-off.*
2. *Entry and exit pits (2m x 2m x 1.5m) will be excavated; the excavated material will be temporarily stored within the works area and used for reinstatement or disposed of to a licensed facility.*
3. *A 2m x 2m x 1.5m steel box will be placed in each pit. This box will capture any drilling fluid returns from the borehole.*
4. *The drill bit will be set up by a surveyor, and the driller will push the drill string into the ground and will steer the bore path under the stream-ways and the forestry.*
5. *A surveyor will monitor drilling works to ensure that the modelled stresses and collapse pressures are not exceeded.*
6. *The drilled cuttings will be flushed back by drilling fluid to the steel box in the entry pit.*
7. *Once the first pilot hole has been completed a hole-opener or back reamer will be fitted in the exit pit and will pull a drill pipe back through the bore to the entry side.*
8. *When all bore holes have been completed, a towing assembly will be set up on the drill and this will pull the ducting into the bore.*
9. *The steel boxes will be removed, and the drilling fluid disposed of to a licensed facility.*
10. *The ducts will be cleaned and proven and their installed location surveyed.*
11. *The entry and exit pits will be reinstated as per the landowners' requirements.*
12. *A typical HDD would take 3 days. This is dependent on a number of factors such as ground conditions, geology, etc. and would be taken into account during design stage by the HDD contractor.*

Table 2-8 Watercourse Crossings along the Proposed Grid Connection

Crossing No.	Watercourse Type	Crossing Type Description	Watercourse Crossing Type
WC-GC-01 (EPA Mapped WC)	Stone Arch Bridge	Existing crossing along the R414. Sufficient cover will be achieved from the top of the bridge to the R403 road at this watercourse crossing to lay the cables in a flat formation on top or below the existing crossing. This scenario ensures that the cable trench will have no impact on the watercourse	Type B or Type C
WC-GC-02 (pNHA crossing)	Canal	The Proposed Grid Connection underground electrical cabling route will travel east on the R414 for approximately 2.1km to approximately 0.2km west of the Shee Bridge. The Proposed Grid Connection underground electrical cabling route will utilise Horizonal Directional Drilling (HDD) to cross the Grand Canal and will not interact with the Shee Bridge	Type D
WC-GC-03 (EPA Mapped WC)	Clear Span Bridge	This Clear Span Bridge passes over a watercourse along the R403. Sufficient cover will be achieved from the top of the bridge to the road. There is sufficient cover at this watercourse crossing to lay the cables in a flat formation on top or below the existing crossing. This scenario ensures that the cable trench will have no impact on the watercourse	Type B or Type C
WC-GC-04 (non-EPA Mapped WC)	Stone Arch Bridge	Existing crossing along the R403. Sufficient cover will be achieved from the top of the bridge to the R403 road. There is sufficient cover at this watercourse crossing to lay the cables in a flat formation on top or below the existing crossing. This scenario ensures that the cable trench will have no impact on the watercourse	Type B or Type C
WC-GC-05 (non-EPA Mapped WC)	Stone Arch Bridge	Existing crossing along the R403 Sufficient cover will be achieved from the top of the bridge to the R403 road. There is sufficient cover at this watercourse crossing to lay the cables in a flat formation on top or below the existing crossing. This scenario ensures that the cable trench will have no impact on the watercourse	Type B or Type C
WC-GC-06 (EPA Mapped WC)	Pipe or Culvert Crossing	Existing crossing along the R403. No Visible Watercourse – Pipe or Culvert Crossing	Type B or Type C
WC-GC-07 (non-EPA Mapped WC)	Pipe or Culvert Crossing	Existing crossing along the R403. No Visible Watercourse – Pipe or Culvert Crossing	Type B or Type C
WC-GC-08 (EPA Mapped WC)	Pipe or Culvert Crossing	Existing crossing along the R403. No Visible Watercourse – Pipe or Culvert Crossing	Type B or Type C
WC-GC-09 (EPA Mapped WC)	Pipe or Culvert Crossing	Existing crossing along the R403. No Visible Watercourse – Pipe or Culvert Crossing	Type B or Type C

Crossing No.	Watercourse Type	Crossing Type Description	Watercourse Crossing Type
WC-GC-10 (non-EPA Mapped WC)	Pipe or Culvert Crossing	Existing crossing along the R403. No Visible Watercourse – Pipe or Culvert Crossing	Type B or Type C
WC-GC-11 (non-EPA Mapped WC)	Culvert Crossing	Existing crossing along the R403. Sufficient cover will be achieved from the top of the culvert to the R403. There is sufficient cover at this watercourse crossing to lay the cables in a flat formation on top or below the existing crossing. This scenario ensures that the cable trench will have no impact on the watercourse	Type B or Type C

2.3.3 Access and Transportation

2.3.3.1 Site Entrances

The Project Site is currently served by a number of existing tracks and access roads due to its previous use as a commercial bog. These site entrances will be used throughout the construction, operation, and decommissioning phases of the Proposed Project to enable delivery of materials and turbine components (construction phase), amenity access and maintenance and monitoring use (operational phase), and removal of Proposed Wind Farm infrastructure (decommissioning phase).

Due to the nature of the Proposed Project, all proposed works will be local to the Project Site and as such, the construction phase will utilise 7 no. access junctions. Of the 7 no. access junctions there are 12 no. associated site entrances proposed to be used during the construction phase. Of these site entrances, 4 no. are existing access junctions that will be upgraded, and 8 no. are proposed new site entrances. Please see Table 2-9 below for further detail.

The operational phase will utilise 10 no. site entrances to facilitate maintenance and monitoring activity and 3 no. site entrances for amenity access. Please see Table 2-9 below for further detail.

As stated above in Section 2.3.1.7.3, it is anticipated that engineering fill and high-quality surfacing granular fill and sand will be sourced from local, authorised quarries. Please see Section 2.3.3.2 below for further details on the construction haul routes of these materials and the corresponding construction phase site entrance that would be utilised by HGVs from each relevant quarry for access to the Project Site.

Please see Figure 2-7 for all Proposed Construction Haul Routes for local, authorised quarries.

Please see Table 2-9 below for details on the locations of these entrances and their proposed use.

Table 2-9 Proposed Construction and Operational Phase Site Entrances

Access Junction	Site Entrance	Description	Used for Turbine Delivery	Used during Construction Phase	Used During Operational Phase (maintenance and monitoring)	Used During Operational Phase (amenity)	Existing Entrance	New Entrance	Security Compound and Gate
1	A	Access on the east side on R401 (previously used for the existing Cushaling Wind Farm)	✓	✓	✓		✓		✓
2	B	Access junction off the west side of L3001 (at existing Ballydermot works)		✓	✓	✓	✓		✓
3	C	Access off the L3001 between T08 & T11 – North		✓	✓			✓	✓
	D	Access off the L3001 between T08 & T11 – Southwest	✓					✓	
	E	Access off the L3001 between T08 & T11 – Southeast	✓	✓	✓			✓	✓
4	F	Access off the L1001 Between T23 & T24 – West	✓	✓	✓			✓	✓
	G	Access off the L1001 Between T23 & T24 – South		✓	✓	✓		✓	✓
	H	Access off the L1001 Between T23 & T24 – East	✓					✓	
5	I	Access off the R414 - West		✓	✓	✓	✓		✓
	J	Access off the R414 – East		✓	✓		✓		✓
6	L	Access off the R414 to access the Proposed Onsite Substation		✓	✓			✓	✓
7	M	Access to the Proposed Offsite Substation - L6002 road		✓	✓			✓	✓

2.3.3.2 Proposed Haul Routes

2.3.3.2.1 *Deliveries of Stone and Ready-Mix Concrete from Quarries*

Construction materials will be delivered to the Project Site via selected Proposed Construction Haul Routes, these have been determined based on the identified proposed source of the construction material. All crushed stone, hardcore materials and ready-mix concrete that will be required during the construction phase will be sourced from local, appropriately authorised quarries. There are no borrow pits proposed as part of the Proposed Project. For the purposes of assessment within this AASR and NIS, 9 no. existing, authorised quarries, located within 20km of the Project Site have been selected and are shown in Figure 2-7.

It is envisaged that general construction traffic (including materials and staff) will travel to the Project Site via the public road network to the relevant construction site access points, detailed above. Delivery of stone and ready-mix concrete to the Project Site will utilise the local roads, regional roads, and national roads.

Site Entrance 6L and Site Entrance 7M will facilitate access to the Proposed Onsite Substation. Site Entrance 8M will facilitate access to the Proposed Offsite Substation. Please refer to Table 2-9 above for further information on site entrances. The Proposed Construction Haul Routes for HGVs from each identified quarry to the closest relevant site entrance location is provided below. Deliveries of stone and ready-mix concrete for use in construction of the Proposed Project, are discussed in further detail in Chapter 15 of the EIAR which accompanies this planning application.

Roadstone Quarry, Derrygreenagh Co. Offaly

HGVs will depart from Roadstone Quarry in the townland of Derrygreenagh, Co. Offaly and turn left onto the R400 regional road. They will travel for 6.3 km before taking the second exit at the roundabout to continue on the R400. After travelling south on the R400 for 1.6 km the HGVs will turn left on to the R401. They will continue on the R401 for 9.4 km before taking the second exit on the roundabout to continue on the R401 for 400 m. The HGVs will then turn right and travel for 900 m before turning right onto the R402. They will continue on the R402 for 600 m and then turn left onto the R401 the HGVs will continue travelling in a southerly direction for 3.7 km to Site Entrance 1A where they will turn left to enter the Proposed Wind Farm.

Kilsaran Quarry, Derryarkin/Derrycoffey Co. Offaly

HGVs will depart from Kilsaran Quarry in the townland of Derryarkin, Co. Offaly and turn right onto the R400 regional road. They will travel for 6.3 km before taking the second exit at the roundabout to continue on the R400. After travelling south on the R400 for 1.6 km the HGVs will turn left on to the R401. They will continue on the R401 for 9.4 km before taking the second exit on the roundabout to continue on the R401 for 400 m. The HGVs will then turn right and travel for 900 m before turning right onto the R402. They will continue on the R402 for 600 m and then turn left onto the R401 the HGVs will continue travelling in a southerly direction for 3.7 km to Site Entrance 1A where they will turn left to enter the Proposed Wind Farm.

Walshes Sandpit, Carbury, Co. Kildare

HGVs will depart from Walshes Sandpit in the townland of Carbury, Co. Kildare and turn left onto L1006. They will travel for 1.3 km before turning right onto the L1005. The HGVs will continue on the L1006 for 3.8 km before turning right onto the R402 for 400 m. They will then take the first exit at the roundabout to travel on the R403 for 5.9 km to Site Entrance 6L where they will turn left to enter the Proposed Wind Farm.

Hanlon Concrete, Robertstown, Co. Kildare

HGVs will depart from Hanlon Concrete in the townland of Robertstown, Co. Kildare and turn left onto Lowtown local road for 1.5 km. They will then turn right onto the R415. The HGVs will continue on the R415 for 1.8 km and then turn left onto the R403. They will travel on the R403 for 6.6 km to Site Entrance 6L where they will turn left to enter the Proposed Wind Farm.

Roadstone Quarry, Allen, Co. Kildare

HGVs will depart from Roadstone Quarry in the townland of Allen, Co. Kildare and turn right to continue for 1.2km on the L3002 before turning left onto the R415. They will continue for 2 km before turning left to stay on the R415. They will continue on the R415 for 5.4 km and then turn left onto the R403. They will travel on the R403 for 6.6 km to Site Entrance 6L where they will turn left to enter the Proposed Wind Farm.

Arkil Sand and Gravel, Rathangan, Co. Kildare

HGVs will depart from Arkil Sand and Gravel in the townland of Rathangan, Co. Kildare and turn left onto the L3002 local road. They will continue on the L3002 for 2.1 km and then continue onto the R401 for 1.7 km before bearing right over Rathangan Bridge. They will travel for 1.2 km and then take the third exit at the roundabout onto the L3001 where they will continue for 1.8 km to Site Entrance 2C and Site Entrance 3E where they will enter the Proposed Wind Farm.

Sheridans Quarry, Shean, Co. Offaly

HGVs will depart from Sheridans Quarry in the townland of Shean, Co. Offaly and turn right onto a local road for 700 m before turning left onto the R401. They will continue on the R401 for 1.1 km to Site Entrance 1A where they will turn left to enter the Proposed Wind Farm.

Kilsaran concrete, Bunaterin, Tullamore, Co. Offaly

HGVs will depart from Kilsaran batching plant in the townland of Bunaterin, Co. Offaly and turn left onto the N52 before turning right onto the R420. They will turn left onto the R402 until they turn right onto the R401 until they reach Site Entrance 1A where they will turn left to enter the Proposed Wind Farm.

Roadstone Concrete, Tullamore, Co. Offaly

HGVs will depart from Roadstones batching plant in the townland of Ballykilmurry, Co. Offaly and turn Right onto the R420 before turning left onto the R443 and then right onto the N52. They will turn left onto the R420 before turning left again onto the R402 until they turn right onto the R401 until they reach Site Entrance 1A where they will turn left to enter the Proposed Wind Farm.

630000
660000
750000
720000
N
Mullingar
Royal Canal
Glebe (Farbill By)
River Deel
Ballivor
R161
R158
N4
Lough Ennell
127 m
N52
R391
Kinnegad
Towlaght
Baconstown
M4
M6
Roadstone Quarry, Derrygreenagh
Walshes Sandpit
R446
R401
115 m
Enfield
Kilbeggan
Kilsaran Quarry
R402
R441
225 m
Sheridan's Quarry
Edenderry
Grand Canal
Dreenan
Roadstone Concrete, Tullamore
Moyliniagh
Townparks (Philipstown Lower By)
Curryhill
Tullamore
R420
Robertstown East
Ballyteige South
Hanlon Concrete
Geashill
R400
Kilsaran Concrete
N80
R419
Roadstone Quarry, Allen
Arkil Sand and Gravel
Newbridge
Clonaslee
187 m
Bracklone
R423
Kildare
Cowpasture
Nicholastown (Kilculler
0 4 8 16 24 32
Kilometers

Legend

- Project Site
- Proposed Construction Haul Routes
- Local Quarries

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Spatial Reference
Name: WGS 1984 Web Mercator Auxiliary Sphere
Datum: WGS 1984
Projection: Mercator Auxiliary Sphere

SITE LOCATION - NOT TO SCALE

Drawing Title
Location of Local Quarries and Proposed Construction Haul Routes

Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	2-7	1:282,118
Drawn By	Checked By	Date
LPM	EC	06/10/2026

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

2.3.3.2.2 Turbine Component Transport Route

There are a number of ports on the island of Ireland that have proven capability to accept and store large wind turbine components such as Cork, Shannon, Foynes, Galway and Dublin ports. Furthermore, subsequent access to the national motorway network during transportation from these ports has been demonstrated. The facilities within the ports and access to and from the ports is continually being upgraded as part of general improvements. It is on this basis that it is not foreseen that the Proposed Project will result in any material change to the port selected should it be consented and enter into the construction phase.

For the purposes of this AASR and NIS, Galway Port has been selected and assessed to facilitate turbine delivery to the Project Site. Galway Port has been selected and assessed to facilitate turbine delivery to the Project Site. Galway Port is regularly used for the delivery of wind turbine components, and the transport of abnormal loads from the port to the national motorway network is well established.

Prior to the commencement of turbine component delivery, the final port of entry will be confirmed following a detailed review of Irish ports and their capacity to facilitate the transport of the Proposed Project's turbine components via the national motorway network.

It is proposed that the large wind turbine components will be delivered to the Project Site via the M6, exiting south at Junction 5 (Tullamore/Kilbeggan) onto the N52, and travelling south towards Tullamore. Turbine delivery vehicles will continue southeast along R420 regional road before turning northeast along the R402 east of Daingean toward the entrance of the existing Cloncreen Wind Farm. Turbine delivery vehicles will progress through the existing Cloncreen Wind Farm before reaching Site Entrance 1A. Abnormal loads will utilise the internal access roads and associated site entrances in order to ensure delivery of all Proposed Turbine locations. The Proposed Turbine Delivery Route is shown on Figure 2-8. All deliveries of turbine components to the Project Site will only be by way of the Proposed Turbine Delivery Route.

The route identified for abnormal load delivery has been previously utilised for the delivery of turbine components to the now operational Cloncreen Wind Farm. Turbine delivery during the construction phase of Cloncreen Wind Farm was successful and therefore this route has been considered for the Proposed Wind Farm, subject to further assessment relevant to present conditions and the Proposed Turbines.

All other construction materials will be delivered to the Project Site via the Proposed Construction Haul Routes shown on Figure 2-7 and will access the Project Site using the appropriate site entrance based on the source of the construction material, which will be included in the Traffic Management Plan (TMP) for the Proposed Project, included as Appendix 15-2 to Chapter 15, Material Assets of the EIAR. Traffic movements generated by the Proposed Project are discussed in in Section 15.1 of Chapter 15, Material Assets of the EIAR.

2.3.3.2.3 Turbine Delivery Accommodation Works

Road and junction widening are sometimes required along the Proposed Turbine Delivery Route to accommodate the large vehicles used to transport turbine components to the Proposed Wind Farm. The Proposed Turbine Delivery Route for the Proposed Project has been the subject of a route assessment to determine if any works are required along its length (Appendix 15-3 to Chapter 15 Material Assets to the EIAR). Full details of the assessment are included as part of the traffic impact assessment set out in Section 15.1.6.2 of the EIAR and summarised below. There are sections on the route where the vertical alignment may require specialist transport vehicles. These sections will be further considered by the appointed transport company following the turbine procurement process. Accommodation works will be required at various locations on the national and regional road network between the port of arrival in Galway and the Project Site. These will be limited to temporary measures including temporary local road widening, overruns of roundabout island and temporary relocation of some signs and street furniture.

Location 1 – M6 East / N52 Roundabout and N52 / M6 West Roundabout

Dwg Nos. 414429-60A1.2 and Dwg Nos. 414429-70A1.1 as shown in Appendix 15-3 to Chapter 15 Material Assets to the EIAR

The abnormally sized loads will undertake a three point turn at the northern M6 East / N52 Roundabout. At this location the roundabout centre island and 2 splitter islands will be levelled and surfaced to provide temporary routes for the abnormally sized loads. The temporary removal of bollards, road signs, a lamp post and some trees will be required.

At the southern N52 / M6 West Roundabout the abnormally sized loads will drive through the centre island of the roundabout. At this location the route through the roundabout centre island will be levelled and surfaced to provide the temporary route for the abnormally sized loads. Resurfacing is already in place and the temporary removal of road signs will be required.

Location 2 – N52 Arden Roundabout

Dwg No. 414429-80A1.1 as shown in Appendix 15-3 to Chapter 15 Material Assets to the EIAR

At this roundabout the abnormally sized loads will drive on a temporary route proposed on the eastern side of the roundabout centre island that will connect the N52 north and N52 south arms of the roundabout. The route through the roundabout centre island will be levelled and surfaced to provide for the abnormally sized loads.

Location 3 – N52 / L2025 Cappancur Roundabout

Dwg No. 414429-90A1.2 as shown in Appendix 15-3 to Chapter 15 Material Assets to the EIAR

It is proposed that the abnormally sized loads will travel contraflow through this roundabout. It is also proposed that they will drive on a temporary route proposed on the western side of the roundabout centre island that will connect the N52 north and N52 south arms of the roundabout. The route through the roundabout centre island will be levelled and surfaced to provide for the abnormally sized loads. The temporary removal of one road signs will be required.

Location 4 – N52 / R420 Cloncollog Roundabout

Dwg No. 414429-300A1.1 as shown in

*Appendix 15-3 to Chapter 15 Material Assets to the EIAR*It is proposed that the eastern section of the centre island of this roundabout will be temporarily levelled and surfaced to provide for the abnormally sized loads travelling from the N52 north arm to the R420 southeastern arm of the roundabout. The temporary removal of road signs and a lamp post will be required.

Location 5 – R420 / R402 Junction Autotrack Assessment

Dwg No. 414429-310A1.1 as shown in Appendix 15-3 to Chapter 15 Material Assets to the EIAR

Significant temporary works have been undertaken for the delivery of turbine components at this location which have since been fenced off.

The extent of the area on the northeast corner of the junction that will be surfaced to accommodate the wheels of the abnormally sized delivery vehicles, is illustrated, as is the additional are that is required to be cleared to facilitate overhang of the blade. The temporary removal of road signs an electricity pole, trees and existing boundary will be required.

Location 6 – R402 / L2025 Junction in Ballingar Autotrack Assessment

Dwg No. 414429-320A1.3 as shown in Appendix 15-3 to Chapter 15 Material Assets to the EIAR

An area on the western side of the R402 comprising of third-party land and a public park, will be required temporarily to provide an over-run area for the delivery of the abnormally sized loads, with an additional area required to provide for oversail of the blade tip. In this area trees, 2 poles, a hedgerow, a fence, a wall and road signs will be temporarily removed. To the east of the junction with the L2025, a splitter island and associated street furniture will also be removed temporarily.

Location 7 – Left bend on R402 in Ballingar Autotrack Assessment

Dwg No. 414429-140A1.1 as shown in Appendix 15-3 to Chapter 15 Material Assets to the EIAR

At this left hand band on the R402 one electricity pole located on the north side of the road will be temporarily removed in order to facilitate blade overhang of the northern carriageway edge.

Location 8 – Right bend on R402 in Daingean Autotrack Assessment

Dwg No. 414429-150A1.1 as shown in Appendix 15-3 to Chapter 15 Material Assets to the EIAR

In order to accommodate the abnormally sized vehicles at the right hand bend on the R402 in Daingean a narrow section of temporary road widening will be implemented on the northern side of the road. The assessment also shows an area on the west side of the R402 that will be cleared temporarily of all obstructions to facilitate oversail of the blade time, and similarly an area on the south east corner of the bend that will be cleared to accommodate overhang of the blade. During the delivery period, on-street parking restrictions will be required in addition to the removal of a lamp post, an electricity pole and the pruning of some trees.

Location 9 – R402 / L1003 Junction Autotrack Assessment

Dwg No. 414429-160A1.1 as shown in Appendix 15-3 to Chapter 15 Material Assets to the EIAR

At this junction the autotrack assessment shows that the tip of the blade will oversail the northern carriageway edge of the R402 but will not extend beyond the existing boundary fence. The assessment also shows that the body of the blade will overhang the south western corner of the R402/ L1003 junction into third party lands. During the delivery period, a telegraph and 2 road signs will be removed on the southwest corner of the junction.

Location 10 – L1003 / Cloncreen Wind Farm Junction Autotrack Assessment

Dwg No. 414429-170A1.2 as shown in Appendix 15-3 to Chapter 15 Material Assets to the EIAR

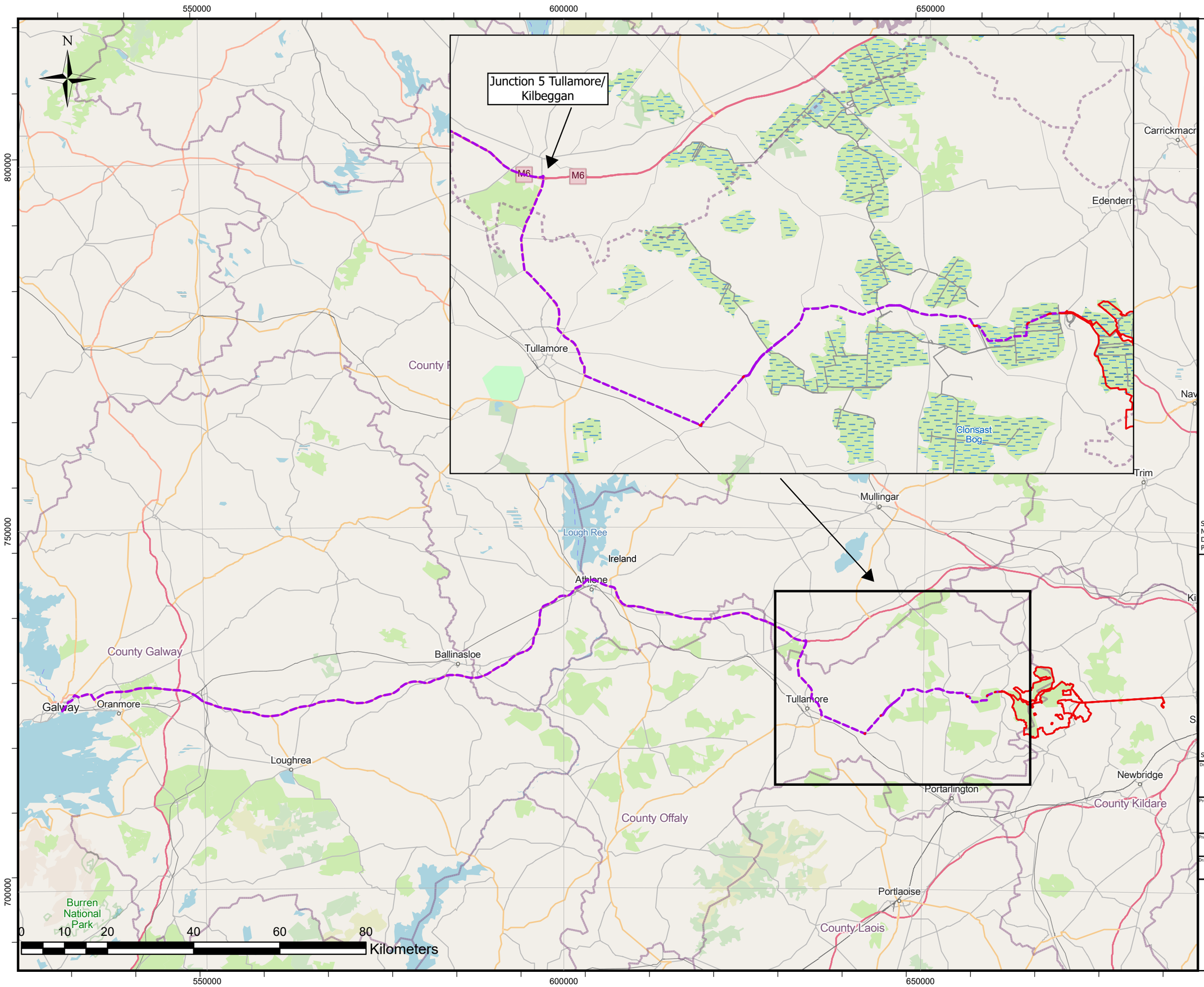
It is proposed that the abnormally sized delivery vehicles will enter the Cloncreen Wind Farm at the existing access off the eastern side of the L1003. The autotrack assessment shows that an addition to the existing access road and area on the eastern side of the L1003 and to the south of the existing access will be temporarily surfaces in order to accommodate the largest vehicles. In addition, a short strip to the north of the existing access road will be cleared of any obstruction to accommodate overhang of the blade. A narrow strip on the west side of the L1003 to the north of the access road will also be kept clear to permit minor oversail of the blade tip across the western carriageway edge. Existing boundary features at the temporary access will also be removed.

Remaining Route to Site Entrance 1A

Dwg Nos. 414429-230A1.1 and 414429-240A1.1 as shown in Appendix 15-3 to Chapter 15 Material Assets to the EIAR

The abnormally sized loads will then travel east via the internal road network of the Cloncreen Wind Farm, with minor temporary remedial works required at 2 locations to accommodate the abnormally sized loads generated by the Proposed Project.

The Proposed Turbine Delivery Route then enters the Proposed Wind Farm site by means of a crossing of the R401 (Site Entrance 1A), with the loads abnormally sized loads distributed through the Proposed Wind Farm site via crossings of the L3001 (Site Entrance 2B) and the L1001 (Site Entrance 3D and Site Entrance 3E). All 3 of these locations are straight crossing and are accommodated within the proposed junction designs.

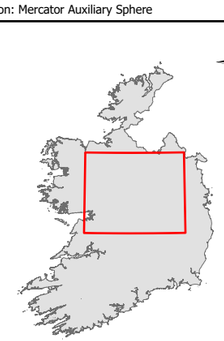


Legend

- Project Site
- Proposed Turbine Delivery Route

Spatial Reference
Name: WGS 1984 Web Mercator Auxiliary Sphere
Datum: WGS 1984
Projection: Mercator Auxiliary Sphere

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SITE LOCATION - NOT TO SCALE

Drawing Title
Proposed Turbine Delivery Route

Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	2-8	1:800,000
Drawn By	Checked By	Date
LPM	CJ	20/10/2026

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

2.3.3.2.4 *Turbine Delivery Traffic Management*

A detailed traffic management plan has been prepared as part of the traffic impact assessment set out in Chapter 15 of the EIAR. The deliveries of turbine components to the Proposed Wind Farm may be made in convoys of three to four vehicles at a time, and at night when roads are quietest. Convoys will be accompanied by escorts at the front and rear operating a "stop and go" system. The delivery escort vehicles will ensure the turbine transport is carried out in a safe and efficient manner with minimal delay or inconvenience for other road users. It is not anticipated that any section of the public road network will be closed during transport of turbines, although there will be some delays to local traffic at pinch points. During these periods it may be necessary to operate local diversions for through traffic. All deliveries comprising abnormally large loads where required will be made outside the normal peak traffic periods, usually at night, to avoid disruption to work- and school-related traffic.

Prior to the delivery of abnormal loads, the TMP will be reviewed and finalised. Prior to the TMP being finalised, a full dry run of the transport operation along the potential routes will be completed using vehicles with attachments to simulate the dimensions of the wind turbine transportation vehicles. This dry run will inform the TMP for agreement with the relevant authorities. All turbine deliveries will be provided for in a TMP which will be finalised in advance of oversized load deliveries, when the exact transport arrangements are known, delivery dates confirmed and escort proposals in place. Such a traffic management plan will be submitted to the relevant authorities for agreement in advance of any abnormal loads using the local roads, and will provide for all necessary safety measures, including a convoy and Garda escort as required, off-peak turning/reversing movements and any necessary safety controls.

2.3.4 Proposed Enhancement Areas

2.3.4.1 Biodiversity Offsetting and Enhancement [15]

A Biodiversity Management Plan (BMP) has been prepared for the Proposed Project and is included as Appendix 6-5 to Chapter 6 Biodiversity of the EIAR. This plan has been developed to offset the loss of habitats identified within the Project Site and further to enhance the biodiversity (flora and fauna, including birds) of the Project Site and its environs and to offset potentially significant effects on ornithological receptors identified within Chapter 7 Ornithology of the EIAR (see footnote 15). The measures included in the plan include removal of areas of woodland and scrub to create suitable habitat for wading birds, planting of areas of woodland and scrub at alternative locations and rewetting of areas of cutover bog. The works involved in the implementation of the biodiversity offsetting and enhancement measures are considered part of the Proposed Project and fully assessed within this AASR and NIS.

Irrespective of the consenting or construction of the Proposed Project, the measures outlined in the Draft Cutaway Bog Decommissioning and Rehabilitation Plan (Appendix 3) will be implemented by the Applicant in agreement with the EPA, per the Applicant's IPC Licence Obligations.

2.3.4.1.1 *Ornithological Mitigation and Enhancement*

Scrub Mosaic Creation Areas

A scrub mosaic habitat of approximately 242.8ha will be created within 250m of the Proposed Turbines to make the areas unsuitable for golden plover by aiming to create a mosaic habitat where no open

[15] *The biodiversity mitigation and enhancement measures relate to addressing residual impacts to biodiversity receptors outside of any European Sites. It does not relate in any way to effects on QIs or the conservation objectives of any European Sites. The mitigation and enhancement measures do not constitute "compensatory measures" in the meaning of that term in Article 6(4) of the Habitats Directive.*

areas of greater than 10ha exist. This will be achieved by planting or promoting scrub in smaller patches (1-5ha) within these larger open areas to fragment these open areas.

Management prescriptions to be implemented are summarised below:

- Where open areas are adjacent to mature scrub (i.e. in areas where a good seed bank is likely to exist within the peat already), granular agricultural lime (calcium carbonate) and slow-release fertiliser will be applied on a target basis to accelerate the germination and growth of scrub species (e.g. birch and willow spp.).
- In more open habitats (where peat production has most recently been ceased), the natural seed bank may be absent; it is therefore proposed to plant native scrub species (e.g. birch and willow spp.) on a targeted basis, at a density of one plant per square metre.
- Drain blocking may be required where dry cutover peat exists and conditions are not optimal for the germination or success of transplanting of scrub species (e.g. birch and willow spp.).
- Slow-release fertiliser will be applied to all targeted scrub areas to accelerate the establishment of the scrub.

Lodge Bog Enhancement Area

The key measure proposed at Lodge Bog is the removal of existing widespread scrub that is present throughout the bog, and the management of the area to ensure scrub does not recolonise during the lifetime of the Proposed Project. Management prescriptions to be implemented:

- All areas of scrub, trees and shrubs will be permanently removed. The timber and brash will be mulched to waste and left on-site. The area will be allowed to revert to peatland habitat, and therefore will create suitable habitat for golden plover and breeding lapwing. Felling/mulching of scrub will be undertaken before the first winter season of the construction phase of the project programme.
- Heavy machinery, e.g. specially adapted tracked excavators and mulching mowers, will be used to clear large areas of dense scrub.
- The vegetation sward will be maintained at the optimal height for waders, including golden plover and lapwing, of approximately 7-10cm. This will be achieved through summer and autumn grazing with livestock or through mechanical means using a flail or mulcher. A sward height of 7-10cm will be achieved by the end of August each year and if there is an extended growing season into September and October of any given year and the vegetation height exceeds 10cm in these months, further mechanical intervention or grazing may be required in October.
- Self-seeding conifers and scrub vegetation originating as windblown seedlings from adjacent and nearby commercial conifer plantations and nearby scrub and bog woodland, are a threat to the viability of the enhancement areas. Habitat maintenance of the area will involve the eradication of self-seeding trees and shrubs, and removal off-site. The frequency of this management intervention will be informed by monitoring, as outlined in Section 5 of the BMP, Appendix 6-5 of the EIAR.

Other measures will include the erection of a number of predator proof fence areas for the benefit of breeding waders; Large open areas of permanent deep water (depths of approximately 1.5m) will be created for the benefit of roosting whooper swan; and a reed bed will be established for the benefit of roosting hen harrier.

Killina Bog Offsetting Area

Approximately 58.0ha of forestry and woodland within Killina Bog will be felled and all timber and brash will be removed from the Proposed Wind Farm site. The area will be reprofiled and managed as an open peatland/grassland habitat for the lifetime of the Proposed Project. The vegetation will be managed through mowing or grazing as required to keep the vegetation height low during the winter periods. Wader scrapes will also be created in wetter areas to create permanent areas of shallow standing water for the benefit of breeding waders, e.g. lapwing

2.3.4.1.2 *Ecological Mitigation and Enhancement*

Marsh Fritillary Habitat Protection and Enhancement

It is proposed to enhance two areas containing fragmented areas of suitable but sub-optimal marsh fritillary within the Proposed Wind Farm site, totalling 11.4ha. These are located near a proposed internal site access road northeast of Proposed Turbine 9 and a proposed internal site access road east of Proposed Turbine 6 to improve the quality of and connectivity of the habitat for marsh fritillary. This will be achieved through targeted scrub removal and plug-planting of devil's bit scabious.

Peatland Enhancement Areas

Draft Rehabilitation Plans has already been prepared for each of the 14 no. bogs within the Allen Bog Group comprising the Proposed Wind Farm site, to satisfy Condition 10 of its EPA licence P0503-01. The aim of the Draft Rehabilitation Plans is to stabilise and rehabilitate the peatland habitats within the Proposed Wind Farm site, and it is proposed that natural revegetation will form the basis for the environmental stabilisation of these areas. The BMP includes for 231.6ha of additional peatland enhancement measures to those included within the Draft Rehabilitation Plans, including re-wetting through drain blocking, to aid in the enhancement of peatland habitat within the Proposed Wind Farm site and encourage cutover bog habitats to establish on areas of bare peat.

Prescriptive measures are unique to the existing baseline habitats and comprise three no. broad categories, 1) measures associated with deep peat cutover bog 2) those associated with wetland cutaway and 3) those associated with dry cutaway. The aim of enhancement is as much as possible to place existing peatlands on a trajectory towards a naturally functioning peatland system (Renou-Wilson, 2012).

Bare peat areas

- Targeted fertiliser applications to accelerate vegetation establishment on areas of bare peat on headlands and high fields. Areas where vegetation has established do not need fertiliser application.
- Regular drain blocking (minimum 3/100) on dry cutaway along with the blocking of outfalls and management of water levels,

Vegetated cutover bog

- Less intensive measures (targeted drain-blocking) will be used in areas where habitats have already established or where tree growth limits access.
- Berms comprising embankments of peat are proposed. These will be constructed with the aim of trapping rainwater and creating shallow pools of water.
- There are areas of deeper peat within all four peatland enhancement areas. These will be targeted for more intensive drain-blocking (max 7/100 m), with field reprofiling also where suitable. Deep peat measures will also include modifying outfalls, and management of water levels with overflow pipes and blocking of internal outfalls.

Wetland Cutaway

- Measures proposed within areas of wetland cutaway include blocking outfalls and managing water levels with overflow pipes.

Native Tree (Woodland and Scrub) Planting

It is proposed to plant 45.3ha of native trees at five different areas within the Proposed Wind Farm site. Over time this will establish into mature woodland habitat. Areas chosen for woodland planting are areas of dry cutaway and wetland cutaway.

Local variation in ground levels and hydrological conditions within the Native Tree (Woodland and Scrub) Planting Area will be taken into account during implementation. LiDAR topographic data and onsite observations will be used to inform species selection and planting layout, to ensure that planting is appropriate to local conditions. Where lower lying or wetter areas are identified, planting will be adapted accordingly, either through the use of appropriate wet woodland species or by allowing areas to remain as more open or transitional habitats. This approach will ensure that woodland enhancement is aligned with site conditions and allows for the gradual establishment of a structurally diverse woodland/wetland mosaic alongside ongoing peatland enhancement.

A management, monitoring and adaptive management framework will be set out to ensure the effective implementation and long-term success of Proposed Enhancement Areas.

3. CHARACTERISTICS OF THE RECEIVING ENVIRONMENT

3.1 Description of Habitats and Flora within the Project Site

A large portion of the Project Site is located within part of the Allen Bog Group, i.e. including for 14 no. individual bogs. These include the following: Ballydermot North, Ballydermot South, Barnaran, Blackriver, Codd 1, Codd 2, Derrybrennan, Glashabaun North, Glashabaun South, Killina, Lodge, Lullybeg, Lullymore and Ticknevin Bogs. A figure showing the relative locations of each of these bogs within the Project Site is provided in Figure 3-1 below.

As outlined in Section 1.5.5.1 above, between 2021 and 2026, MKO ecologists visited the Proposed Wind Farm site to ground-truth the results of BnM habitat surveys and mapping and to undertake detailed habitat and botanical surveys, given the time that has passed and the dynamic nature of the habitats. The habitat descriptions in this section are based on the walkover surveys and detailed vegetation surveys undertaken by MKO in 2024, 2025 and 2026. Detailed surveys were also undertaken along the Proposed Grid Connection (see Section 3.1.7 below) and at the Proposed Turbine Delivery Route accommodation areas (see Section 3.1.8 below). All habitats described below have been classified in accordance with Fossitt (2000).

The Proposed Wind Farm site comprises 14 no. large cutaway bogs classified as **Cutover Bog (PB4)** comprising part of the Allen Bog Group. Large areas of the cutover bog have been in industrial peat extraction by BnM until relatively recently (June 2020) and are characterised by bare peat. Where areas of the cutover bog have been out of commercial peat production for a significant period of time, i.e. since the early 90s, these areas have since largely revegetated, primarily by secondary *Calluna*-dominated communities, birch (*Betula* spp.) dominated scrub and bog woodland, pioneer poor fen communities characterised by common cottongrass (*Eriophorum angustifolium*) and small areas of grassland which occur mostly along the decommissioned railway lines traversing the Proposed Wind Farm site. These habitats occur in variable habitat mosaics within the Project Site. The habitats are described in greater detail in the sections below.

In addition to the habitats of the cutover bog, there are also a number of small areas of remnant uncut raised bog at various locations throughout the Proposed Wind Farm site, predominantly around the margins of the Proposed Wind Farm site.

Waterbodies within the Project Site include a network of drainage ditches, small streams/watercourses classified as lowland depositing rivers, small areas of standing open water and artificial silt ponds.

660000
665000
670000
730000
725000
N
Ticknevin
Glashabaun North
Derrybrennan
Codd 2
Glashabaun South
Killina
Codd 1
Lullybeg
Lullymore
Lodge
Ballydermot North
Blackriver
Barnaran
Ballydermot South
0
1
2 km

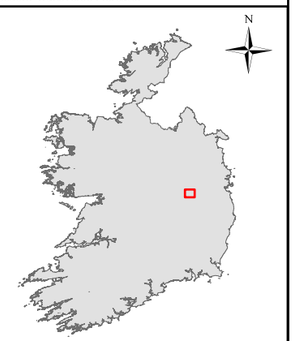
Map Legend

- Project Site

Bogs

- Ballydermot North
- Ballydermot South
- Barnaran
- Blackriver
- Codd 1
- Codd 2
- Derrybrennan
- Glashabaun North
- Glashabaun South
- Killina
- Lodge
- Lullybeg
- Lullymore
- Ticknevin

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



SITE LOCATION - NOT TO SCALE

Drawing Title
Locations of 14 no. bogs within the Project Site

Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	3-1	1:42,000
Drawn By	Checked By	Date
TS	KB	22/10/2026

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

3.1.1 Raised bog (PB1)

There are a number of areas of remnant uncut raised bog habitat within the Proposed Wind Farm site. These are classified as **Raised bog (PB1)**. Large sections of this habitat are located within Glashabaun South, Blackriver and Ballydermot South Bogs, with smaller remnant areas also present in a number of locations along the margins of the Project Site. Large areas are also present beyond the Project Site in Ticknevin Bog.

The potential for areas of remnant raised bog to conform to the Annex I habitats Active raised bog [7110] (ARB) and Degraded raised bog still capable of natural regeneration [7120] (DRB) has been considered. According to the latest Article 17 report (NPWS, 2025), *"ARB is characterised by the presence of an acrotelm, which is defined as the living, actively growing upper layer of a raised bog, the surface of which is composed mainly of living bog bosses (Sphagnum spp.)".* In addition, as outlined in Smith and Crowley (2020), previous raised bog research in Ireland indicated that ARB, at least in the midlands, generally supports cover of *Sphagnum* greater than 40% (Fernandez Valverde *et al.* 2005, 2012). The results of vegetation composition assessments (in line with Fernandez *et al.,* 2014) have been considered alongside eco-hydrological modelling in order to interpret the habitats present and their potential to conform to Annex I ARB and DRB.

Areas of raised bog within the Proposed Wind Farm site are generally bordered by tall (2-5m), vertical facebanks with man-made drains around the margins (Plate 3-1) and are degraded in nature due to the presence of drainage ditches throughout as well as ongoing turbary in several locations. These drains are generally inserted in parallel channels which result in firm, dry ground conditions in several areas, such as in Glashabaun South Bog and in the marginal areas of the majority of the remnant raised bogs throughout the Project Site. The vegetation communities in these areas are typically characterised by a high cover of ling heather (*Calluna vulgaris*) with cross-leaved heath (*Erica tetralix*), deergrass (*Trichophorum germanicum*), common cottongrass (*Eriophorum angustifolium*) and hare's-tail cottongrass (*Eriophorum vaginatum*) frequently recorded (Plate 3-2). Species occurring in smaller amounts also include round-leaved sundew (*Drosera rotundifolia*), bog asphodel (*Natrhecium ossifragum*), bog-rosemary (*Andromeda polifolia*) and white-beak sedge (*Rhynchospora alba*), particularly where ground conditions grade into wetter sections. Cover of *Sphagnum* bog mosses is generally low in these areas, comprising the species *Sphagnum capillifolium, S. rubellum, S. tenellum* and *S. papillosum* most frequently. Where ground conditions are slightly wetter, including within the man-made drains, the species *S. cuspidatum* was also recorded. Other bryophytes and lichens recorded include *Hypnum jutlandicum, Cladonia portentosa, Cladonia uncialis, Odontoschisma sphagni* and, where areas of bare eroding peat are present, *Campylopus introflexus.* These dry, degraded sections of raised bog which generally lack any pools or microtopography correlate most closely to the *Marginal* ecotope per Fernandez *et al.* (2014), grading towards *Facebank* ecotope at the very margins, where erosion channels were also occasionally present.

The area of remnant raised bog at the location of the proposed amenity boardwalk in the south of Ballydermot South Bog was characterised by firm ground conditions with no evidence of burning, erosion or bare peat, slight microtopographic hummocks of *Sphagnum capillifolium* and ling heather (*Calluna vulgaris*), and an absence of any pools. Species composition comprised dominant ling heather (*Calluna vulgaris*) approximately 25cm in height on average, with cross-leaved heath (*Erica tetralix*), white-beak sedge (*Rhynchospora alba*), common cottongrass (*Eriophorum angustifolium*), bog rosemary (*Andromeda polifolia*), round-leaved sundew (*Drosera rotundifolia*), the bryophytes *Sphagnum capillifolium, S. papillosum, S. tenellum, S. austinii, Campylopus atrovirens, Hypnum jutlandicum, Odontoschisma sphagni* and the lichens *Cladonia portentosa* and *C. uncialis.* This area most closely correlated to the *Marginal* ecotope per Fernandez *et al.* (2014), however using hydro-ecological modelling it was not found to conform to Annex I DRB. As such, in line with Article 17 Reporting (NPWS, 2025), this habitat is considered *'Supporting Raised bog habitat'.*

The wettest areas of remnant raised bog within the Project Site were located within the large area in Ballydermot South Bog (also known as Cloonroosk Bog). This habitat was found to support a greater

abundance of bog asphodel (*Narthecium ossifragum*) and white beak sedge (*Rhychospora alba*) in lawns, with a greater abundance, cover and diversity of *Sphagnum* species, including *S. subnitens, S. medium and S. pulchrum*. Assessments undertaken approximately 50m from the margins of Cloonroosk Bog found that, while in general this wetter area was softer underfoot, it was not quaking in nature and was not characterised by standing water/pools or associated with lawns of *Sphagnum*. This area was found to best align with the *Sub-marginal* ecotope per Fernandez *et al.* (2014). Using eco-hydrological modelling, Annex I DRB was identified throughout large sections of Cloonroosk Bog, located approximately 125m from the Proposed Turbine 13 hardstand and 90m from the proposed peat and spoil area associated with Proposed Turbine 13. Drainage ditches are largely present throughout Cloonroosk and have been blocked as part of restoration efforts, contributing to its higher quality status. This area likely grades towards *Sub-central* and *Central* ecotopes towards the centre of the high bog, with pockets of Annex I ARB present in the highest quality areas.

The majority of the remaining remnant raised bog areas, including those within Blackriver and Glashabaun South Bogs, are largely dry and degraded in nature throughout, with altered vegetation and *Sphagnum* compositions. Based on vegetation analysis of the marginal areas of these remnant raised bogs (i.e. the areas which are located within 150m of the Proposed Project infrastructure) best correspond to *Marginal* ecotopes, in line with Fernandez *et al.* (2014). As per Fernandez *et al.* (2014) *Marginal* ecotopes can correspond to the Annex I habitat DRB [7120]. This is supported by eco-hydrological modelling, which shows the presence of DRB within areas of raised bog in Blackriver Bog. A large area of DRB is located within the raised bog approximately 200m to the north of Proposed Turbine 10 hardstand, approximately 170m north of the proposed internal cabling route and peat and spoil area associated with Proposed Turbine 10 at its closest. DRB has also been mapped using eco-hydrological modelling within the raised bog approximately 190m northwest of Proposed Turbine 39, approximately 150m from the peat and spoil area associated with Proposed Turbine 39 at its closest. A small pocket of DRB was also identified via eco-hydrological modelling in the south of Blackriver Bog, approximately 260m west of the Proposed Turbine 5 hardstand and 210m from the proposed internal cabling route associated with Proposed Turbine 5 at its closest.

No other areas of Annex I ARB or DRB were identified within the Project Site during either vegetation composition assessments or using eco-hydrological modelling. In line with Article 17 reporting (NPWS, 2025), all other areas of remnant, uncut raised bog within the Project Site which neither conform to Annex I ARB nor DRB, are considered *'Supporting Raised bog habitat'.*



Plate 3-1 A high vertical facebank and drainage ditch at the margins of the remnant Raised bog (PB1) in the north of Blackriver Bog



Plate 3-2 The area of Raised bog (PB1) in the north of Glashabaun South Bog, which is dry and degraded in nature.

3.1.2 Cutover Bog (PB4) and Revegetating Habitats

The vast majority of the Proposed Wind Farm site, with the exception of small remnant sections of raised bog, comprises cutover raised bog or cutaway peat classified as **Cutover bog (PB4)**. Where peat cutting has ceased relatively recently on large areas of the Project Site, e.g. large parts of Ballydermot South Bog, Ticknevin Bog, Barnaran and Codd Bogs, these areas are dominated by bare peat with little growth of vegetation (Plate 3-3). Evidence of recent peat cutting was also observed in some areas (Plate 3-4).

Where peat extraction has ceased for longer periods of time, areas of the cutover bog are in various stages of revegetation with secondary cutover habitats. While ultimately this habitat is classified as **Cutover bog (PB4)** as per Fossitt (2000), the revegetating secondary habitats of the cutover bog are also described and classified below in terms of their closest corresponding Fossitt code where possible. Therefore, many of the habitats described below will be classified first and foremost as Cutover bog (PB4) with the closest corresponding Fossitt code (e.g. Poor fen and flush (PF2), Scrub (WS1), Wet grassland (GS4) also provided to capture the diversity and non-homogenous nature of the revegetating secondary habitats present.

For example, where peat extraction recently ceased in June 2020 and the cutover bog is in the early stages of recolonisation, areas consist of mosaics of bare peat and pioneer open cutaway communities, including pioneer ling heather (*Calluna vulgaris*) dominated secondary ***Calluna*-dominated vegetation** (Plate 3-5), pioneer **Poor fen (PB4/PF2)**, **Scrub (PB4/WS1)** and dry grassland habitats.

Where peat production/extraction has ceased for some time, e.g. much of Lullybeg Bog and Glashabaun South Bog, mosaics of well-established ***Calluna*-dominated vegetation**[16], **Poor fen (PB4/PF2)** type communities as well as downy birch (*Betula pubescens*) and grey willow (*Salix cinerea*) dominated **Scrub (PB4/WS1)** and dry **Bog woodland (WN7[17])** are present.

A small number of areas of cutover bog within the Proposed Wind Farm site, particularly those in low lying areas, are much wetter in nature with some standing water. These often occur in association with areas **Poor fen and flush (PB4/PF2)** and **Reed and large sedge swamp (PB4/FS1)** communities.

The potential for cutover bog habitats within the Project Site to correspond to either Annex I ARB [7110] or Annex I DRB [7120] has been considered. The NPWS Article 17 Reporting for 2019 states:

> *"In an Irish context, ARB (which is currently defined as occurring only on the high bog) encompasses active peat --forming ecotopes (central and sub--central) as defined by Kelly (1993) and Kelly & Schouten (2002), and actively peat --forming flushes."*

The 2025 Article 17 Report (NPWS, 2025) recognises the publication of the classification and appraisal system for cutover raised bog habitats (Smith and Crowley, 2020). Regarding this system it is stated,

> *"This is the first time that ARB has been recognised as occurring on cutover in the Irish context. In general, however, regenerating ombrotrophic vegetation on cutover characterised by a high Sphagnum cover (i.e. greater than 40- 50% cover), lacks the diversity of Sphagnum species, microtopographical features and good quality indicators associated with ARB. These cutover areas have the capacity to develop into embryonic ARB but longer time periods (>30 years) are likely to be required for high quality ARB to develop."*

With regard to the definition of DRB, the 2025 Article 17 Report states,

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[16] *This secondary vegetation community has no direct corresponding Fossitt habitat code as it was not found to closely to conform to either typical dry heath (HH1) or wet heath (HH3) communities as described within Fossitt (2000).*
[17] *Bog woodland is not mapped with the Fossitt classification PB4/WN7 as this habitat, by definition within Fossitt (2000), includes areas of this habitat on cutover bog. These habitats within the Proposed Wind Farm site are highly established, therefore the Cutover bog (PB4) clarification was not considered necessary.*

> *"Currently cutover areas are not considered to support DRB. However, the potential of cutovers to support peat-forming vegetation is recognised. Potential peat-forming habitat (PPFH) on cutover is defined using similar methods to that for DRB on the high bog. PPFH is not included under the definition of DRB as it is believed that these areas will require periods longer than 30 years to develop into ARB."*

The cutover bog habitats within the Project Site were not found to correspond to either ARB or DRB. The vast majority of the cutover bog was found to be dry in nature and have either no or low *Sphagnum* cover. No areas of cutover bog met the criteria to be considered ARB as per Smith and Crowley (2020).

The following sub-sections provide a description of the secondary habitats that have begun to form on the cutover bog following cessation of peat extraction/milling.



Plate 3-3 Cutover bog (PB4) dominated by bare peat at the location of Proposed Turbine 18.



Plate 3-4 Freshly cut peat bricks left out for drying in Blackriver Bog, showing ongoing local turbary activities.



Plate 3-5 Cutover bog dominated by bare peat, in the early stages of recolonisation by ling heather (Calluna vulgaris) secondary Calluna-dominated community in Ballydermot South Bog.

3.1.2.1 *Calluna*-dominated communities on Cutover bog

Secondary ***Calluna*-dominated communities** within the Proposed Wind Farm site are largely dominated by ling heather (*Calluna vulgaris*) (Plate 3-6), common cottongrass (*Eriophorum angustifolium*) and purple moor grass (*Molinia caerulea*) on dry, drained peat with little to no *Sphagnum* present. The bryophyte heath star moss (*Campylopus introflexus*) was also recorded regularly throughout the Proposed Wind Farm site within this habitat.

This habitat regularly occurs alongside and forms mosaics with other habitats including scrub, with immature self-seeded birches (*Betula* spp.) and willows (*Salix* spp.) frequently growing throughout these communities (Plate 3-7). Other encroaching species recorded include sitka spruce (*Picea sitchensis*), rowan (*Sorbus aucuparia*), Scot's pine (*Picea abies*) and European gorse (*Ulex europaeus*). This habitat also frequently grades into bare peat, with pockets of bare peat also common within the habitat blocks as *Calluna* revegetates more recently cutover areas.

Where ground conditions are wetter, species including cross-leaved heath (*Erica tetralix*), white beak sedge (*Rhynchospora alba*), bog asphodel (*Narthecium ossifragum*), tormentil (*Potentilla erecta*) and *Sphagnum* bog mosses are present in greater abundances (Plate 3-8).

Revegetating cutover bog habitats within the Proposed Wind Farm site do not conform to Annex I or non-Annex I heath habitats as defined by the Irish Wildlife Manual (Perrin *et.al.* 2014). As stated by Smith and Crowley (2020):

> *"Cutover bog habitats should only rarely be considered examples of dry siliceous heath (HH1) or wet heath (HH3). These habitats are defined by peat depths of less than 0.5 m (Fossitt, 2000), which seldom occur on cutover bog. Only where a habitat is underlain by shallow peat and good indicators of heath are present, such as Carex binervis, Galium saxatile and Juncus squarrosus, should heath habitats be considered for cutover bog."*

The heath communities which have established on the cutover bog within the Proposed Wind Farm site occur on peat with a depth of >0.5m and none of the good heath indicator species were recorded within these habitats during the field surveys undertaken. Therefore, the secondary heath type communities growing on cutover bog within the Proposed Wind Farm site do not conform to Annex I heath habitats. They are secondary, cutover raised bog habitats that are located on deep peat and level ground. They do not conform to Annex I wet heath [4010] or Annex I dry heath [4030] habitat as defined by the Irish Wildlife Manual (Perrin *et.al.* 2014). Neither do they conform to Annex I raised bog habitats or any other Annex I habitat.



Plate 3-6 Ling heather (Calluna vulgaris) dominated community adjacent to the location of the Proposed Met Mast 2 in the west of the Proposed Wind Farm site.



Plate 3-7 Secondary Calluna-dominated community with encroaching downy birch (Betula pubescens) scrub (WS1)



Plate 3-8 Secondary Calluna-dominated community with higher abundance of white-beak sedge (Rhynchospora alba) and Sphagnum bog mosses

3.1.2.2 Poor fen and flush (PB4/PF2)

Poor fen and flush (PB4/PF2) occurs within the Proposed Wind Farm site predominantly as pioneer poor fen vegetation following the cessation of peat harvesting, with established poor fen and flush where the habitats have developed over longer timeframes. The habitat was widespread but highly variable, mostly occurring as a mosaic along with bare peat and often with encroaching scrub.

The majority of poor fen within the Proposed Wind Farm site occurs as pioneer vegetation. These areas are most commonly dominated by common cottongrass (*Eriophorum angustifolium*) with other sedges and rushes including soft rush (*Juncus effusus*), sharp-flowered rush (*Juncus acutiflorus*), jointed rush (*Juncus articulatus*), toad rush (*Juncus bufonius*), common yellow sedge (*Carex viridula*) and hare's tail cottongrass (*Eriophorum vaginatum*) also frequent (Plate 3-9). Other commonly recorded species within these pioneer habitats include water mint (*Mentha aquatica*), marsh willowherb (*Epilobium palustre*), great willowherb (*Epilobium hirsutum*), bulrush (*Typha* latifolia), reed canary grass (*Phalaris arundinacea*), marsh arrowgrass (*Triglochin palustre*), with encroaching ling heather (*Calluna vulgaris*), cross-leaved heath (*Erica tetralix*) and downy birch (*Betula pubescens*).

Wetter areas of poor fen with standing water are associated with more established poor fen communities (Plate 3-10). These habitats have a greater diversity of species, particularly within the broadleaved component, and were found to include marsh pennywort (*Hydrocotyle vulgaris*), lesser spearwort (*Ranunculus flammula*), round-leaved sundew (*Drosera rotundifolia*), bog pondweed (*Potamogeton polygonifolia*), lesser bladderwort (*Utricularia minor*), meadowsweet (*Filipendula ulmaria*), common valerian (*Valeriana officinalis*), tormentil (*Potentilla erecta*), bog rosemary (*Andromeda polifolia*), water plantain (*Alisma plantago-aquatica*), gypsywort (*Lycopus europaeus*) and white beak sedge (*Rhynchospora alba*). Bryophytes identified within these areas of poor fen also include *Bryum pseudotriquetrum*, *Calliergonella cuspidata*, *Marchantia polymorpha* and *Aneura pinguis*.

Established poor fen is scattered across the Proposed Wind Farm site and is located within the Proposed Project infrastructure footprint at the location of Proposed Turbine 11 and to the east of Proposed Turbine 46. The Proposed Turbine layout is shown in Figure 2-2 above.



Plate 3-9 Area of pioneer Poor fen (PB4/PF2) dominated by common cottongrass (Eriophorum angustifolium) in Lodge Bog, in a mosaic with areas of bare peat.



Plate 3-10 Area of more developed Poor fen (PF2) with standing water at the location of the Proposed Turbine 11 hardstand.

3.1.2.3 Reed and large sedge swamps (PB4/FS1)

Where cutover bog has become waterlogged and dominated by reeds, large grasses or sedges, it is classified as **Reed and large sedge swamps (PB4/FS1)**. This habitat is sparse across the Proposed Wind Farm site, generally occurring only in small pockets. A larger area of reed swamp is located at the Proposed Turbine 23 (Plate 3-11).

This area of habitat comprises a high proportion of standing water, with vegetation dominated by common cottongrass (*Eriophorum angustifolium*), marsh arrowgrass (*Triglochin palustris*) and bulrush (*Typha latifolia*). Other species commonly recorded in reed swamps within the Project Site include soft rush (*Juncus effusus*), jointed rush (*Juncus articulatus*), water horsetail (*Equisetum fluviatile*), watercress (*Nasturtium officinale*), slender rush (*Juncus tenuis*), marsh willowherb (*Epilobium palustre*) and redshank (*Persicaria maculosa*), as well as grey willow (*Salix cinerea*) and downy birch (*Betula pubescens*) saplings.



Plate 3-11 Area of Reed and large sedge swamp (FS1) at the location of the Proposed Turbine 23.

3.1.3 Woodland, Scrub, Treeline and Hedgerows

Large areas of the Proposed Wind Farm site where peat harvesting activities have ceased for some time (i.e. prior to June 2020) have become recolonised with Scrub (PB4/WS1) and Bog woodland (WN7) habitats, particularly where ground conditions are dry. The Project Site also has small areas of linear Hedgerows (WL1) and Treelines (WL2), and sections of Conifer plantation (WD4) present particularly in the east of the Proposed Wind Farm site. Small areas of Mixed broadleaved woodland (WD1) and Oak-ash-hazel woodland (WN2) are also present within the Project Site, outside of the Proposed Project footprint. These habitats are each described in detail in the following sections. The habitat Dense bracken (PB4/HD1) is also included in this section.

3.1.3.1 Scrub (PB4/WS1)

Throughout the Proposed Wind Farm site, **Scrub (WS1)** is common where it is developing on drier areas of cutover bog.

This habitat is generally dominated by downy birch (*Betula pubescens*), silver birch (*Betula pendula*) and grey willow (*Salix cinerea*) (Plate 3-12), with smaller amounts of eared willow (*Salix aurita*) and goat willow (*Salix caprea*) also recorded. The understorey within this habitat is generally dry in nature and species-poor, comprising various mixes of ling heather (*Calluna vulgaris*), brambles (*Rubus fruticosus* agg.) and purple moor grass (*Molinia caerulea*). Other species less commonly recorded within scrub habitats include gorse (*Ulex europaeus*), raspberry (*Rubus idaeus*), tormentil (*Potentilla erecta*), lodgepole pine (*Pinus contorta*), sessile oak (*Quercus petraea*), soft rush (*Juncus effusus*), sweet vernal grass (*Anthoxanthum odoratum*), marsh arrowgrass (*Triglochin palustris*), marsh thistle (*Cirsium palustre*), rowan (*Sorbus aucuparia*), colt's foot (*Tussilago farfara*), marsh horsetail (*Equisetum palustre*), wild carrot (*Daucus carota*), rosebay willowherb (*Chamaenerion angustifolium*), devil's-bit scabious (*Succisa pratensis*), wild angelica (*Angelica sylvestris*), tormentil (*Potentilla erecta*) and common knapweed (*Centaurea nigra*).

Where grasses or heath species are present in higher abundances, scrub commonly forms mosaics with habitats including dry meadows and grassy verges (PB4/GS2), *Calluna*-dominated vegetation and pioneer poor fen (PB4/PF2) communities. Where scrub species were found growing greater than 4 metres in height, it was classified as bog woodland (WN7 as per Fossitt, 2000). These habitats are described in detail in the relevant sections below.



Plate 3-12 Area of downy birch (Betula pubescens)-dominated Scrub (PB4/WS1) to the south of Proposed Turbine 27.

3.1.3.2 Bog woodland (WN7)

Birch-dominated **Bog woodland (WN7)** is common throughout the Propsoed Wind Farm site and is present in large areas particularly within Glashabaun North, Glashabaun South, Ballydermot North and Barnaran Bogs. These woodlands are commonly found growing in blocks separated by large drainage ditches (FW4) and rides usually dominated by grasses or bracken (Plate 3-13). This habitat also commonly occurs as narrow linear strips in association with drainage ditches (Plate 3-14). As these linear habitats are >4m in width, they are classified as linear bog woodland (as per Fossitt, 2000).

Bog woodland within the Project Site is largely dominated by downy birch (*Betula pubescens*) and silver birch (*Betula pendula*) (Plate 3-15) with grey willow (*Salix cinerea*) also abundant in some areas. Other occasional tree species include eared willow (*Salix aurita*), hawthorn (*Crataegus monogyna*), rowan (*Sorbus aucuparia*), Scot's pine (*Pinus sylvestris*), lodgepole pine (*Pinus contorta*) and oak saplings (*Quercus* spp.). The shrub layer commonly consists of brambles (*Rubus fruticosus* agg.), ivy (*Hedera helix*) and bracken (*Pteridium aquilinum*) with honeysuckle (*Lonicera periclymenum*), raspberry (*Rubus idaeus*), golden scaly male fern (*Dryopteris affinis*), broad buckler fern (*Dryopteris dilatata*), ling heather (*Calluna vulgaris*) and broom (*Cytisus scoparius*) also frequently recorded. The ground flora is often of low diversity, however where the canopy is less dense, grasses including purple moor grass (*Molinia caerulea*), sweet vernal grass (*Anthoxanthum odoratum*), common bent grass (*Agrostis capillaris*) and false oat grass (*Arrhenatherum elatius*), are found growing abundantly, and rarely floating sweet grass (*Glyceria fluitans*) where ground conditions are wetter. Other species recorded within bog woodland within the Project Site include herb Robert (*Geranium robertianum*),

common dog violet (*Viola riviniana*), marsh horsetail (*Equisetum palustre*), wild strawberry (*Fragaria vesca*), marsh willowherb (*Epilobium palustre*), marsh bedstraw (*Galium palustre*), and the rushes hard rush (*Juncus inflexus*), soft rush (*Juncus effusus*) and jointed rush (*Juncus articulatus*).

The bryophytes recorded within the bog woodlands include *Thuidium tamariscinum, Kindbergia praelonga*, *Eurhynchium striatum*, *Orthotrichum affine*, *Loeskeobryum brevirostre*, *Polytrichum juniperinum*, *Polytrichum commune, Calliergonella cuspidata*, *Hypnum cupressiforme, Eurhychium striatum, Lophocolea bidentata* and *Frullania dilatata*.

The bog woodlands within the Project Site were recorded growing on cutover bog which is predominantly dry in nature with little to no *Sphagnum* cover. As such, no areas of this habitat growing upon cutover bog were found to conform to Annex I Bog Woodland [91D0].



Plate 3-13 Area of Dry meadows and grassy verges (PB4/GS2) and Dense bracken (PB4/HD1) separating two blocks of Bog woodland (WN7) in Barnaran Bog.



Plate 3-14 Linear areas of Bog woodland (WN7) located in Ballydermot South Bog.



Plate 3-15 Downy birch (Betula pubescens) dominated Bog woodland (WN7).

3.1.3.3 Oak-ash-hazel woodland (WN2)

An area of woodland classified as **Oak-ash-hazel woodland (WN2)** is present in the north of Lullybeg Bog, along the Crabtree River to the west of Proposed Turbine 36. This woodland comprises ash (*Fagus sylvatica*), grey willow (*Salix cinerea*), hazel (*Corylus avellana*), holly (*Ilex aquifolium*) and goat willow (*Salix caprea*), as well as occasional beech (*Fagus sylvatica*). The understorey was dominated by brambles (*Rubus fruticosus* agg.) and ivy (*Hedera helix*) (Plate 3-16). This habitat is located entirely outside of the Proposed Project footprint.



Plate 3-16 Area of Oak-ash-hazel woodland (WN2) present along the Crabtree River

3.1.3.4 Mixed broadleaved woodland (WD1)

An area of woodland classified as **Mixed broadleaved woodland (WD1)** is present to the west of Proposed Turbine 36, in Lullybeg Bog within the Proposed Wind Farm site. Species recorded within this area of woodland include grey willow (*Salix cinerea*), ash (*Fagus sylvatica*), goat willow (*Salix caprea*), holly (*Ilex aquifolium*), hawthorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*) as well as occasional non-native sycamore (*Acer pseudoplatanus*) (Plate 3-17). The understorey comprised ivy (*Hedera helix*), brambles (*Rubus fruticosus* agg.), hedge bindweed (*Calystegia sepium*) and occasional meadowsweet (*Filipendula ulmaria*) and silverweed (*Potentilla anserina*). This habitat is located entirely outside of the Proposed Project footprint.



Plate 3-17 Mixed broadleaved woodland (WD1) located to the west of Proposed Turbine 36

3.1.3.5 Hedgerows (WL1) and Treelines (WL2)

Hedgerow (WL1) and **Treeline (WL2)** habitats make up a very small proportion of the habitats within the Project Site. As outlined in the section above relating to bog woodland, many of the linear treelines within the Project Site, which are largely associated with drainage ditches, are over 4m in width and are therefore classified as linear stretches of bog woodland (WN7).

These habitats are present at the location of the Proposed Offsite Substation and in the accommodation areas along the Proposed Turbine Delivery Route and are described accordingly below.

3.1.3.6 Conifer plantation (WD4)

A large area of **Conifer plantation (WD4)** managed by Coillte is located in the east and northeast of the Project Site, within Killina, Lullymore, Lullybeg and Glashabaun South Bogs, with further areas of conifer forestry also recorded within Derrybrennan and Ballydermot North Bogs (Plate 3-18). A number of forestry sub-compartments are present in this area, with the coniferous components of the plantations comprising mixes of sitka spruce (*Picea sitchensis*), Norway spruce (*Picea abies*), lodgepole pine (*Pinus contorta*), Corsican pine (*Pinus nigra*), and Monterey pine (*Pinus radiata*), with varying percentages of broadleaves including willows (*Salix* spp.), birches (*Betula* spp.), and oaks (*Quercus* spp.). These plantations are of mixed maturity, with planting dates between 1983 and 2019.



Plate 3-18 Conifer plantation (WD4) within Killina Bog, at the location of the Proposed Enhancement Area.

3.1.3.7 Dense bracken (PB4/HD1)

Areas of the habitat **Dense bracken (PB4/HD1)** on cutover bog are dominated by the fern bracken (*Pteridium aquilinum*). This habitat occurs in small pockets throughout the Proposed Wind Farm site, along the edges of roads and tracks, as well as in rides between areas of Bog woodland (WN7) (Plate 3-19).



Plate 3-19 Dense bracken (HD1) present within a ride between areas of Bog woodland (WN7) to the north of Turbine 16.

3.1.4 Grassland Habitats

Grassland habitats are present in small areas in throughout the Project Site. These habitats are typically dry in nature, comprising Dry calcareous and neutral grassland (PB4/GS1), particularly along the decommissioned railway lines, as well as Dry meadows and grassy verges (PB4/GS2) and Wet grassland (PB4/GS4) in places. These habitats are described in detail in the following sections.

Grassland habitats present at the location of the Proposed Offsite Substation are outlined separately in Section 3.1.7.3 below.

3.1.4.1 Dry calcareous and neutral grassland (PB4/GS1)

Small areas of **Dry calcareous and neutral grassland (PB4/GS1)** were recorded growing along the decommissioned railway lines throughout the Proposed Wind Farm site (Plate 3-20). These areas were frequently recorded as early recolonising habitats upon the calcareous substrate of the decommissioned railway lines. The railway lines have been removed as part of the decommissioning requirements of the IPC Licence, however the limestone gravel that formerly underlay the railway lines remains along many of its stretches, creating calcareous ground conditions.

A diversity of plant species was identified growing along these areas, predominantly comprising calcareous species along with a mixture of species characteristic of the surrounding scrub and peatland. These include yellow-wort (*Blackstonia perfoliata*), wild carrot (*Daucus carota*), glaucous sedge (*Carex flacca*), yellow mignonette (*Reseda lutea*), fairy flax (*Linum catharticum*), salad burnet (*Sanguisorba minor*), colt's foot (*Tussilago farfara*), ribwort plantain (*Plantago lanceolata*), black medick (*Medicago lupulina*), fern-grass (*Catapodium rigidum*), yarrow (*Achillea millefolium*), fireweed (*Chamaenerion angustifolium*), common knapweed (*Centaurea nigra*), silverweed (*Potentilla anserina*), common ragwort (*Jacobaea vulgaris*), yellow rattle (*Rhinanthus minor*), red fescue (*Festuca rubra*), glaucous sedge (*Carex flacca*), false oat grass (*Arrhenatherum elatius*), tormentil (*Potentilla erecta*), dandelion

(*Taraxacum officinale*), wild strawberry (*Fragaria vesca*), purple moor grass (*Molinia caerulea*), yarrow (*Achillea millefolium*), bird's foot trefoil (*Lotus corniculatus*), sweet vernal grass (*Anthoxanthum odoratum*), quaking grass (*Briza media*), cow parsley (*Anthriscus sylvestris*), field horsetail (*Equisetum arvense*), cock's-foot grass (*Dactylis glomerata*), self-heal (*Prunella vulgaris*) and common centaury (*Centaurium erythraea*). Few bryophytes such as *Flexitrichum gracile*, *Fissidens taxifolius* and *Encalypta streptocarpa* were also identified along these former railways. Small pockets of calcareous grassland were also infrequently recorded in scattered areas throughout the Project Site outside of these linear railways (Plate 3-21).

The Red-listed species basil thyme (*Clinopodium acinos*) was also frequently recorded along the decommissioned railway lines.

The calcareous grasslands within the Project Site were recorded growing on cutover bog and along decommissioned railway lines. In line with Irish Wildlife Manual 102 *The monitoring and assessment of three EU Habitats Directive Annex I grassland habitats* (Martin *et al.,* 2018), no areas of this habitat were found to conform to Annex I Semi-natural dry grasslands and scrub facies on calcareous substrates [6210].



Plate 3-20 Area of Dry calcareous and neutral grassland (PB4/GS1) growing along a former railway line in Glashabaun North Bog.



Plate 3-21 Area of developed Dry calcareous and neutral grassland (PB4/GS1) in Ballydermot North Bog.

3.1.4.2 Dry meadows and grassy verges (PB4/GS2)

Small areas of dry grassland classified as **Dry meadows and grassy verges (PB4/GS2)** were encountered on the dryest areas of cutover bog within the Proposed Wind Farm site, frequently along the margins of existing machine tracks through cutover bog (Plate 3-22). The dominant grasses within this habitat across the Project Site were Yorkshire fog (*Holcus lanatus*), sweet vernal grass (*Anthoxanthum odoratum*), rough meadow grass (*Poa trivialis*), purple moor grass (*Molinia caerulea*), creeping bent (*Agrostis stolonifera*), false oat grass (*Arrhenatherum elatius*), and quaking grass (*Briza media*). Other species commonly recorded within dry meadows included field horsetail (*Equisetum arvense*), silverweed (*Potentilla anserina*), meadowsweet (*Filipendula ulmaria*), cat's-ear (*Hypochaeris radicata*), knapweed (*Centaurea nigra*), meadow vetchling (*Lathyrus pratensis*), creeping cinquefoil (*Potentilla reptans*), coltsfoot (*Tussilago farfara*), tormentil (*Potentilla erecta*), great willowherb (*Epilobium hirsutum*), creeping thistle (*Cirsium arvense*), dandelion (*Taraxacum officinale*), creeping buttercup (*Ranunculus repens*), common ragwort (*Jacobaea vulgaris*), common hogweed (*Heracleum sphondylium*), bittersweet nightshade (*Solanum dulcamara*), devil's bit scabious (*Succisa pratensis*), spear thistle (*Cirsium vulgare*), bird's foot trefoil (*Lotus corniculatus*), common chickweed (*Stellaria media*), common spotted orchid (*Dactylorhiza fuchsii*), fragrant orchid (*Gymnadenia conopsea*), meadow thistle (*Cirsium dissectum*), ribwort plantain (*Plantago lanceolata*), carnation sedge (*Carex panicea*), hedge bindweed (*Calystegia sepium*), tufted vetch (*Vicia cracca*), fireweed (*Epilobium angustifolium*), common centaury (*Centaurium erythraea*), groundsel (*Senecio vulgaris*), field scabious (*Knautia arvensis*), and hemp agrimony (*Eupatorium cannabinum*) (Plate 3-23).

This habitat was regularly recorded as a mosaic with Scrub (PB4/WS1), with brambles (*Rubus fruticosus* agg.), nettles (*Urtica dioica*), downy birch (*Betula pubescens*), grey willow (*Salix cinerea*), and ling heather (*Calluna vulgaris*) encroaching.



Plate 3-22 Grassy verges (PB4/GS2) present at the edges of existing machine tracks at the location of Proposed Turbine 25.



Plate 3-23 Dry meadows and grassy verges (PB4/GS2) growing in association with Dense bracken (PB4/HD1) near the margins of Codd 2 Bog

3.1.4.3 Wet grassland (PB4/GS4)

Areas of cutover bog that have begun to revegetate with **Wet grassland (PB4/GS4)** were recorded within small areas of the Proposed Wind Farm site. These habitats are most commonly dominated by purple moor grass (*Molinia caerulea*) (Plate 3-24). Other species recorded within revegetating wet grasslands commonly include jointed rush (*Juncus articulatus*), water mint (*Mentha aquatica*), sweet vernal grass (*Anthoxanthum odoratum*), Yorkshire fog (*Holcus lanatus*), marsh thistle (*Cirsium palustre*), cat's-ear (*Hypochaeris radicata*), yellow sedge (Carex *viridula*), glaucous sedge (*Carex flacca*), wild carrot (*Daucus carota*), colt's foot (*Tussilago farfara*) and more rarely wild angelica (*Angelica sylvestris*), common valerian (*Valeriana officinalis*), spear thistle (*Cirsium vulgare*), redshank (*Persicaria maculosa*), brooklime (*Veronica beccabunga*), knotgrass (*Polygonum aviculare*), slender St John's-wort (*Hypericum pulchrum*), groundsel (*Senecio vulgaris*) and common spotted orchid (*Dactylorhiza fuchsii*).



Plate 3-24 Area of purple moor grass (Molinia caerulea) dominated Wet grassland (PB4/GS4) that has recolonised cutover bog in Blackriver Bog.

3.1.5 Artificial Habitats

3.1.5.1 Buildings and artificial surfaces (BL3)

A number of existing public and private paved roads are present through the Proposed Wind Farm site and are classified as **Buildings and artificial surfaces (BL3)**. These include the L1001/L3001 local road that traverses the centre of the Proposed Wind Farm in a north-south direction, as well as the R414 which traverses the eastern section of the Proposed Wind Farm site, to the west and north of Lodge Bog. A smaller gravel access road is also located to the east of the L1001/L3001 (Plate 3-25), however this road changes to Recolonising bare ground (ED3) as it traverses north.

Site Entrance 1A to the Proposed Wind Farm is located to the north of the Edenderry Power Station in the west of the Proposed Wind Farm site and overlaps with the existing access road to the existing Cushaling Wind Farm for a distance of approximately 850m (Plate 3-26).



Plate 3-25 Existing gravel road located to the west of Proposed Turbine 2, classified as Buildings and artificial surfaces (BL3).



Plate 3-26 The existing access road to Cushaling Wind Farm, classified as Buildings and artificial surfaces (BL3), overlaps with the Proposed Wind Farm access track for a distance of approximately 850m in the west of the Project Site.

3.1.5.2 Recolonising bare ground (ED3)

Where areas of bare ground (excluding bare peat) and tracks through the Project Site been left undisturbed, they have revegetated with opportunistic colonising vegetation and are classified as **Recolonising bare ground (ED3)**. A large area of this habitat is present along the main access road of the Proposed Wind Farm in the west of the Proposed Wind Farm site, where recolonising plants are underlain by dense wood chippings (Plate 3-27).

This habitat is also present at the proposed temporary construction compound to the east of Proposed Turbine 14, where the species broadleaf plantain (*Plantago major*), jointed rush (*Juncus articulatus*), black medick (*Medicago lupulina*), devil's-bit scabious (*Succisa pratensis*), rough meadow grass (*Poa trivialis*), sweet vernal grass (*Anthoxanthum odoratum*), yarrow (*Achillea millefolium*) and cat's-ear (*Hypochaeris radicata*) have begun to recolonise (Plate 3-28).



Plate 3-27 Area of Recolonising bare ground (ED3) along the Proposed Wind Farm access road in the west of the Project Site.



Plate 3-28 The proposed temporary construction compound located to the east of Proposed Turbine 14 is located in an area of Recolonising bare ground (ED3).

3.1.6 Watercourses and Waterbodies

The Proposed Wind Farm site is traversed by a network of Drainage ditches (FW4) throughout the cutover bog habitats, as well as within some sections of remnant Raised bog (PB1). The Project Site is largely drained by a number of tributaries of the Figile and Slate Rivers, which flow through the Proposed Wind Farm. Silt ponds are also present in several locations within the Project Site, as well as other areas of open water. These habitats are described in detail in the following sections.

3.1.6.1 Lowland depositing rivers (FW2)

The Project Site is drained by a number of EPA mapped watercourses within and surrounding the Project Site, as outlined in further detail in Section 3.5 below. These are classified as **Lowland depositing rivers (FW2)** and include a number of tributaries of the Figile River and the Slate River which both discharge downstream into the River Barrow. The River Barrow is designated as the River Barrow and River Nore SAC approximately 9.8km south of the Project Site, and at a distance of approximately 17km downstream of the Project Site at its nearest point. A small tributary of the River Boyne also flows along the northern boundary of the Project Site, to the north of Ticknevin Bog.

These mapped watercourses have been modified and straightened in several areas in association with historical turbary activities within the Project Site. A map showing the location of watercourses draining and surrounding the Project Site is shown in Figure 3-2 below.

Watercourse Crossings within the Proposed Wind Farm site

As outlined in Section 2.3.1.11 above, there are a total of 15 no. watercourse crossing locations associated with the Proposed Wind Farm infrastructure footprint over natural watercourses (rivers and streams). While an additional crossing of the EPA blue line mapping is located to the east of Proposed Turbine 8, during the surveys undertaken this was found to be highly modified and best characterised as a drain (FW4) therefore it is not considered in the table below. The main crossing locations are over the Figile River (WC-WF-04 and WC-WF 07) and both of these crossings will be completed using clear-span crossings. Existing bridges are present at these locations and these will be dismantled and replaced as part of the Proposed Wind Farm, following the methodologies set out in Section 2.3.1.11 above. The watercourses at each of the 15 no. crossings are described in further detail in Section 4.1 of the Aquatic Baseline Report, Appendix 2.



Plate 3-29 Tributary of the River Figile, a Lowland depositing river (FW2), located in Blackriver Bog.

Table 3-1 Watercourse Crossings within the Proposed Wind Farm

Crossing ID and Location	Works Proposed	Photo(s)
WC-WF-01 Existing crossing over the Clonbrown Stream, approximately 270 west/ southwest of Proposed Turbine 8	Existing Crossing to be removed and a new crossing will be constructed. Box culvert/ Bottomless. **In-stream works may be required.**	

Crossing ID and Location	Works Proposed	Photo(s)
		
WC-WF-02 Proposed crossing over the Clonbrown Stream, approximately 300m west of Proposed Turbine 8	New Crossing to facilitate Site Entrance 3C, a secondary entrance off the L-3001. Box Culvert / Bottomless Culvert / Pipe. **In-stream works may be required.**	
WC-WF-03 Existing crossing over the Clonbrown Stream, approximately 630m southwest of Proposed Turbine 9	Existing Crossing to facilitate Site Entrance 3D – along proposed amenity track. No structural upgrade necessary to existing crossing. Floated track for amenity use only. No in-stream works required.	

Crossing ID and Location	Works Proposed	Photo(s)
WC-WF-04 Existing crossing over the Figile River between Codd 1 and Codd 2 Bogs	Existing Crossing – The existing crossing will be demolished and replaced with a Clear span bridge to facilitate the internal site access road south west of Proposed Turbine 26 over the Figile River. **In-stream works required.**	 
WC-WF-05 Existing crossing over the Ballykilleen Stream, approximately 470m east of Proposed Site Entrance A	Existing Culvert Crossing – Facilitating Site Entrance 1A. No in-stream works required.	

Crossing ID and Location	Works Proposed	Photo(s)
WC-WF-6 Existing crossings over the Figile River, approximately 650m east of Proposed Site Entrance A	Existing Clear Span Bridge Crossing – Facilitating Site Entrance 1A. No in-stream works required.	 
WC-WF-07 Existing crossing over the Figile River between Glashabaun North and Glashabaun South Bogs	Existing bridge to be demolished and replaced with a clear-span bridge. **In-stream works required.**	

Crossing ID and Location	Works Proposed	Photo(s)
		
WC-WF-08 Existing crossing over the Lullymore East Stream, approximately 340m east of Proposed Turbine 39 (amenity track)	Existing crossing to be used. Floated access track for amenity use only. No in-stream works required.	
WC-WF-09 Proposed crossing over the Lullymore East Stream, approximately 300m east of Proposed Turbine 39	No existing crossing, proposed new crossing. Clear Span Bridge / Bottomless Culvert. No in-stream works required.	

Crossing ID and Location	Works Proposed	Photo(s)
WC-WF-10 Proposed crossing over the Lullymore East Stream, approximately 130m south of Proposed Turbine 36	No existing crossing, proposed new crossing. Clear Span Bridge / Bottomless Culvert. No in-stream works required.	
WC-WF-11 Proposed crossing over the Lullybeg Stream, approximately 170m east of Proposed Turbine 38	No existing crossing, proposed new crossing. Clear Span Bridge / Bottomless Culvert. No in-stream works required.	
WC-WF-12 Existing crossing over the Lullybeg Stream, approximately 600m south of Proposed Turbine 35	Existing Culvert Crossing – Upgrades to existing culvert crossing to facilitate internal site access road south of Proposed Turbine 35. Bottomless culvert. **In-stream works may be required.**	

Crossing ID and Location	Works Proposed	Photo(s)
WC-WF-13 Existing crossing over the Lullybeg Stream, approximately 300m north of Proposed Turbine 34	Existing Culvert Crossing – Upgrades to existing culvert crossing to facilitate internal site access road north of Proposed Turbine 34. Bottomless culvert. **In-stream works may be required.**	
WC-WF-14 Existing crossing over the Lullybeg Stream, approximately 420m southeast of Proposed Turbine 10	Existing Culvert Crossing – Upgrades to existing culvert crossing to facilitate internal site access road to Proposed Turbine 10. Box Culvert / Bottomless Culvert / Pipe **In-stream works may be required.**	 

Crossing ID and Location	Works Proposed	Photo(s)
WC-WF-15 Proposed crossing over the Lullybeg Stream, approximately 410m northeast of Proposed Turbine 9	New Crossing – crossing to facilitate Proposed Road to Proposed Turbines 9 and 10. Box Culvert / Bottomless Culvert / Pipe. **In-stream works may be required.**	

The watercourses above are also described in the Aquatic Baseline Report which is included as Appendix 2 of this AASR and NIS. During the baseline aquatic surveys undertaken in 2021, the Annex I habitat Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] was identified at the Ballygarret River confluence, approximately 3.5km downstream of the Project Site. At the time of survey, the river in this location was heavily-modified but retained some semi-natural characteristics. Macrophyte growth was very high with a diversity of both emergent and submerged species. Given the presence of indicator species (EC, 2013; Devaney *et al.,* 2013) various-leaved pondweed (*Potamogeton gramineus*), curled pondweed (*Potamogeton crispus*), spiked water milfoil (*Myriophyllum spicatum*) and common water starwort (*Callitriche stagnalis*), in addition to aquatic moss species *Fontinalis antipyretica* which was recorded occasionally on small boulders and cobble, the aquatic vegetation community was considered representative of the Annex I habitat Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]. This survey site was not revisited during the baseline aquatic surveys undertaken in 2024 or 2026, and no other areas with the potential to conform to this Annex I habitat were identified in any other locations during the 2024 or 2026 surveys.

665000 670000 675000 680000

735000 730000 725000 720000

N

T32 T31 T30 T29 T27 T28 T23 T24 T26 T25 T22 T20 T21 T17 T19 T18 T16 T15 T10 T09 T35 T34 T38 T37 T36 T39 T40 T41 T42 T45 T43 T44 T46 T08 T07 T06 T33 T01 T05 T04 T03 T02 T11 T12 T13 T14

WCWF01 WCWF02 WCWF03 WCWF04 WCWF05 WCWF06 WCWF07 WCWF08 WCWF09 WCWF10 WCWF11 WCWF12 WCWF13 WCWF14 WCWF15

WCGCR01 WCGCR02 WCGCR03 WCGCR04 WCGCR05 WCGCR06 WCGCR07 WCGCR08 WCGCR09 WCGCR10 WCGCR11

0 1.5 3 km

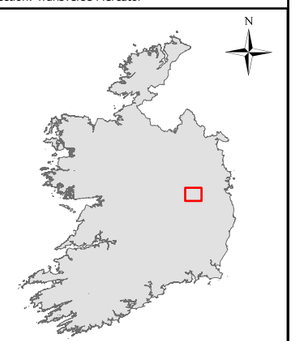
Map Legend

- Project Site
- Turbine Layout
  - 220
  - 200
- Proposed Relay Mast
- Proposed Met Mast
- Proposed Telecommunications Tower
- Watercourse crossing
- Joint Bays
- WFD Watercourses
- Existing OHL
- Internal 33kV Cable Trench
- Proposed Internal 33kV Cabling
- Proposed OHL
- Proposed Grid Connection Underground 220KV electrical cabling
- New Road
- Upgrades to Existing Roads
- TDR Accommodation
- Proposed Amenity Links Centreline
- Proposed Pedestrian Amenity Boardwalk
- Turbine Hardstands

Layer

- Diversion Routs
- Proposed Construction Haul Routes
- Proposed Turbine Delivery Route
- Temporary Construction Compounds
- Proposed Peat and Spoil Areas
- Proposed Security Hut
- Proposed Car parking
- Proposed Set Down Area
- Proposed Onsite 110kV GIS Substation
- Proposed Onsite 220kV GIS Substation
- Proposed Offsite Substation Tower Build Area
- Proposed Offsite Substation Crane Pad
- Proposed Offsite 220kV GIS Substation

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



SITE LOCATION - NOT TO SCALE

Drawing Title
WFD Watercourses within the Project Site

Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	3-2	1:70,000
Drawn By	Checked By	Date
OM	KB	23/10/2026

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

3.1.6.2 Drainage ditches (FW4)

The Proposed Wind Farm site is extensively drained with **Drainage ditches (FW4)** that run throughout the cutover bog habitats. These channels range from approximately 0.5m in width up to 3m in width, with water flow generally very slow to stagnant and a silt/peat substrate. Where the drains were more recently dug for peat extraction, the banks are generally devoid of vegetation, vertical-sided and over 1m deep (Plate 3-30), however over time many of the drains throughout the Proposed Wind Farm site have eroded, now with much shallower, vegetated banks (Plate 3-31). Common components of vegetated drains include bulrush (*Typha latifolia*), water mint (*Mentha aquatica*), marsh horsetail (*Equisetum palustre*), yellow flag iris (*Iris pseudacorus*), soft rush (*Juncus effusus*), toad rush (*Juncus bufonius*), lesser spearwort (*Ranunculus flammula*) and marsh pennywort (*Hydrocotyle vulgaris*), as well as floating vegetation including pondweeds (*Potamogeton* spp.) and common duckweed (*Lemna minor*). Small saplings of scrubby species such as grey willow (*Salix cinerea*), downy birch (*Betula pubescens*) and ling heather (*Calluna vulgaris*) were also regularly recorded as riparian vegetation.

The drains within large areas of Lodge and Lullymore Bogs have undergone drain blocking as part of peatland enhancement and rehabilitation measures.



Plate 3-30 Narrow, vertical-sided Drainage ditch (FW4) on bare peat at the location of Proposed Turbine 10.



Plate 3-31 Wet, vegetated Drainage ditch (FW4) with eroded banks in Ballydermot South Bog.

3.1.6.3 Other artificial lakes and ponds (FL8)

Silt ponds are present at various locations throughout the Proposed Wind Farm site and have been classified as **Other artificial lakes and ponds (FL8)** (Plate 3-32). As bogs have been developed and the draining of areas of bog by gravity was no longer feasible, pumping stations were installed at several of these silt ponds in order to drain part or all of the catchment.



Plate 3-32 Pumping station and silt pond located in Ballydermot South Bog

3.1.6.4 Open water

Several areas of open water are present in the wettest and lower lying areas of the Proposed Wind Farm site, often associated with poor fen and flush and reed and large sedge swamp communities, as outlined in Section 3.1.2.2 and 3.1.2.3 above. The areas of open water in these habitats were generally small in size at the time of survey but are subject to seasonal fluxes in water levels (Plate 3-33). Open water also occurs commonly within mosaics of bare peat where ground conditions naturally flood, as well as where deep excavations of peat have created permanent pools of water (Plate 3-34).

A larger area of open water is present at the location of Proposed Turbine 6 (Plate 3-35) in which soft rush (*Juncus effusus*) and common reed (*Phragmites australis*) are growing at the edges. This area is surrounded by predominantly bare peat.



Plate 3-33 Areas of open water associated with pioneer Poor fen (PB4/PF2) communities in Derrybrennan Bog.



Plate 3-34 Area of open water where deep excavations have resulted in permanent pools of water in Glashabaun South bog.



Plate 3-35 Area of open water at the location of Proposed Turbine 6 in Ballydermot North Bog, with little revegetation.

3.1.7 Habitats along the Proposed Grid Connection

The underground cabling required to facilitate the Proposed Grid Connection will be laid beneath the surface of the internal site road network and public road. The Proposed Grid Connection will originate at the Proposed Onsite Substation, which is located in the northeast of Lodge Bog, within the townland of Allenwood South, before travelling east along the public road network to the location of the Proposed Offsite Substation in the townland of Killybegs, Co. Kildare.

3.1.7.1 Habitats at the Location of the Proposed Onsite Substation

The Proposed Onsite Substation is located in the north of Lodge Bog, Co. Kildare. The habitats in this location are dominated by **Cutover bog (PB4)** comprising large areas of bare peat, with early colonisation of species such as common cottongrass (*Eriophorum angustifolium*) and downy birch (*Betula pubescens*) saplings (Plate 3-36). Where ground conditions are wetter, pioneer **Poor fen (PB4/PF2)** occurs in a mosaic with **Scrub (PB4/WS1)** (Plate 3-37), with small areas of standing water present. Vegetation in these areas is dominated by common cottongrass (*Eriophorum angustifolium*) with smaller amounts of hare's-tail cottongrass (*Eriophorum vaginatum*), soft rush (*Juncus effusus*) and marsh thistle (*Cirsium palustre*), with the scrub species downy birch (*Betula pubescens*) and grey willow (*Salix cinerea*), and the bryophyte *Bryum pseudotriquetrum*.

A small section of cutover bog within the footprint of the Proposed Onsite Substation was very dry in nature, with a gravel substrate and recolonisation of species such as cat's-ear (*Hypochaeris radicata*), creeping bent (*Agrostis stolonifera*), barren strawberry (*Potentilla sterilis*), colt's foot (*Tussilago farfara*), wild carrot (*Daucus carota*), common ragwort (*Jacobaea vulgaris*), field horsetail (*Equisetum arvense*) and lesser trefoil (*Trifolium dubium*) (Plate 3-38). This area was therefore classified as **Recolonising bare ground (ED3)**.

A small section of the Proposed Onsite Substation is located within a high field previously used for material storage. This area occurs as a narrow strip approximately 30m wide in the westernmost area of the Proposed Onsite Substation and is bordered by a vertical facebank approximately 1.2-2m high (Plate 3-39). As the acrotelm has previously been removed from this area it is classified as cutover bog. This area has revegetated with a ***Calluna*-dominated community** with a small amount of downy birch (*Betula pubescens*) and grey willow (*Salix cinerea*) saplings, bracken (*Pteridium aquilinum*) and *Campylopus introflexus* colonisation also present (Plate 3-40). A deep drain approximately 4m in depth is also present through the centre of this area.



Plate 3-36 Cutover bog (PB4) at the location of the Proposed Onsite Substation, dominated by bare peat with some early colonisation



Plate 3-37 A mosaic of pioneer Poor fen (PB4/PF2) and Scrub (PB4/WS1) on cutover bog at the location of the Proposed Onsite Substation



Plate 3-38 Area of Recolonising bare ground (ED3) on cutover bog at the location of the Proposed Onsite Substation



Plate 3-39 The facebank of high field at the location of the Proposed Onsite Substation, classified as cutover bog with secondary Calluna-dominated communities



Plate 3-40 Secondary Calluna-dominated community within the high field at the location of the Proposed Onsite Substation

3.1.7.2 Habitats along the Proposed Grid Connection Underground Electrical Cabling Route

The underground electrical cabling route will originate at the Proposed Onsite Substation and travel approx. 0.5km north on internal access roads through an area consisting largely of **Cutover bog (PB4)** dominated by bare peat, with sections of pioneer **Poor fen (PF2)** and **Scrub (WS1)** also present. The route then passes through a narrow section of scrub and **Bog woodland (WN7)** along the road margins before exiting the Proposed Wind Farm site via the R414 regional road.

It is proposed that the Proposed Grid Connection underground electrical cabling route will continue east along R414 road for approximately 2.2km through the townland of Allenwood South. The cabling route will be laid entirely within the existing road corridor in this location, which is classified as **Buildings and artificial surfaces (BL3)**. There is one watercourse crossing (WC-GCR-01) along this stretch of cable route, at the Killinagh Upper Stream, a tributary of the Slate River. The cables will be laid using Flatbed Formation Under– Type B or Flatbed Formation Over– Type Cwithin the existing road corridor. No instream works will be required. This is a **Depositing/lowland river (FW2)**, a full description of which is included in Section 4.2.1 (aquatic survey site G1) of the Aquatic Baseline Report, included as Appendix 2 to this AASR and NIS.

The Proposed Grid Connection underground electrical cabling route will then cross under the Grand Canal via HDD approximately 0.2km west of Shee Bridge (WC-GCR-02). The watercourse in this location is classified as a **Canal (FW3)** and flows slowly in a westerly direction. At the time of survey, the canal was mature and well-vegetated with a 10m-wide channel and depths between 1 and 2m. The littorals supported frequent heterophyllous common clubrush (*Schoenoplectus lacustris*) and yellow lily (*Nuphar lutea*). Mare's-tail (*Hippuris vulgaris*), blue water speedwell (*Veronica anagallis-aquatica*), water plantain (*Alisma plantago-aquatica*), amphibious bistort (*Persicaria amphibia*) and fine-leaved water dropwort (*Oenanthe aquatica*) were all occasional. The central and deeper navigation channel supported abundant heterophyllous arrowhead (*Sagittaria sagittifolia*). Small areas along exposed gravel and cobble margins supported delicate stonewort (*Chara virgata*). The invasive macrophyte New Zealand pigmyweed (*Crassula helmsii*) was also occasional. This species is listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011, as amended) and the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) - see Section 3.3 below in relation to invasive species). The largely open banks supported common species of the canal corridor such as yellow iris (*Iris pseudacorus*), meadowsweet (*Filipendula ulmaria*), hedge bindweed (*Calystegia sepium*), reed canary grass (*Phalaris arundinacea*), nettle (*Urtica dioica*) and scattered sycamore (*Acer pseudoplatanus*), ash (*Fraxinus excelsior*) and beech (*Fagus sylvatica*). Full details on the baseline aquatic conditions at this watercourse crossing are detailed in Section 4.2.2 (aquatic survey site G2) of the Aquatic Baseline Report in Appendix 2 to this AASR and NIS.

The Proposed Grid Connection underground electrical cabling route then merges onto the R403 regional road and continues eastwards for approximately 8.5km through the townlands of Allenwood Middle, Allenwood North/Derrymullen, Brockagh, Graigues, Blackwood, Coolree, Downings North and Curryhills before turning right on the local L6002 road. The Proposed Grid Connection underground electrical cabling route will be laid entirely within the existing road corridor, which is classified as **Buildings and artificial surfaces (BL3)**, and passes through the villages of Allenwood and Prosperous, Co. Kildare. The predominant habitats bordering this section of the route have been assessed as **Improved agricultural grasslands (GA1), Arable crops (BC1)** and sections of woodlands and **Conifer plantation (WD4)**, bordered by **Treelines (WL2)** and **Hedgerows (WL1)**. There are a further 9 no. watercourse crossings along this stretch of the Proposed Grid Connection underground electrical cabling route (WC-GCR-03 to WC-GCR-11), all of which will be constructed using Flatbed Formation Under– Type B or Flatbed Formation Over– Type C methodology within the existing road corridor. These are located at the Upper Ballynakill River, Blackwood feeder canal, Brockagh River, a number of locations along the Slate River, an unnamed tributary of the Slate River and two unmapped channels. Full details on the baseline aquatic conditions at each of these watercourse crossing are

detailed in Sections 4.2.3 to Section 4.2.11 (aquatic survey sites G3-G9) of the Aquatic Baseline Report in Appendix 2 to this AASR and NIS. The Blackwood feeder canal is also designated as part of the Ballynafagh Lake SAC.

The Proposed Grid Connection underground electrical cabling route will continue south along the L6002 road for approximately 0.8km through the townlands Curryhills and Killybegs. The Proposed Grid Connection underground electrical cabling route turns right into Site Entrance 7M crossing agricultural fields classified as **Improved agricultural grassland (GA1)** into the area of the Proposed Offsite Substation, in the townland of Killybegs, Co. Kildare.

3.1.7.3 Habitats at the Location of the Proposed Offsite Substation

The Proposed Offsite Substation is located within two fields in the townland of Killybegs, Co. Kildare. The northeastern portion of the Proposed Offsite Substation is located within a highly managed agricultural field classified as **Improved agricultural grassland (GA1).** This habitat is dominated by perennial rye grass (*Lolium perenne*) with small amounts of Yorkshire fog (*Holcus lanatus*), white clover (*Trifolium repens*) and creeping buttercup (*Ranunculus repens*) also present (Plate 3-41).

To the south of this managed and grazed area, this field is fenced off from livestock and is classified as **Dry meadows and grassy verges (GS2).** This habitat is dominated by grasses including cock's-foot grass (*Dactylis glomerata*), rough meadow grass (*Poa trivialis*), Yorkshire fog (*Holcus lanatus*), Timothy grass (*Phleum pratense*) and crested dog's tail (*Cynosurus cristatus*), as well as creeping buttercup (*Ranunculus repens*), broad-leaved dock (*Rumex obtusifolius*), silverweed (*Potentilla anserina*), meadow vetchling (*Lathyrus pratensis*), ribwort plantain (*Plantago lanceolata*), nettles (*Urtica dioica*) and hairy sedge (*Carex hirta*) (Plate 3-42).

This habitat transitions into **Wet grassland (GS4)** towards the western portion of the field with a high cover of hard rush (*Juncus inflexus*) and sharp-flowered rush (*Juncus acutiflorus*), as well as the sedges brown sedge (*Carex disticha*), hairy sedge (*Carex hirta*) and glaucous sedge (*Carex flacca*) (Plate 3-43). A diversity of forbs including meadowsweet (*Filipendula ulmaria*), water mint (*Mentha aquatica*), great willowherb (*Epilobium hirsutum*), meadow vetchling (*Lathyrus pratensis*) and marsh woundwort (*Stachys palustris*) are also present in this area. The western field, at the location of the Proposed Temporary Construction Compound 10 associated with the Proposed Offsite Substation, also comprises wet grassland with similar species present, however this area is transitioning into dense grey willow **Scrub (GS4/WS1)** (Plate 3-44).

A **Treeline (WL2)** comprising mature and semi-mature ash (*Fraxinus excelsior*) and hawthorn (*Crataegus monogyna*) trees delineates the eastern and western fields, as well as the southern field boundaries. To the east of the Proposed Offsite Substation is a mature treeline of ash (*Fraxinus excelsior*) and beech (*Fagus sylvatica*) (Plate 3-45).



Plate 3-41 The Proposed Offsite Substation is partially located within an Improved agricultural grassland (GA1) field.



Plate 3-42 The eastern portion of the Proposed Offsite Substation is classified as Dry meadows and grassy verges (GS2).



Plate 3-43 Much of the Proposed Offsite Substation is located a field of rush-dominated Wet grassland (GS4)



Plate 3-44 The Proposed Temporary Construction Compound 10 for the Proposed Offsite Substation is located within a field of Wet grassland/Scrub (GS4/WS1).



Plate 3-45 The eastern field boundary is delineated by a mature ash (Fraxinus excelsior) and beech (Fagus sylvatica) treeline.

3.1.7.4 Watercourse Crossings along the Proposed Grid Connection Underground Electrical Cabling Route

There are a number of watercourse crossings along the Proposed Grid Connection underground electrical cabling route, as outlined in Section 2.3.2.8 above. The watercourses in these locations are generally classified as **Lowland depositing rivers (FW2)** and include a number of tributaries of the Slate River, as well as **Canals (FW3)** at the Grand Canal and the Blackwood feeder canal.

The Proposed Grid Connection underground electrical cabling route will involve 11 no. crossings over watercourses (7 no. crossings over EPA mapped watercourses, 1 no. crossing under the Grand Canal and 3 no. crossings over unmapped watercourses). No in-stream works are required along the Proposed Grid Connection underground electrical cabling route. Watercourse crossing methodologies are detailed in Section 2.3.2.8 above and listed in Table 3-2 below, starting with the watercourse crossing closest to the Proposed Onsite Substation and progressing eastwards towards the Proposed Offsite Substation. The watercourses at each of the 11 no. crossings are described in further detail in Section 4.2 of the Aquatic Baseline Report, Appendix 2.

Table 3-2 Watercourse crossings along the Proposed Grid Connection Underground Electrical Cabling Route

Crossing ID and Location	Works Proposed	Photo(s)
WC-GCR-01 Killinagh Upper Stream, Allenwood South	Flatbed Formation Under– Type B or Flatbed Formation Over– Type C No in-stream works required	 
WC-GCR-02 Grand Canal, approximately 150m west of Shee Bridge	HDD No in-stream works required	

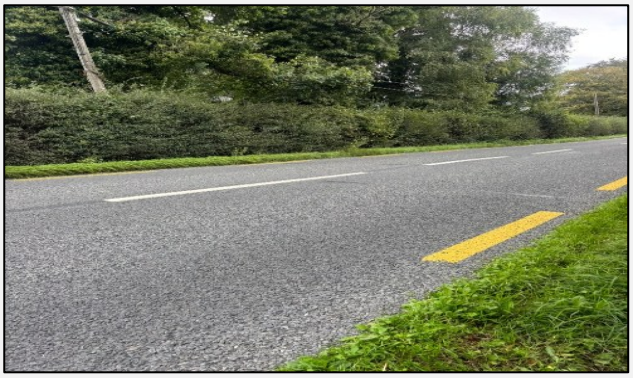
Crossing ID and Location	Works Proposed	Photo(s)
WC-GCR-03 Upper Ballynakill River, Derrymullen	Flatbed Formation Under– Type B or Flatbed Formation Over– Type C No in-stream works required	 
WC-GCR-04 Unmapped channel, R403 road crossing, Derrymullen	Flatbed Formation Under– Type B or Flatbed Formation Over– Type C No in-stream works required	

Crossing ID and Location	Works Proposed	Photo(s)
		
WC-GCR-05 Slate River, Quigley's Bridge	Flatbed Formation Under– Type B or Flatbed Formation Over– Type C No in-stream works required	 

Crossing ID and Location	Works Proposed	Photo(s)
WC-GCR-06 Slate River, New Bridge	Flatbed Formation Under– Type B or Flatbed Formation Over– Type C No in-stream works required	 
WC-GCR-07 Blackwood feeder canal, R403 crossing	Flatbed Formation Under– Type B or Flatbed Formation Over– Type C No in-stream works required	

Crossing ID and Location	Works Proposed	Photo(s)
		
WC-GCR-08 Slate River, Blackwood	Flatbed Formation Under– Type B or Flatbed Formation Over– Type C No in-stream works required	 

Crossing ID and Location	Works Proposed	Photo(s)
WC-GCR-09 Brockagh River, Dagwelds Cross	Flatbed Formation Under– Type B or Flatbed Formation Over– Type C No in-stream works required	 
WC-GCR-11 Unmapped channel, R403 road crossing, Downings North	Flatbed Formation Under– Type B or Flatbed Formation Over– Type C No in-stream works required	

Crossing ID and Location	Works Proposed	Photo(s)
		
WC-GCR-10 Unnamed Stream, Black Stick Crossroads	Flatbed Formation Under– Type B or Flatbed Formation Over– Type C No in-stream works required	 

3.1.8 Habitats at the Proposed Turbine Delivery Route Accommodation Areas

Road and junction widening are sometimes required along roads to accommodate the large vehicles used to transport turbine components to wind farm sites. The Proposed Turbine Delivery Route for the Proposed Project has been the subject of a route assessment to determine if any works are required along its length. These comprise 'overrun' areas where the delivery vehicle's wheels run over land, and 'oversail' where the length of the turbine part being delivered will result in its swing across an airspace.

A number of accommodation areas have been identified along the Proposed Turbine Delivery Route, as outlined in Chapter 15 of the EIAR submitted as part of this planning application. Of these, five accommodation areas include works which require planning permission are therefore included in this AASR and NIS for assessment. The habitats present at each these five accommodation areas are outlined in the following subsections.

In addition to these areas, as outlined in Section 2.3.3.2.2 above, temporary removal of two immature trees will also be required at the M6 east/N52 roundabout, and pruning of a single tree will be required at a right bend on the R402 in Daingean, Co. Offaly. These works are minor in nature and therefore not described in detail below.

Location 1 – R402/R420 Junction (ITM Grid Ref.: X 641917, Y 721602)

This accommodation area is located at the junction of the R402 and R420 Regional Roads. This area comprises a gravelled area classified as **Recolonising bare ground (ED3)** with recolonisation of grassy species typical of road verges including scentless mayweed (*Tripleurospermum inodorum*), creeping thistle (*Cirsium arvense*), greater plantain (*Plantago major*), white clover (*Trifolium repens*), great willowherb (*Epilobium hirsutum*), silverweed (*Potentilla anserina*), Yorkshire fog (*Holcus lanatus*), false oat-grass (*Arrhenatherum elatius*), common ragwort (*Jacobaea vulgaris*), red clover (*Trifolium pratense*), field horsetail (*Equisetum arvense*), creeping cinquefoil (*Potentilla reptans*), spear thistle (*Cirsium vulgare*), bush vetch (*Vicia sepium*), black medick (*Medicago lupulina*), ribwort plantain (*Plantago lanceolata*) and smooth sow-thistle (*Sonchus oleraceus*) (Plate 3-46). As outlined in Section 2.3.3.2.3 above, the area on the northeast corner of the junction will be surfaced to accommodate the wheels of the abnormally sized delivery vehicles.

A **Treeline (WL2)** of ash (*Fraxinus excelsior*), hazel (*Corylus avellana*), blackthorn (*Prunus spinosa*), hawthorn (*Crataegus monogyna*) and hornbeam (*Carpinus betulus*) is also present at this location on the north side of the R420 (Plate 3-47). A small portion of this treeline will require removal as part of the Proposed Turbine Delivery Route accommodation works.



Plate 3-46 Proposed Turbine Delivery Route accommodation area 1 comprises a large area of Recolonising bare ground (ED3) at the junction of the R402 and R420 Regional Roads.



Plate 3-47 Treeline (WL2) present at the location of Proposed Turbine Delivery Route accommodation area 1.

Location 2 – R402/L2025 Junction in Ballinagar (ITM Grid Ref.: X 644098, Y 724134)

This accommodation area is located in the west of Ballinagar village along the R402 Regional Road and comprises a small **Amenity grassland (GA2)** associated with a public green space (Plate 3-48). As outlined in Section 2.3.3.2.3 above, this area will be required temporarily to provide an over-run area for the delivery of the abnormally sized loads, with an additional area required to provide for oversail of the blade tip.

A short, mixed **Treeline (WL2)** comprising silver birch (*Betula pendula*), hawthorn (*Crataegus monogyna*), elder (*Sambucus nigra*), and non-native cypress and poplar trees (Plate 3-49) is also present in this location. This treeline will require removal as part of the Proposed Turbine Delivery Route accommodation works.



Plate 3-48 Proposed Turbine Delivery Route accommodation area 2 comprises an Amenity grassland (GA2) in the west of Ballinagar village.



Plate 3-49 Short section of mixed Treeline (WL2) located at Proposed Turbine Delivery Route accommodation area 2.

Location 3 – L1003/Cloncreen Wind Farm Junction (ITM Grid Ref.: X 656076, Y 726927)

This accommodation area is located at the western entrance to the existing Cloncreen Wind Farm, from the local L1003 road. This entrance has been fenced and blocked off since the construction of the wind farm and now comprises an **Earth bank (BL2)** of bare peat spoil (Plate 3-50). As outlined in Section 2.3.3.2.3 above, this existing boundary will be removed in order to facilitate turbine delivery.

To the south, this accommodation area also overruns an area of peaty substrate that has revegetated with **Scrub (WS1)** comprising alder (*Alnus glutinosa*), gorse (*Ulex europaeus*), grey willow (*Salix cinerea*) and brambles (*Rubus fruticosus* agg.) (Plate 3-51). The understorey component comprised colt's foot (*Tussilago farfara*), tormentil (*Potentilla erecta*), great willowherb (*Epilobium hirsutum*), creeping bent grass (*Agrostis stolonifera*), creeping thistle (*Cirsium arvense*), meadowsweet (*Filipendula ulmaria*), dandelion (*Taraxacum officinale*), creeping buttercup (*Ranunculus repens*), Yorkshire fog (*Holcus lanatus*), marsh woundwort (*Stachys palustris*), brambles (*Rubus fruticosus* agg.), common figwort (*Scrophularia nodosa*), common ragwort (*Jacobaea vulgaris*), common hogweed (*Heracleum sphondylium*) and bittersweet nightshade (*Solanum dulcamara*). This area will be temporarily surfaced in order to accommodate the largest vehicles.



Plate 3-50 Proposed Turbine Delivery Route accommodation area 3 enters the existing Cloncreen Wind Farm from the west, through an entrance currently blocked with a peat Earth bank (BL2)



Plate 3-51 Scrub (WS1) present at Proposed Turbine Delivery Route accommodation area 3 in the west of the existing Cloncreen Wind Farm

Locations 4 and 5 – Cloncreen Wind Farm (ITM Grid Refs.: X 658860, Y 727063; and X 659989, Y 727593)

These accommodation areas are located within the existing Cloncreen Wind Farm, at two junctions within the internal wind farm road network. The existing roads in these locations are classified as **Buildings and artificial surfaces (BL3)** and, as outlined in Section 2.3.3.2.3 above, will require minor temporary remedial works to accommodate the abnormally sized loads generated by the Proposed Project.

At both Locations 4 and 5, the road verge comprises **Cutover bog (PB4)** with a small amount of recolonisation of species including colt's-foot (*Tussilago farfara*), sweet vernal-grass (*Anthoxanthum odoratum*), deergrass (*Trichophorum germanicum*), cat's-ear (*Hypochaeris radicata*) and soft-rush (*Juncus effusus*) present at the time of survey (Plate 3-52, Plate 3-53).



Plate 3-52 Existing gravel road through Cloncreen Wind Farm at the Proposed Turbine Delivery Route accommodation area 4



Plate 3-53 Existing gravel road through Cloncreen Wind Farm at the Proposed Turbine Delivery Route accommodation area 5

3.2 Protected, Rare and Threatened Flora

No plant species listed under Annex II of the EU Habitats Directive were identified within the Project Site.

Two species listed on Ireland's Red List of Vascular Plants (Wyse Jackson *et al.,* 2016) were identified within the Project Site: Round-leaved wintergreen (*Pyrola rotundifolia* subsp. *rotundifolia*) and Basil thyme (*Clinopodium acinos*). Both species are listed as Near Threatened (NT) on the Red List of Vascular Plants. Species listed as Near Threatened are species which do not qualify for, but are close to qualifying for, or is likely to qualify for a threatened category in the near future. These species are discussed in detail in Section 6.3.2.2 of Chapter 6 Biodiversity of the EIAR.

No species protected under the Flora (Protection) Order 2022 were identified within the Project Site.

3.3 Invasive Flora

One invasive plant species listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011, as amended) and the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) was recorded during the surveys of the Proposed Wind Farm site. Japanese knotweed (*Reynoutria japonica*) was identified growing on the margins of an unnamed watercourse located along the southwestern boundary of Ticknevin Bog (Plate 3-54). Two large, mature stands were identified in this location, which were flowering at the time of survey. Evidence of local spread was observed, with a number of immature individual saplings recorded up to 120m from the main stands. The Japanese knotweed stands in this location are all located over 380m from the nearest Proposed Project infrastructure, i.e. the Proposed Turbine 31.

The unnamed watercourse drains into the Codd Stream (EPA Code: 14C44). The Codd stream flows in a south westerly direction through The Long Derries, Edenderry SAC.

Several medium to large stands of Japanese knotweed were also identified approximately 830m to the west of the Project Site, along an existing access track in the west of Ticknevin Bog. This access track is used for ongoing turbary activities in the area. Many of these stands were in flower at the time of survey.

The locations of recorded Japanese knotweed are shown in Figure 3-3 below.

During baseline aquatic surveys along the Proposed Grid Connection (see Aquatic Baseline Report, Appendix 2 for detail), the aquatic invasive plant species New Zealand pigmyweed (*Crassula helmsii*) was identified growing occasionally at survey site G2 on the Grand Canal, at Shee Bridge, Co. Kildare. This species is also listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011, as amended) and the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024). No in-stream works are required in this location.

In addition, the non-native invasive plant species cherry laurel (*Prunus laurocerasus*), butterfly bush (*Buddleja davidii*), montbretia (*Crocosmia* x *crocosmiiflora*) and wall cotoneaster (*Cotoneaster horizontalis*) were also each recorded once within the Project Site, in Killina, Glashabaun North, Barnaran and Lodge Bogs, respectively. These species are not listed under the Third or First Schedules and were not recorded within or adjacent to the Proposed Project infrastructure footprint. No invasive species were recorded within the Proposed Turbine Delivery Route accommodation areas.



Plate 3-54 Japanese knotweed (Reynoutria japonica) identified growing in the south of Ticknevin Bog



Plate 3-55 Japanese knotweed (Reynoutria japonica) located along an access track to the west of the Project Site.

665000
670000
675000
730000
725000
720000
N
0 0.5 1 km
0 1.5 3 km

Map Legend

- Project Site
- Proposed Project Infrastructure Footprint
- Japanese knotweed

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



SITE LOCATION - NOT TO SCALE

Drawing Title
Japanese Knotweed Locations

Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	3-3	1:45,000
Drawn By	Checked By	Date
BOC	KB	18/09/2026

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

3.4 Description of Fauna

The following subsections provide the results of the faunal surveys undertaken within the Project Site to inform this AASR and NIS as outlined in Section 1.5.5 (Ecological Surveys).

3.4.1 Birds

Bird survey results were reviewed for species relevant to the assessment of potential impacts on SPAs within the likely ZoI of the Proposed Project (included in Table 4-1). SPAs within the likely ZoI of the Proposed Project (as outlined in Section 1.5.5.5 above) are listed below in addition to approximate distances from the Proposed Project. The distance to the Proposed Wind Farm site is provided, in addition to the distance from the Proposed Grid Connection and/or Proposed Turbine Delivery Route accommodation areas where these areas are located in closer proximity:

- **Slieve Bloom Mountains SPA [004160]** (12.0km from the Proposed Turbine Delivery Route accommodation areas; 27.5km from the Proposed Wind Farm)
- **River Boyne and River Blackwater SPA [004232]** (14.3km from the Proposed Wind Farm)
- **Poulaphouca Reservoir SPA [004063]** (18.5km from the Proposed Offsite Substation; 26.2km from the Proposed Wind Farm)
- **Lough Ennell SPA [004044]** (22.0km from the Proposed Turbine Delivery Route accommodation areas; 26.5km from the Proposed Wind Farm)
- **Wicklow Mountains SPA [004040]** (24.5km from the Proposed Offsite Substation; 32.2km from the Proposed Wind Farm)
- **River Nore SPA [004233]** (29.9km from the Proposed Turbine Delivery Route accommodation areas; 41.8km from the Proposed Wind Farm)
- **Lough Owel SPA [004047]** (32.3km from the Proposed Turbine Delivery Route accommodation areas; 33.8km from the Proposed Wind Farm)

The results of the extensive bird surveys of the Core Ornithology Survey Area undertaken by MKO between April 2020 to March 2026 to inform the AASR and NIS for the Proposed Project were reviewed. Results pertaining to species listed as Special Conservation Interest (SCI) species for the above-mentioned SPAs are described below (a full summary of the ornithological baseline, including non-SCI species is found in Chapter 7 Ornithology of the EIAR submitted with this planning application). Species which were recorded within, flying over or within a 500m radius of the Core Ornithology Survey Area and which are listed as SCIs for these SPAs are:

- Hen harrier (Annex I & SCI species of the Slieve Bloom Mountains SPA)
- Kingfisher (Annex I & SCI species of the River Boyne & River Blackwater SPA & River Nore SPA)
- Lesser black-backed gull (SCI species of Poulaphouca Reservoir SPA)
- Merlin (Annex I & SCI species of Wicklow Mountains SPA)
- Peregrine (Annex I & SCI species of Wicklow Mountains SPA)
- Shoveler (SCI species of Lough Owel SPA)

The results of the detailed bird surveys, including all data and associated maps relating to the above species are provided in Appendix 7 of this AASR and NIS.

The following species are also SCI species of SPAs listed above but were not recorded during the extensive ornithological surveys undertaken between 2020 and 2026:

- Greylag goose (SCI species of Poulaphouca Reservoir SPA)
- Coot (SCI species of Lough Owel SPA and Lough Ennell SPA)
- Pochard (SCI species of Lough Ennell SPA)
- Tufted duck (SCI species of Lough Ennell SPA)

The sections below set summarise the results of the surveys in relation to the relevant SCI species listed above, i.e. hen harrier, kingfisher, lesser black-backed gull, merlin, peregrine and shoveler, under the relevant survey headings.

3.4.1.1 Hen Harrier

Hen harrier were observed in the winter and passage seasons (August to April) with one additional observation of an individual in July 2020. Raw survey data and maps are provided in Appendix 7. Hen harrier is a SCI of the Slieve Bloom Mountains SPA, located 12.0km from the Proposed Turbine Delivery Route accommodation works, and 27.5km from the Proposed Wind Farm site.

Vantage Point Surveys

Hen harrier were observed on 140 occasions during vantage point surveys. Hen harrier were observed on average once every 50 hours of the vantage point survey. Observations were of individuals and the majority were of birds travelling or hunting. Observations were of both male and female birds. There were three observations of birds roosting within the Core Ornithology Survey Area, with birds flushed from a roost in Glashabaun North in January 2024, and different roost in Barnaran in January 2026 and March 2026. The majority of observations were from the passage and winter season months of August to March, with four observations during the breeding seasons, comprising individual birds travelling in May 2020, April 2022 and April 2023. Birds were observed flying at potential collision height on 13 occasions. Of the total 140 observations of hen harrier, 135 were within the Core Ornithology Survey Area and 117 were within 500m of the Proposed Turbines.

Winter Walkover Survey

Hen harrier were observed on 11 occasions during winter walkover surveys (on 7 of 24 survey visits). Observations were of individual birds flushed, perched, hunting or travelling. All observations were within the Core Ornithology Survey Area and four overlapped with the Proposed Project permanent infrastructure footprint.

Hen Harrier Roost Survey

Hen harrier were observed on 54 occasions during hen harrier roost surveys (on average, one observation per 25 hours of survey). The majority of observations were of one or two birds flushed, perched, hunting or travelling. There were 15 observations of birds roosting during hen harrier roost surveys, nine of which were within the Core Ornithology Survey Area and 10 were within 500m of the Proposed Turbines. The roosts were in various locations and no regularly used roost was identified. Of the 54 total observations, 40 were within/partially within the Core Ornithology Survey Area and 38 were within/partially within 500m of the Proposed Turbines.

Incidental Observations

Hen harrier were observed on 17 occasions as incidental observations. Observations comprised individual birds hunting and travelling. Of the 17 observations, nine were within/partially within the Core Ornithology Survey Area and seven were within/partially within 500m of the Proposed Turbines.

Roost Summary

There were 18 observations of hen harrier roosting, with 11 roost locations identified during five of the six winters surveyed. There were no regularly used roosts identified, with roost locations distributed throughout the Core Ornithology Survey Area:

- **Winter 2020/21** – No roosting observed.

- **Winter 2021/22** – Roosting recorded at three areas within, or adjacent to, the Proposed Wind Farm
- **Winter 2022/23** – Roosting recorded at four areas within, or adjacent to, the Proposed Wind Farm
- **Winter 2023/24** – Roosting recorded at one area within, or adjacent to, the Proposed Wind Farm
- **Winter 2024/25** – Roosting recorded at three areas within, or adjacent to, the Proposed Wind Farm
- **Winter 2025/26** - Roosting recorded at one area within, or adjacent to, the Proposed Wind Farm

3.4.1.2 Kingfisher

Kingfisher were observed in the winter and breeding seasons. Raw survey data and maps are provided in Appendix 7. Kingfisher is a SCI of the River Boyne and River Blackwater SPA, and River Nore SPA, which are located 14.3km and 41.8km from the Project Site, respectively. Additionally, the River Boyne and River Blackwater SPA is located at a hydrological distance of 22km from the Project Site. There is no hydrological connectivity between the Project Site and the River Nore SPA.

Vantage Point Surveys

Kingfisher were observed on 28 occasions during vantage point surveys. Kingfisher were observed on average once every 248 hours of the vantage point survey. Observations were of individuals and the majority were of birds calling or travelling. All observations of kingfisher were within the Core Ornithology Survey Area and 27 were within 500m of the Proposed Turbines.

Winter Walkover Survey

Kingfisher were observed on two occasions during winter walkover surveys (on 2 out of 24 survey visits). Observations comprised single birds flushed, perched, foraging and calling. Of the two observations, both were within the Core Ornithology Survey Area but outside the Proposed Project permanent infrastructure footprint.

Breeding Walkover Survey

Kingfisher were observed on 14 occasions during breeding walkover surveys (on 8 out of 24 survey visits). Observations were of one or two birds calling, perched, flushed or travelling. Of the 14 observations, 11 were within the Core Ornithology Survey Area and two overlap with the Proposed Project permanent infrastructure footprint.

Waterbird Distribution and Abundance Survey

Kingfisher were observed on 10 occasions during the waterbird distribution and abundance surveys (on 9 out of 118 survey rounds). Observations comprised of one or two birds travelling and foraging. Observations ranged from 37m to 12km from the Core Ornithology Survey Area.

Incidental Observations

Kingfisher were observed on 23 occasions as incidental observations. Observations comprised individual birds calling, travelling, foraging and perched. Of the 23 observations, 10 were within/partially within the Core Ornithology Survey Area and nine were within/partially within 500m of the Proposed Turbines.

3.4.1.3 Lesser Black-backed Gull

Lesser black-backed gull were observed in the winter and breeding seasons. Raw survey data and maps are provided in Appendix 7. Lesser black-backed gull is a SCI of Poulaphouca Reservoir SPA, which is located 18.5km from the Proposed Grid Connection at its nearest (i.e. the Proposed Offsite Substation) and 26.2km from the Proposed Wind Farm.

Vantage Point Surveys

Lesser black-backed gull were observed on 124 occasions during vantage point surveys. Lesser black-backed gull were observed on average once every 56 hours of the vantage point survey. Observations ranged from 1 to 125 birds with the majority were of birds calling or travelling. There were two observations of birds landing on the ground. The majority of observations were during the breeding season months (66) with 58 observations during winter months. Birds were observed flying at the potential collision height on 48 occasions during the breeding season and on 46 occasions in the winter season. Of the 124 observations of lesser black-backed gull, 86 were within the Core Ornithology Survey Area and 48 were within 500m of the Proposed Turbines.

Winter Walkover Surveys

Lesser black-backed gull were observed on three occasions during winter walkover surveys (on 2 out of 24 survey visits). Observations ranged from three to four birds, with two of observations comprising birds travelling and one observation of birds wading on the ground. All observations were within the Core Ornithology Survey Area and none overlapped with the Proposed Project permanent infrastructure footprint.

Breeding Walkover Surveys

Lesser black-backed gull were observed on 20 occasions during breeding walkover surveys (on 7 out of 24 survey visits). Observations were of birds travelling, ranging from 1 to 48 birds. Of the 20 observations, 13 were within the Core Ornithology Survey Area and nine overlapped with the Proposed Project permanent infrastructure footprint.

Waterbird Distribution and Abundance Surveys

Lesser black-backed gull were observed on 40 occasions during the waterbird distribution and abundance surveys (on 33 out of 118 survey rounds). Observations were of birds calling, travelling, foraging, wading and roosting. Of the 40 observations, six were within the Core Ornithology Survey Area and four were within 500m of the Proposed Turbines, with off-site observations up to 4.3km from the Core Ornithology Survey Area.

Incidental Observations

Lesser black-backed gull were observed on 70 occasions as incidental observations. Observations ranged from one to 203 birds and comprised of birds travelling, circling, foraging and roosting. Of the 70 observations, 15 were within/partially within the Core Ornithology Survey Area and 11 were within 500m of the Proposed Turbines.

3.4.1.4 Merlin

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

Merlin are an SCI species of Wicklow Mountains SPA, which is located 24.5km from the Proposed Grid Connection and its nearest point (i.e., the Proposed Offsite Substation) and 32.2km from the Proposed Wind Farm site.

Vantage Point Surveys

Merlin were observed on 35 occasions during vantage point surveys. Merlin were observed on average once every 199 hours of the vantage point survey. The majority observations were of individuals. Two birds were observed chasing each other in September 2020, possibly indicating that these are juveniles or an adult and juvenile bird. Juvenile birds were also observed on two occasions, in September 2022 and December 2024. Given that these juveniles were observed during the passage and winter seasons, it is most likely that these birds are part of the wintering population and originated from breeding territories some distance from the Core Ornithology Survey Area. The majority of observations were of birds travelling or hunting. Observations were of both male and female birds. The majority of observations were from the passage and winter season months of August to March, with two observations during the breeding seasons, comprising individual birds hunting and travelling in July 2023 and April 2024. Birds were observed flying at potential collision height on two occasions. Of the total 35 observations of merlin, 33 were within the Core Ornithology Survey Area and 19 were within 500m of the Proposed Turbines.

Winter Walkover Survey

Merlin were observed on 15 occasions during winter walkover surveys (on 9 out of 24 survey visits). Observations were of individuals travelling, perched or hunting. Of the 15 observations, 13 were within the Core Ornithology Survey Area and one overlapped with the Proposed Project permanent infrastructure footprint.

Breeding Walkover Survey

Merlin were observed on three occasions during breeding walkover surveys (on 3 out of 24 survey visits). Observations were of individuals hunting or travelling. All observations were within the Core Ornithology Survey Area and two overlapped with the Proposed Project permanent infrastructure footprint.

Incidental Observations

Merlin were observed on 43 occasions as incidental observations. Observations comprised individual birds hunting, perched and travelling. Of the 43 observations, 19 were within/partially within the Core Ornithology Survey Area and 16 were within/partially within 500m of the Proposed Turbines.

3.4.1.5 Peregrine

Peregrine were observed in the winter and breeding seasons. Raw survey data and maps are provided in Appendix 7. Peregrine are an SCI species of Wicklow Mountains SPA, which is located 24.5km from the Proposed Grid Connection at its nearest point (i.e. the Proposed Offsite Substation) and 32.2km from the Proposed Wind Farm site.

Vantage Point Surveys

Peregrine were observed on 84 occasions during vantage point surveys. Peregrine were observed on average once every 83 hours of the vantage point survey. Observations were of one or two birds, with the majority of observations of travelling or hunting. There were five observations of breeding activity, all within the Core Ornithology Survey Area. A female bird was observed carrying prey in March 2022, flying in a southwest direction away from the known nest site. This indicates a second confirmed

breeding territory, with the most probable location within a quarry approximately 1.7km from the Core Ornithology Survey Area. A bird was observed displaying in the west of the Proposed Wind Farm site in July 2022 and a juvenile was observed in July 2022, confirming successful breeding at a nest box in 2022. In June 2024, two birds were observed chasing each other, indicating a probable breeding territory in the area. There were two observations of peregrine mobbing other birds, once in March 2025 and once in January 2026. All of which are assumed to be related to the known pair that are resident at the nest box located approximately 600m from the Core Ornithology Survey Area. Birds were observed flying at potential collision height on 35 occasions. Of the total 84 observations of peregrine, 76 were within the Core Ornithology Survey Area and 50 were within 500m of the Proposed Turbines.

Winter Walkover Survey

Peregrine were observed on six occasions during winter walkover surveys (on 4 out of 24 survey visits). Observations were of one or two birds, with the majority of observations comprising birds travelling or perched. There was one observation of a bird mobbing in October 2024, however this is not considered to indicate breeding activity due to the timing of the observation. Of the six observations, five were within the Core Ornithology Survey Area and one overlapped with the Proposed Project permanent infrastructure footprint.

Breeding Walkover Survey

Peregrine were observed on eight occasions during breeding walkover surveys (on 7 out of 24 survey visits). Observations were of one or two birds, the majority of which were of birds hunting or travelling. There was one observation of two adults perched at the known nest site 600m from the Core Ornithology Survey Area. Of the eight observations, seven were within the Core Ornithology Survey Area and two overlapped with the Proposed Project permanent infrastructure footprint.

Breeding Raptor Survey

Peregrine were observed on 97 occasions during breeding raptor surveys (on 19 out of 24 survey visits). Observations were of between one and three birds, the majority of which were of birds travelling or perched. All observations were outside the Core Ornithology Survey Area and beyond 500m of the Proposed Turbines.

There were several observations of breeding behaviour, largely located at a nest box located 600m from the Core Ornithology Survey Area. In 2020, there were 29 observations confirming breeding at this nest box site (including food provisioning and observation of juveniles). In 2021, there was one observation of behaviour indicating probable breeding at this nest box site (adult pair perched at nest site). In 2022, there were 13 observations of breeding behaviour at the nest box, including observations confirming breeding (food provisioning and observations of juveniles). There was one further observation in July 2024 of two birds mobbing, indicating probable breeding and likely associated with the second territory, 1.7km from the Core Ornithology Survey Area. In 2023, there were six observations of breeding behaviour at the nest box, including observations confirming breeding (food provisioning). In 2024, there were three observations of behaviour indicating probable breeding at the nest box (adult perched at nest site). In 2025, there were three observations of breeding behaviour at the nest box site, including an observation confirming breeding at the nest box (observation of juveniles).

Incidental Observations

Peregrine were observed on 50 occasions as incidental observations. Observations were of between one and three birds and the majority of observations comprised birds hunting, perched and travelling. There were two observations of juvenile birds, confirming breeding in 2020 and 2023. There were also

two observations of birds carrying prey, however these are not considered to indicate breeding activity due to the timing of the observations (December 2023 and February 2026) and were likely of birds travelling to a regular plucking post. Of the 50 observations, 13 were within/partially within the Core Ornithology Survey Area and 10 were within/partially within 500m of the Proposed Turbines.

Breeding Summary

A nest box was observed to be utilised by a breeding pair in 2020, 600m from the Core Ornithology Survey Area. Breeding at this location was confirmed in 2020, 2022, 2023 and 2025 and probable in 2021 and 2024. An additional confirmed territory was identified in 2022, 1.7km from the Core Ornithology Survey Area, with probable breeding at this location again in 2024.

3.4.1.6 Shoveler

Shoveler were observed in the winter season. Raw survey data and maps are provided in Appendix 7. Shoveler are an SCI species of Lough Owel SPA, which is located 33.8km from the Proposed Wind Farm.

Waterbird Distribution and Abundance Survey

Shoveler were observed on one occasion during the waterbird distribution and abundance surveys (on 1 out of 118 survey rounds). The observation comprised of four birds feeding, 74m from the Project Site and 876m from the nearest Proposed Turbine.

3.4.2 Otter

As outlined in Section 1.5.5.2 above, otter are a QI of both the River Barrow and River Nore SAC and the River Boyne and River Blackwater SAC, which have been identified as being located within the likely ZoI of the Proposed Project, following the methodology outlined in Section 1.5.1.2.

Desk-based review identified that otter (*Lutra lutra*) are widespread in wider area surrounding the Proposed Project. Watercourses within the Project Site, including those crossed by the Proposed Grid Connection underground electrical cabling route provide suitable habitat for otter.

Potential otter slides were identified near watercourse crossing (WC-WF-15) located northeast of Proposed Turbine 9 in July 2024 (refer to Figure 3-4 below), however following a detailed search, no holts, spraints, couches or any other evidence of breeding otter were identified within this area.

An individual otter was observed as an incidental record during ornithological surveys on a single occasion in October 2024, to the southwest of the Proposed Onsite Substation, within a large drain through Lodge Bog. Detailed otter surveys were undertaken along the length of this drain and it was found to have high suitability for otter, however no breeding or resting sites were identified along this drain during any of the surveys undertaken.

Otter prints were also identified along the margins of a drain in Glashabaun South Bog in March 2025, however no further signs, including breeding or resting sites were identified in this location during any of the surveys undertaken.

Additionally, a regular otter sprainting site was identified on a number of stones beneath Shee Bridge on the Grand Canal in August 2025, at the location of proposed watercourse crossing WC-GCR-02 along the Proposed Grid Connection underground electrical cabling route. This spraint site is located approximately 200m from the proposed HDD location, and approximately 20m from the Proposed Grid Connection underground electrical cabling route within the R403 regional road. Otter spraint and

feeding remains (fish scales and fins) were also identified at a second location approximately 350m to the west of the proposed HDD location.

During the aquatic baseline surveys in 2026, Triturus Environmental Ltd. also surveyed 42 no. aquatic survey locations within and downstream of the Project Site for otter, including each proposed watercourse crossing along the Proposed Grid Connection underground electrical cabling route. The following should be read in conjunction with Figure 2.1 (survey locations) in the Aquatic Baseline Report (Appendix 2) and Table 1-5 above. The following evidence of otter was recorded during the surveys undertaken by Triturus in 2021, 2024 and 2026:

- An inactive otter holt was identified at survey site A9, on the east bank of an unnamed stream at Lullybeg within the Proposed Wind Farm site. This is located over 170m from the proposed hardstand associated with Proposed Turbine 36, 135m from the proposed peat and spoil area associated with Proposed Turbine 36, and 100m from the proposed scrub mosaic creation area. As identified by Triturus Environmental Ltd., this holt was unused by otters at the time of survey. This inactive holt is located over 25km upstream of the River Barrow and River Nore SAC.
- In 2021, an otter holt and spraint site were identified in a pipe culvert near the Codd River crossing of the local L1001 road. This is located approximately 550m from the nearest Proposed Project infrastructure i.e. Proposed Turbine 23. During a follow-up site visit in September 2026 the pipe culvert was no longer found to be in use by otter and no signs of otter in this area were observed. . The pipe culvert is located over 25km upstream of the River Barrow and River Nore SAC.
- A fresh otter spraint site and slide were identified at survey site A12b (Lullybeg Stream) in 2026. This survey site is located within the Proposed Wind Farm site at the location of proposed watercourse crossing WC-WF-14 associated with a proposed internal site access track. No holts, couches or any other evidence of breeding otter were identified within 150m of this location.
- A regular otter spraint site was identified at survey site A14a (Cushaling Bridge, Figile River), under the bridge in 2021, 2024 and 2026, indicating continual use of this watercourse by otter. This survey site is located within the Project Site along the L3001 road. No works are proposed within 1.0km of the location of this spraint site.
- An otter spraint was recorded at survey site A15a (Figile River, Kilcumber), on a boulder under the bridge in 2026. While this location was not surveyed in previous years, an otter spraint site and otter prints were recorded at Kilcumber Bridge approximately 0.8km downstream of this location in 2024 and 2021, respectively, indicating continual use of this watercourse by otter. Survey site A15a is located within the Proposed Wind Farm site along at the location of proposed watercourse crossing WC-WF-06 associated with a proposed internal site access track. No holts, couches or any other evidence of breeding otter were identified within 150m of this spraint location.
- A mixed aged otter spraint site was identified at survey site A18 (Figile River, Millgrove Bridge) in 2026. This survey site is located outside of and approximately 4.9km downstream of the Project Site.
- A regular otter spraint site was identified on a pipe culvert lip below the local road crossing of the L10032 in 2021. This site was not resurveyed in 2024 or 2026, however no otter signs were recorded at survey site A16 in 2024 or 2026, which is located approximately 760m downstream of the spraint site. This spraint site was located outside of and approximately 1.8km downstream of the Project Site.
- A regular otter spraint site was identified on a large boulder at the mouth of the Ballygarret River in 2021. This site was not resurveyed in 2024 or 2026, however no otter signs were recorded at survey sites A16 or A17 in 2024 or 2026, which are located approximately 0.9km and 1.4km upstream of the spraint site, respectively. This spraint site is located outside of and approximately 3.5km downstream of the Project Site.

- A latrine and prints were identified at survey site B2 (Kishawanny Bridge, River Boyne) in marginal mud underneath the bridge in both 2021 and 2024. This survey location is situated outside of and approximately 4.3km downstream of the Project Site. No otter signs were identified in this location during the surveys undertaken in 2026.
- A spraint site was identified in the vicinity of the bridge at survey site C2 (Agar Bridge, Slate River) in 2021 and 2024. This survey location is located outside of, and approximately 3.6km downstream of, the Project Site. No otter signs were identified in this location during the surveys undertaken in 2026.
- A regular otter spraint site was identified at survey site G1 (Allenwood South, Killinagh Upper Stream) in 2024, on a concrete plinth under the bridge structure, with three-spined stickleback and small mammal remains. Two recently-used otter spraint sites were also recorded on the bridge ledge in this location in 2021. This survey site is located at a watercourse crossing associated with the Proposed Grid Connection underground electrical cabling route. No otter signs were identified in this location during the surveys undertaken in 2026.
- A regular otter spraint site was identified at survey site G5 (Quigley's Bridge, Slate River), under the bridge in 2024. This survey site is located at a watercourse crossing associated with the Proposed Grid Connection underground electrical cabling route. No otter signs were identified in this location during the surveys undertaken in 2026.

All otter signs are shown in Figure 3-4 below, excluding the location of the inactive holt identified in 2026 and the holt identified in a pipe culvert in 2021 which was identified in 2026 as being no longer in use as a holt. These are shown in Confidential Appendix 6-6 of the EIAR which accompanies this planning application.

660000 665000 670000 675000

735000 730000 725000 720000

Map Legend

- Project Site
- Proposed Project Infrastructure Footprint
- Latrine and Prints
- Prints
- Sighting
- Slide
- Spraint
- Spraint and slide
- Spraint and Feeding remains
- Spraint and Prints
- WFD Watercourses

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

N

SITE LOCATION - NOT TO SCALE

0 3 6 km

Drawing Title
Otter Signs

Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	3-4	1:70,000
Drawn By:	Checked By	Date
JG	CF	22/10/2026

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

3.4.3 Marsh Fritillary

As outlined in Section 1.5.5.3 above, marsh fritillary are a QI of Ballynafagh Lake SAC, which is crossed by the Proposed Grid Connection underground electrical cabling route. In addition, an information request was also sent to the NPWS scientific data unit requesting records from the Rare and Protected Species Database on the 7th of May 2026. A response was received on the 12th of May 2026, which noted records of marsh fritillary from hectad N62.

Suitable marsh fritillary habitat within the Project Site was identified and mapped during multi-disciplinary ecological walkover surveys. Dedicated marsh fritillary larval web surveys were undertaken within the suitable habitat within the Project Site in 2024 and 2025.

Active larval webs were identified in nine key areas across the Proposed Wind Farm site during surveys undertaken in 2024 and 2025, in Ballydermot North, Ballydermot South, Barnaran, Blackriver, Glashabaun North, Glashabaun South, Lodge, Lullybeg, Lullymore and Ticknevin Bogs. Over 200 larval webs were identified in 2024 and over 180 in 2025. Several of those recorded in 2025 were noted as being wet and rotten, indicating their possible failure due to seasonal wet weather.

A core population was identified within Lullybeg Nature Reserve and surrounding suitable habitat to the south and east, as well as to the south of Lullymore West Nature Reserve. Adult marsh fritillary butterflies were also recorded within Lullybeg Nature Reserve during multi-disciplinary ecological walkover surveys undertaken in this area in May 2026. Populations were also identified to the north and west of Proposed Turbine 29, north of Proposed Turbine 32, to the south of the proposed access road to the Proposed Onsite Substation, south of the proposed road adjoining Proposed Turbines 1 and 6, and northeast of Proposed Turbine 9, with sparse individual records also recorded within small areas of suitable habitat to the northeast of Proposed Turbine 13, west of Proposed Turbine 17 and southeast of Proposed Turbine 41.

Additional areas of suitable habitat were identified to the north of Proposed Turbine 2, northwest of Proposed Turbine 26 and at the location of Proposed Turbine 15, however no larval webs were located in these areas.

Two larval web was located within the footprint of the Proposed Project, one at the location of the Proposed Onsite Substation access road, and a second to the west of Turbine 17. Three webs were located adjacent to (within 10m of) the proposed infrastructure, one to the west of Proposed Turbine 17 and two to the southeast of Proposed Turbine 41.

Habitat condition assessments for marsh fritillary were also undertaken within each area of identified suitable habitat for marsh fritillary within the Project Site. Of these, several of the areas within Lullybeg, Lullymore Blackriver, Ticknevin and Glashabaun North Bogs were assessed as being in *Good Condition* per NBDC guidelines due to the relative abundance of devil's-bit scabious (*Succisa pratensis*), the larval foodplant, as well as well-structured vegetation and a low cover of scrub. Larval webs were abundant within these habitat areas. Several areas were also classified as *Suitable (Under-grazed),* particularly in Barnaran, Codd 2 and Lodge Bogs and in marginal habitat areas bordering scrub or heath, as there was an abundance of devil's-bit scabious, however the vegetation structure was generally tall (>25cm) and unstructured. Larval webs were also recorded within these areas. Very small pockets of marsh fritillary suitable habitat in Lullybeg, Barnaran, Codd 2 and Ballydermot South Bogs were also classified as *Unsuitable* due to a low abundance of devil's-bit scabious within generally tall (>25cm) swards. No larval webs were identified within these unsuitable habitats.

Marsh Fritillary are a QI species of Ballynafagh Lake SAC. However, given the intervening distance between the SAC and the records recorded within the Project Site (i.e. over 7.7km at their nearest), and what is known of the species' dispersal abilities (Fowles, 2003; NPWS, 2025c) they are not considered to be associated with the SAC population.



Plate 3-56 Marsh fritillary larval web identified adjacent to the proposed access road to the Proposed Onsite Substation



Plate 3-57 Adult marsh fritillary butterfly recorded in Lullybeg Nature Reserve within the Project Site, May 2026

3.4.4 Desmoulin's Whorl Snail

Desktop records for Desmoulin's whorl snail (*Vertigo moulinsiana*) were returned from the desktop search of the NBDC database from hectads N72 and N82. In addition, an information request was also sent to the NPWS scientific data unit requesting records from the Rare and Protected Species Database on the 7th May 2026. A response was received on the 12th May 2026, which also noted records of Desmoulin's whorl snail from hectads N72 and N82. The majority of these records are historical in nature, dating from before the year 2000. Historical records are known from the Grand Canal at Cloncurry, with the most recent record from this location dating from 1995. The most recent records for the species are associated with Ballynafagh Lake SAC, for which this species is designated. In addition, there is reporting available on the occurrence of this species within Ballynafagh Lake SAC (see Brophy *et al.,* 2025; Long and Brophy, 2019; Moorkens and Killeen, 2011).

No dedicated surveys for this species were undertaken during the ecological surveys for the Project Site, as no areas of suitable habitat were identified during the multidisciplinary surveys within the likely ZoI of the Proposed Project. The precautionary principle was adopted in the writing of this AASR and NIS, and as such the lack of dedicated surveys for this species is not considered to be a limitation.

3.4.5 Fisheries and Aquatic Fauna

Full details of results of aquatic surveys undertaken in August 2026 are provided in the Aquatic Baseline Report (Appendix 2) and are summarised in this section. The results of aquatic surveys undertaken during 2021 and 2024 in relation to the Project Site were also considered in this report. All survey locations (n=42) (41 no. riverine sites and 1 no. canal site) are shown in Figure 2.1 of the Aquatic Baseline Report. The following summary has been extracted from the baseline report. In addition, as noted in Section 1.5.5.2, otter surveys were also conducted.

3.4.5.1 Watercourses

The surveyed watercourses in the vicinity of the Project Site were typically small lowland channels draining areas of peatland that experienced low summer flows. Historical drainage pressures (straightening, deepening) and ongoing peat escapement (siltation) had significantly reduced the quality of aquatic habitats and biological water quality on the majority of surveyed watercourses. In keeping with previous 2021 and 2024 surveys, several species of high conservation value were recorded in the survey area, including Atlantic salmon, lamprey (*Lampetra* sp.) and otter (summarised in Section 3.4.2).

Blackwood Feeder Canal

Aquatic survey site G7 is located on the Blackwood Feeder at the R403 road at the location of the underground cabling connection crossing of the feeder canal, which forms part of the Proposed Grid Connection. This survey site is located within the Ballynafagh Lake SAC [001387]. The artificial Grand Canal supply was partially filled-in during the 1940s although still maintains an ecological link between Ballynafagh Lake and the Grand Canal, which it joins near Bonynge Bridge (NPWS, 2021b). The channel at the road crossing was 4-6m and dry at the time of survey with no aquatic habitats present during surveys in either 2026 or 2024 (this location was not surveyed in 2021). The channel was heavily scrubbed and encroached by terrestrial vegetation. The riparian areas supported mature elder (*Sambucus nigra*), grey willow (*Salix cinerea*), hawthorn (*Crataegus monogyna*), sycamore (*Acer pseudoplatanus*), osier (*Salix viminalis*) and ash (*Fraxinus excelsior*).



Plate 3-58 Blackwood feeder canal at aquatic survey site G7, August 2026

3.4.5.2 Fish Species

The following paragraphs summarise the fish species that were recorded during the aquatic baseline surveys, with respect to QIs of SACs within the likely ZoI of the Proposed Project as outlined in Section 1.5.5.4 above. The below paragraphs should be read in conjunction with Figure 2.1 (survey locations) in the Aquatic Baseline Report (Appendix 2). Siltation and eutrophication pressures were significant throughout much of the survey area and were evidently contributing to a reduction in the quality of fisheries habitat, particularly for salmonids and lamprey:

- Annex II **Atlantic salmon** (*Salmo salar*) was only recorded during electrofishing surveys at a single location in 2026, at site A18 on the Figile River (Millgrove Bridge) where salmon parr were identified. Atlantic salmon were also recorded via electrofishing in this location in 2024, and at site C2 on the Slate River (Agar Bridge) in both 2021 and 2024. Additionally, in 2026 Atlantic salmon were detected at site A15a on the Figile River, site B2 on the River Boyne and site C2 on the Slate River via eDNA sampling (Atlantic salmon were not tested for as part of eDNA sampling in 2024). All are watercourses known to support the species in low numbers.
- **Lamprey ammocoetes** (*Lampetra* sp.) were recorded via electrofishing in 2026 in two locations, at site G5 on the Slate River (Quigley's Bridge) and on the River Boyne at Kishawanny Bridge (B2) in medium and high densities, respectively. Lamprey were also recorded at survey site B2 on the River Boyne in both 2021 and 2024, where low densities were present. Additionally, in 2026 lamprey were detected at sites A15a and A18 on the Figile River and site C2 on the Slate River via eDNA sampling (lamprey were not tested for as part of eDNA sampling in 2024). The quality of lamprey habitat was generally poor across the survey area given widespread hydromorphological and siltation pressures.

Invasive Fish Species

A number of invasive faunal species listed on the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) and the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011, as amended) were also recorded during the baseline aquatic surveys.

The invasive fish species roach (*Rutilus rutilus*) was recorded during electrofishing surveys on the Figile River at aquatic survey site A18 at Millgrove Bridge. In 2024, this species was also recorded on the Figile River at survey sites A14a at Cushaling Bridge and 0.8km downstream of survey site A15 at Kilcumber Bridge. Roach were also recorded from survey sites along the Figile River and River Boyne in 2021.

Invasive dace (*Leuciscus leuciscus*) was recorded on the Figile River at survey sites A14a, A15a and A18 in 2026. In 2024, this species was also recorded at survey site A18 as well as 0.8km downstream of survey site A15 at Kilcumber Bridge, and site C2 on the Slate River at Agar Bridge. Dace was also recorded at survey sites along the Figile and Slate Rivers in 2021, indicating their continual presence within these watercourses. Although established in Ireland, both roach and dace are invasive cyprinid species listed on the Third and First Schedules.

3.4.5.3 White-clawed Crayfish and Crayfish Plague

Despite local habitat suitability and numerous available records within the area, including on the Figile and Slate rivers (1986-2020), no white-clawed crayfish were recorded via hand-searching or sweep netting of instream refugia at any of the aquatic survey sites in 2026, 2024 or 2021. As per the previous surveys in 2024, eDNA sampling of the Figile, Boyne and Slate rivers failed to detect the species in the survey area. Examination of otter spraint also did not reveal the presence of crayfish remains on the Figile River or Lullybeg Stream.

However, as outlined within the Aquatic Baseline Report (Appendix 2), eDNA sampling of the Figile River at Kilcumber Bridge in 2025 detected white-clawed crayfish (Triturus data) and sampling of the Figile near Bracknagh in 2020 as part of the National Crayfish Plague Surveillance Programme (NCPSP) also detected crayfish. Although most crayfish records within the wider survey area are from 2015 or before (NPWS, EPA & Triturus data), it would appear a small remnant crayfish population persists in the Figile sub-catchment.

3.4.5.4 eDNA Analysis

No white-clawed crayfish or freshwater pearl mussel eDNA was detected in 2026 or 2024 from composite water samples collected from sites A15a (in 2024 a survey location approximately 0.8km downstream of survey site A15a) and A18 on the Figile River, B2 on the River Boyne or site C2 on the Slate River. These results were considered as evidence of the species' absence at or upstream of the sampling locations in 2026 and 2024. Crayfish plague was also tested for in 2024 and no positive qPCR replicates were identified, indicating the absence of crayfish plague at or upstream of these survey locations.

As outlined in Section 3.4.5.2 above in relation to fish species, Atlantic salmon were detected at sites A15a, B2 and C2 and lamprey (*Lampetra* sp.) were recorded at survey sites A15a, A18 and C2 via eDNA sampling. Neither Atlantic salmon nor lamprey were tested for as part of eDNA sampling in 2024.

3.4.5.5 Biological Water Quality and Macro-Invertebrates

None of the survey sites achieved greater than Q3 (poor status) in 2026. With the exception of survey site A10a on the Lullymore East stream (which achieved **Q2 (bad status)** given the dominance of Group D *Asellus aquaticus*), all riverine sites supporting aquatic habitats (29 in total) achieved **Q2-3 or Q3 (poor status)** based on an absence of group A species, an absence or low numbers of group B species and a dominance of pollution-tolerant group C and D species such as the mayfly *Baetis rhodani*, freshwater shrimp (*Gammarus duebeni*) and freshwater hoglouse (*Asellus aquaticus*).

Thus all failed to meet the target good status (≥Q4) requirements of the European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2019 and the Water Framework

Directive (2000/60/EC). The biological water quality results were highly similar to the previous 2024 and 2021 surveys where all sites except one achieved ≤Q3.

However, the ratings for the majority of survey sites (20 in total) were tentative in 2026 due to poor flows and or an absence of suitable riffle areas for sampling (as per Toner *et al.,* 2005). A total of 10 no. sites on the Codd River (A3, A4), Ballykilleen Stream (A15b), Clonbullogue River (A16), Ballygarrett River (A17), Slate River (G6, G8), Blackwood Feeder (G7), Brockagh River (G9), an unmapped channel (G10) and an unnamed stream (G11) were dry at the time of survey and thus could not be sampled for aquatic macro-invertebrates

In general, the biological water quality of the survey area was of poor status (Q2-3 or Q3) with significant siltation, eutrophication and hydromorphological impacts evidently contributing to a reduction in aquatic habitat quality.

3.5 Baseline Hydrology and Hydrogeology

The following sections have been summarised from the hydrological and hydrogeological assessment carried out for Chapter 9 Water of the accompanying EIAR (included here as Appendix 5) where pertinent in the assessment of potential effects on European Sites.

3.5.1 Local and Regional Hydrology

3.5.1.1 Proposed Wind Farm

Within the Study Area for water, the vast majority of the Proposed Wind Farm site is located in the River Barrow surface water catchment within Hydrometric Area 14 of the South-Eastern River Basin District. A small area in the north of Ticknevin Bog is located in the River Boyne surface water catchment within Hydrometric Area 07 of the Eastern River Basin District. All surface waters draining the Project Site eventually discharge to the River Boyne or the River Barrow, of which sections of both rivers form part of designated sites: the River Boyne and Blackwater SAC [002299] and the River Barrow and River Nore SAC [002162]. A regional hydrology map is shown in Figure 3-5.

Regionally, within the River Barrow surface water catchment, the Proposed Wind Farm site is located in 3 no. river sub-catchments. The majority of the Proposed Wind Farm site is located within the Figile_SC_010 river sub-catchment, the southwest is located within the Figile_SC_020 river sub-catchment and the south/southeast is located within the Slate_SC_010 river sub-catchment.

Within the Figile_SC_010 river sub-catchment, the Proposed Wind Farm site is mapped in 3 no. WFD river sub-basins: the Abbeylough_010, Figile_020 and Figile_030 WFD river sub-basins.

- Within the Abbeylough_010 WFD river sub-basin, the Abbeylough Stream (EPA Code: 14A01) flows to the west along the northern boundary of Derrybrennan Bog where it discharges into the Figile River (EPA Code: 14F01).
- Within the Figile_020 WFD river sub-basin, the Figile River flows to the west, between Glashabaun South and Glashabaun North bogs. A tributary of the Figile River, referred to by the EPA as the Lullymore East Stream (EPA Code: 14L11) is mapped to flow to the west from the western boundary of Lodge Bog. This stream dissects the northern sections of Lullymore and Lullybeg bogs and forms the boundary between Blackriver Bog to the west and Glashabaun South Bog to the east before it discharges into the Figile River. A smaller stream, referred to by the EPA as the Lullybeg Stream (EPA Code: 14L13), flows around the eastern, southern and western perimeter of Lullybeg Bog before it discharges into the Lullymore East Stream. Another stream, assigned the same name (Lullybeg) on the EPA database, flows from south to north through the western section of Blackriver Bog before it discharges into the Figile River.

- Within the Figile_030 WFD river sub-basin, the Figile River flows to the northwest, separating Codd 1 in the south from Codd 2 in the north. A small tributary of the Figile River, the Clonbrown Stream (EPA Code: 14C32) is mapped to flow to the north along the eastern boundary of Ballydermot North Bog before it discharges into the Figile River close to the east of Codd 1 Bog. The EPA also map a stream referred to as the Cloncant Stream (EPA Code: 14C41) to flow to the southwest, dissecting Codd 2 Bog before discharging into the Figile River. Further north, Ticknevin Bog is drained by 2 no. streams which merge at its southern boundary to form the Codd Stream (EPA Code: 14C44). The Codd stream flows in a south westerly direction through The Long Derries, Edenderry SAC [000925]. The Codd Stream flows to the south, along the northwestern boundary of Glashabaun North before it flows to the west and discharges into the Ballyleakin Stream (EPA Code: 14B22). This stream discharges into the Figile River to the northwest of Codd 1 Bog.

Within the Figile_SC_020 river sub-catchment, the Proposed Wind Farm site is mapped within the Figile_050 WFD river sub-basin. Within this WFD river sub-basin Figile River is mapped to flow to the south approximately 2km west of the Proposed Wind Farm site. Several streams are mapped to originate at the western boundary of the Proposed Wind Farm site. The Clonbullogue Stream (EPA Code: 14C53) to the west of Ballydermot North Bog and the Ballygarrett Stream (EPA Code: 14B30) to the west of Ballydermot South Bog. These streams merge just upstream of their confluence with the Figile River.

Within the Slate_SC_010 river sub-catchment, the Proposed Wind Farm site is mapped within the Slate_050 and Slate_060 WFD river sub-basins. Within the Slate_050 WFD river sub-basin, the Killinagh Upper Stream (EPA Code: 14K17) is mapped to flow along the southeastern boundary of Lodge Bog before it discharges into the Slate River (EPA Code: 14S01). A second tributary of the Slate River is mapped to originate at the western boundary of Lodge Bog, referred to by the EPA as the Drumsru Stream (EPA Code: 14D19). The Slate River flows to the southwest, approximately 80m from the south of Lodge Bog. Within the Slate_060 WFD river sub-basin, the Slate River is located ~1km south of Barnaran Bog. There are no watercourses mapped in the immediate vicinity of the Proposed Wind Farm site within this WFD river sub-basin.

Further downstream, the Slate River flows through Rathangan and confluences with the Figile River approximately 6.6km southwest of the Proposed Wind Farm site. The Figile River continues to flow to the south before it discharges into the River Barrow to the north of Monasterevin.

Within the River Boyne surface water catchment, the Proposed Wind Farm site is located within the Boyne_SC_010 river sub-catchment and the Boyne_010 WFD river sub-basin. The Clonkeen Stream (EPA Code: 07C36) is mapped to flow along the northern boundary of Ticknevin Bog before it flows to the northwest and discharges into the River Boyne (EPA Code: 07B04) approximately 2km north of the Proposed Wind Farm. The River Boyne continues to flow to the northwest before it veers to the northeast close to its confluence with the Yellow River (approximately 7km northwest of the Proposed Wind Farm).

The accommodation works along the Proposed Turbine Delivery Route are located in the Figile_010, Figile_020 and Tullamore_010 river sub-catchments. The Proposed Turbine Delivery Route accommodation works are generally distant from any EPA mapped watercourses and outside of the 50 metre hydrological buffer zones. However, a works area is located approximately 30m southeast of the EPA mapped Rathvilla or Rathclonbrackan Stream (EPA Code: 14R12). All other works areas are located in excess of 50m from natural watercourses.

For the purposes of this AASR and NIS, the names of rivers and streams correspond to those assigned in the EPA database. Some watercourses are identified by different names on local basemaps and OSI Discovery Series mapping. For example, the Figile River is referred to as the Cushaling River along the section of river flowing between Glashabaun North and Glashabaun South bogs. Similarly, the Lullybeg Stream which flows around the perimeter of Lullybeg Bog, is also known as the Crabtree River, while the Lullybeg Stream within Blackriver Bog is referred to as the Black River. The EPA nomenclature is

used throughout this NIS as it represents the most up to date and authoritative hydrological database available within Ireland.

3.5.1.2 Proposed Grid Connection

Within the Study Area for water, the vast majority of the Proposed Grid Connection underground cabling route and the Proposed Onsite Substation are located in the River Barrow surface water catchment. A small area in the east of the Proposed Grid Connection, including the Proposed Offsite Substation, is located in the Liffey and Dublin Bay surface water catchment within Hydrometric Area 09 of the Eastern River Basin District.Regionally, within the River Barrow surface water catchment, the majority of the Proposed Grid Connection is located in Slate_SC_010 river sub-catchment with a very small area in the west mapped within the Figile_SC_010 river sub-catchment. Within the River Liffey and Dublin bay surface water catchment, the Proposed Grid Connection is located in Liffey_SC_050 river sub-catchment.

Within the Slate_SC_010 river sub-catchment, the Proposed Grid Connection is mapped in 5 no. WFD river sub-basins: the Slate_010, Slate_020, Slate_030, Slate_040 and Slate_050 WFD river sub-basins. There are a total of 11 no. watercourse crossings within this sub-catchment (7 no. crossings over EPA mapped watercourses, 1 no. crossing under the Grand Canal and 3 no. crossings over unmapped watercourses). These crossings are detailed in Sections 2.3.2.8 and 3.1.7.4 above and listed below:

- Within the Slate_050 WFD river sub-basin, the Proposed Grid Connection underground cabling route crosses the EPA mapped Killinagh Upper Stream (EPA Code: 14K17) along the R414 at an existing stone arch bridge. This stream flows to the south before discharging into the Slate River (EPA Code: 14S01).
- Within the Slate_050 WFD river sub-basin, the Proposed Grid Connection underground cabling route is mapped to cross the Grand Canal Main Line East (Barrow) approximately 200m to the west of Shee Bridge. The proposed crossing will utilise HDD and will not interact with Shee Bridge.
- Within the Slate_040 WFD river sub-basin, the Proposed Grid Connection underground cabling route crosses the Upper Ballynakill Stream (EPA Code: 14U09) to the east of Allenwood along the R403 at an existing clear span bridge.
- There is an additional stone arch bridge crossing over a watercourse which is not included in the EPA database within the Slate_040 WFD river sub-basin. This crossing is located approximately 700m east of the Upper Ballynakill Stream along the R403.
- Within the Slate_020 WFD river sub-basin, the Proposed Grid Connection underground cabling route crosses the Slate River (EPA Code: 14S01) along the R403 at Quigley's Bridge (Stone Arch Bridge).
- There are also an additional 2 no. EPA mapped crossings over the Slate River to the east of Quigley's Bridge (Whilst these crossings are mapped by the EPA – no crossings were recorded during surveys of the Proposed Grid Connection underground cabling route. The crossings are assumed to be piped or culvert crossings).
- There is also a crossing over the Blackwood feeder canal, which is designated as part of the Ballynafagh Lake SAC, to the east of Quigley's Bridge. This crossing is a pipe or culvert crossing along the R403.
- Within the Slate_010 WFD river sub-basin, the Proposed Grid Connection underground cabling route crosses the Brockagh Stream (EPA Code: 14B73) at Dagwelds Cross. This stream flows north where it discharges into the Slate River (EPA Code: 14S01). This is an existing pipe or culvert crossing along the R403 (no crossing was recorded during surveys).
- There is also a crossing over a non EPA mapped watercourses, located approximately 630m to the east of the EPA mapped Brockagh Stream along the R403 to the west of Prosperous, Co. Kildare. This is an existing culvert crossing.
- Within the Slate_010 WFD river sub-basin, the Proposed Grid Connection underground cabling route crosses the Temp Stream (EPA Code: 14A46) at Black Stick Cross Roads in Prosperous, Co. Kildare. This is a pipe or culvert crossing along the R403.

Within the Figile_SC_010 river sub-catchment, the Proposed Grid Connection underground cabling route is mapped in Figile_020 WFD river sub-basin. There are no crossings over EPA mapped watercourses within this WFD river sub-basin.

Within the Liffey_SC_050 river sub-catchment, the Proposed Grid Connection is mapped within the Awillyinish Stream_010 WFD river sub-basin. There are no crossings proposed over EPA mapped watercourses within this sub-catchment. The closest EPA mapped watercourse to the Proposed Offsite 220kV Substation is the Goatstown Stream (EPA Code: 09G16), mapped approximately 970m to the south. A small drain is located approximately 10m to the southwest of the Proposed Offsite 220kV Substation. This feature is not included in the EPA blueline database but is shown on the OSI Discovery Series Mapping and text on local 6" base mapping also indicates a streambed at this location. Site surveys undertaken to inform Chapter 9 Water of the EIAR revealed that this feature is heavily vegetated, contains little water and is separated from the Proposed Offsite Substation by an existing hedgerow.

Table 3-3 summarises the location of the Proposed Project infrastructure with respect to the WFD catchments, sub-catchments and river sub-basins. A regional hydrology map showing the WFD catchments and sub-catchments is shown as Figure 3-5 below.

Table 3-3 WFD Catchments, sub-catchments and river-basins and Proposed Project infrastructure

Catchment	Sub-Catchment	River Sub-Basin	Proposed Project Infrastructure
Barrow (14)	Slate_SC_010	Slate_010	Proposed Grid Connection underground electrical cabling route
		Slate_020	Proposed Grid Connection underground electrical cabling route
		Slate_030	Proposed Grid Connection underground electrical cabling route
		Slate_040	Proposed Grid Connection underground electrical cabling route
		Slate_050	Proposed Grid Connection and Proposed Enhancement Areas
		Slate_060	8 no. Proposed Turbines, 2 no. construction compounds, access roads, peat and spoil areas, and Proposed Enhancement Areas
	Figile_SC_010	Abbeylough_010	1 no. Proposed Turbine, 1 no. construction compound, access roads, peat and spoil areas, and Proposed Enhancement Areas
		Figile_020	16 no. Proposed Turbines, 2 no. construction compounds, Proposed Onsite Substation, site access roads, met mast, Proposed Grid Connection underground electrical cabling route, peat and spoil areas and Proposed Enhancement Areas
		Figile_030	19 no. Proposed Turbines, 4 no. construction compounds, access roads, relay mast, met mast, peat and spoil areas, Proposed Enhancement Areas and Proposed Turbine Delivery Route accommodation works
	Figile_SC_020	Figile_040	Proposed Turbine Delivery Route accommodation works
		Figile_050	2 no. Proposed Turbines and Proposed Enhancement Areas

Catchment	Sub-Catchment	River Sub-Basin	Proposed Project Infrastructure
Boyne (07)	Boyne_SC_010	Boyne_010	Access roads
Liffey and Dublin Bay (09)	Liffey_SC_050	Awillyinish Stream_010	Proposed Grid Connection underground electrical cabling route, Proposed Offsite Substation, access roads and 1 no. construction compound
Lower Shannon Catchment (25A)	Tullamore_SC_010	Tullamore_020	Proposed Turbine Delivery Route accommodation works

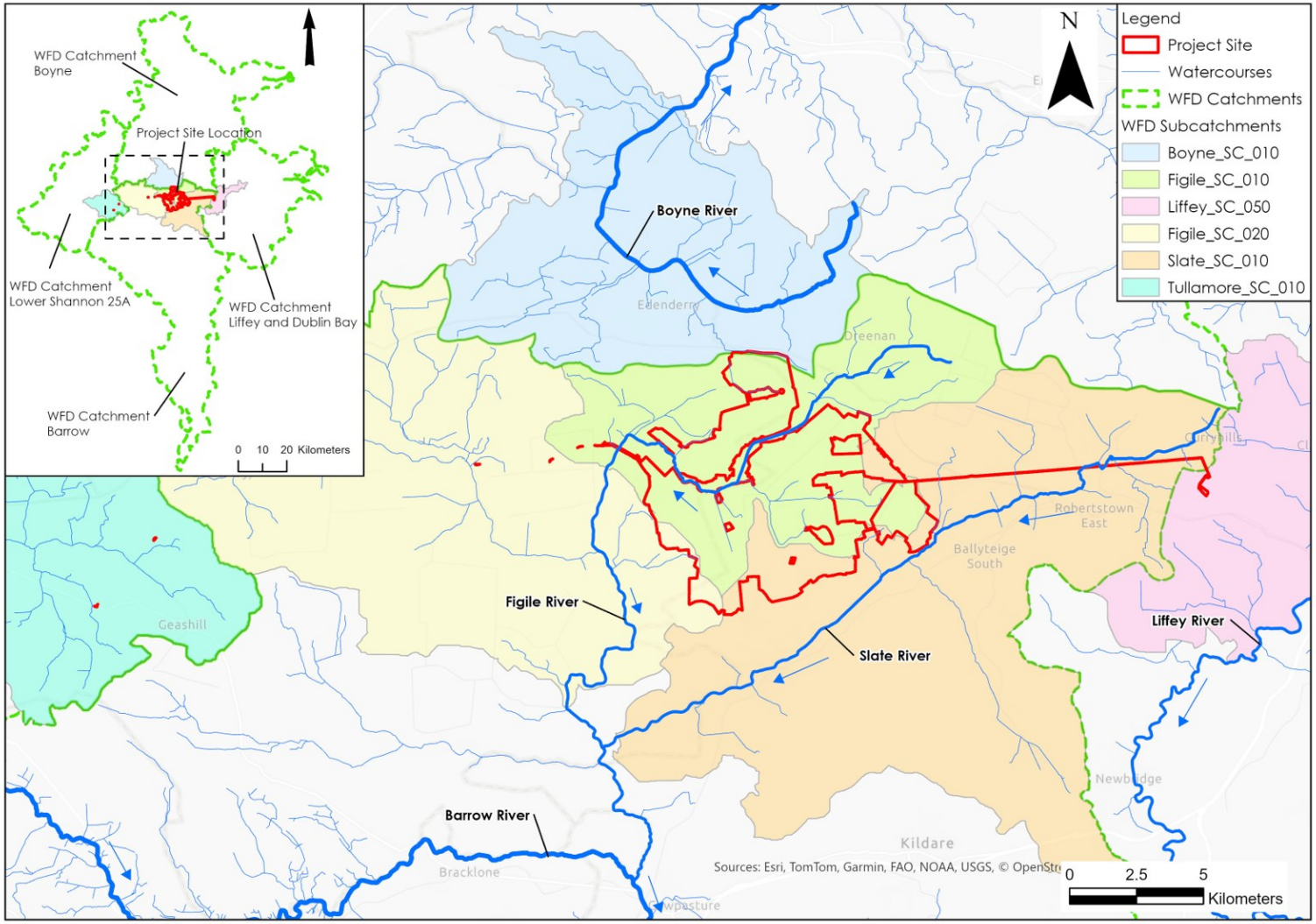


Figure 3-5 Regional hydrology map

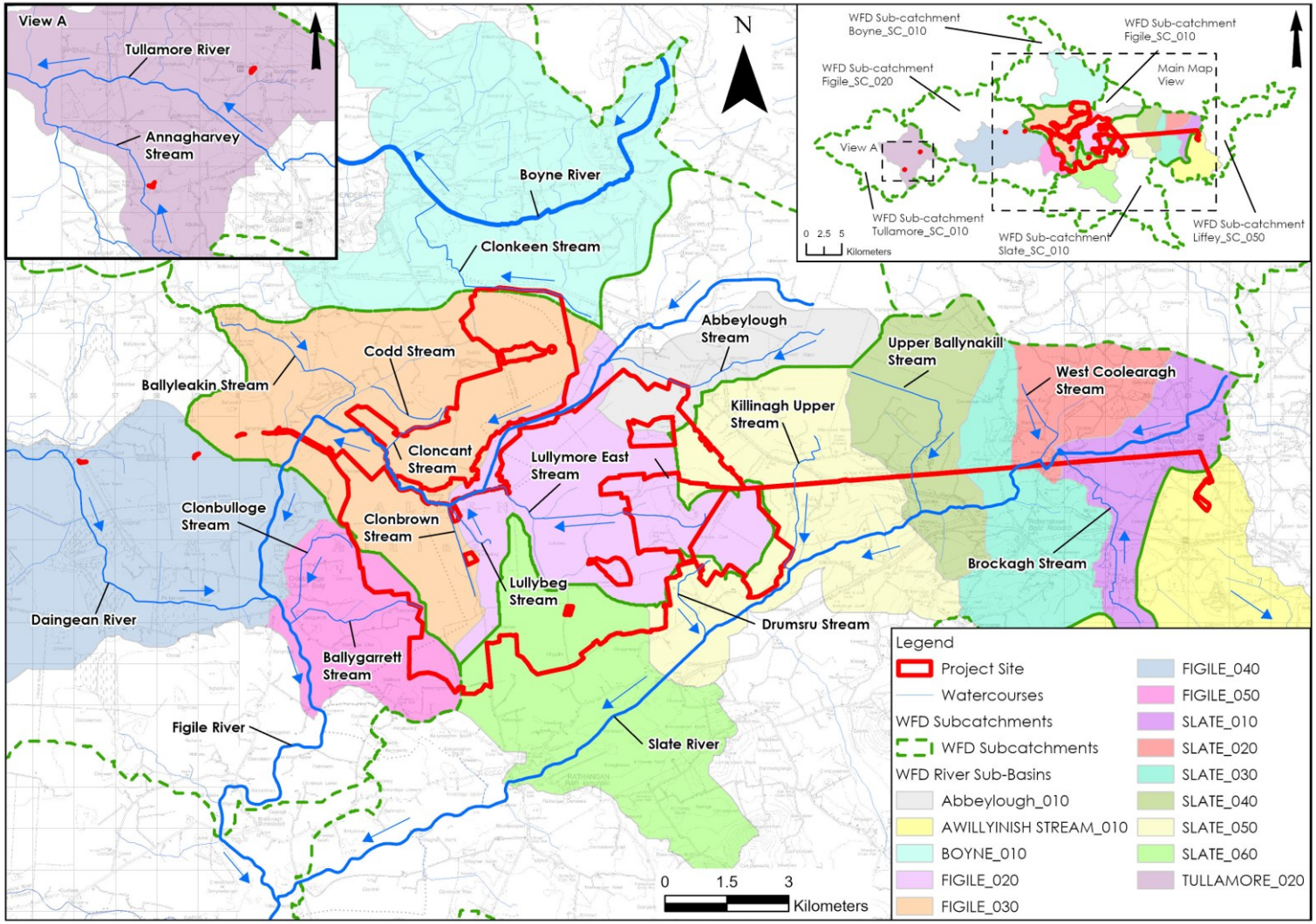


Figure 3-6 Local hydrology map

3.5.2 Proposed Wind Farm - Existing Site Drainage

Due to the historic peat extraction activities within the Proposed Wind Farm site, the land in which the Proposed Wind Farm, Proposed Enhancement Areas, Proposed Onsite Substation, and 0.5km of the Proposed Grid Connection underground electrical cabling route is located has been artificially drained in order to lower the water table. The timing of the initial site preparation works (vegetation clearance and drainage insertion) varied across the Proposed Wind Farm site. The site preparation works were first completed in 1935 at Lullymore, Lullybeg and Killina bogs, whilst the last bogs which underwent site preparation and drainage works were Ticknevin and Codd 2 bogs in 1973 (estimated date based on available aerial imagery).

Currently surface water (or runoff water) is drained from the Proposed Wind Farm site via a network of field drains typically spaced at 15 to 20m intervals, piped drains, main drains, headland drains, and silt ponds. Much of the Proposed Wind Farm site is drained by gravity however there are 10 no. existing pumps located around the bogs. These include pumping stations in each of the following bogs; Ticknevin Bog, (P37/010), Glashabaun North Bog (P37/008), Codd 1 Bog (P37/012), Ballydermot South (P37-011) and Blackriver Bog (P37/007) (refer to Table 3-4). Several of these locations contain more than 1 no. pump. Pumping stations have also been decommissioned at Lodge (P37-013) and Codd 1 (P37-014) (refer to Table 3-4). Following peat extraction activities, drainage by gravity in these areas of the Proposed Wind Farm site was no longer feasible as the water level in the surrounding streams were higher than the water level within the bogs. The field drains discharge to main drains which flow via gravity, or are pumped, towards the perimeter of the site where they discharge to larger headland drains. These headland drains eventually discharge to large silt (settlement) ponds (IPC licence settlement ponds). The silt ponds are used to trap sediment and prevent elevated levels of suspended sediment arising in effluent from the drained peatland. Treated surface water is then discharged at outfall points where the effluent flows into off-site drainage channels which in turn discharge into the local stream and river network.

Table 3-4 Pumping Stations at the Proposed Wind Farm site

Pump Station ID	No. Pumps	Easting	Northing	Bog Name	Year of Installation	Status
P37/014	2	663656	726455	Codd 1	Unknown	Decommissioned
P37/007	2	666025	724944	Blackriver	Unknown	Existing
P37/008	2	665251	728217	Glashabaun North	Pre July 1988	Existing
P37/010	2	666212	729630	Ticknevin	Unknown	Existing
P37/011	2	664498	723400	Ballydermot South	Pre July 1988	Existing
P37/012	2	665029	725617	Boundary of Codd 1 and Ballydermot North	Unknown	Existing
P37/013	2	673081	724538	Lodge	Unknown	Decommissioned

Drainage of the bogs which comprise the Proposed Wind Farm site, as well as Lodge Bog within which the Proposed Onsite Substation is located, is currently operating under licence from the EPA (P0503-01). The drainage system has been operating in accordance with this existing IPC licence, with all drainage water from the bogs being discharged via an appropriately designed silt pond treatment arrangement. A flow diagram for the existing drainage system is shown as Plate 3-59 and the flowpaths from each bog to downstream watercourses are shown as Plate 3-60.

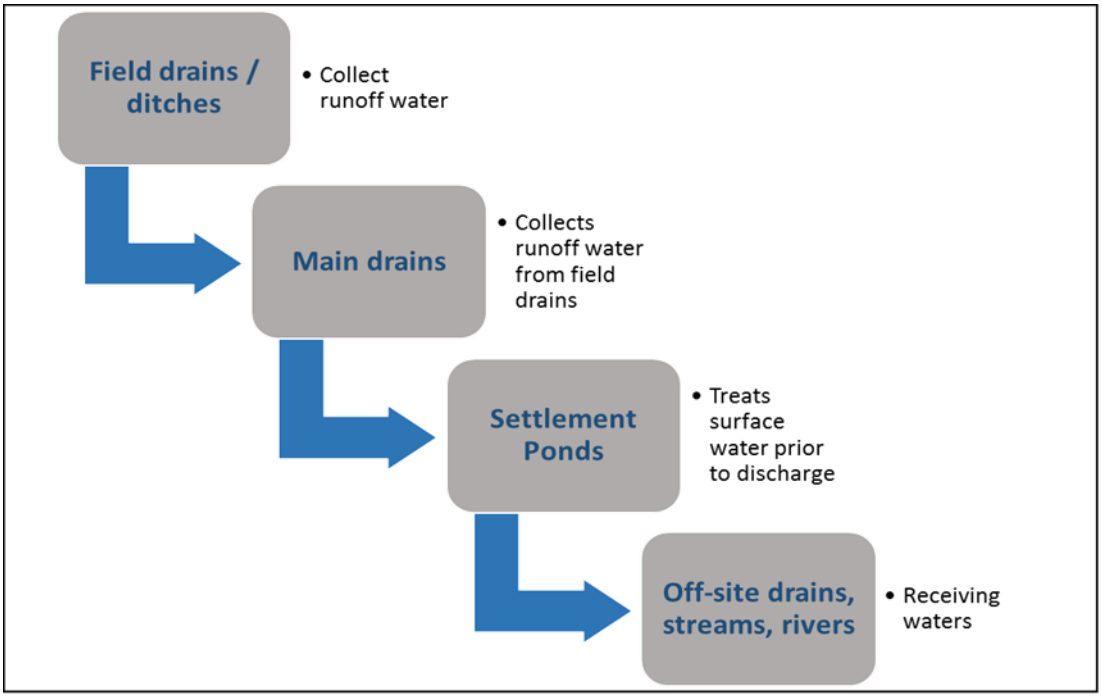


Plate 3-59 Process Flow Diagram for the Existing Drainage System

There are a total of 26 no. surface water discharge locations from the Proposed Wind Farm site (Table 3-5. These discharge locations are situated downstream of the IPC licence settlement ponds, with the treated and attenuated water from the bog drainage system being discharged to outfall drains which in turn discharge to local watercourses. All bogs comprising the Proposed Wind Farm site discharge into the Figile River or its tributaries. A section of Lodge Bog also discharges to a tributary of the Slate River. Downstream of the Proposed Wind Farm site, the Slate River discharges into the Figile River. Therefore, all surface waters from the Proposed Wind Farm site eventually end up in the Figile River, and the River Barrow further downstream.

Table 3-5 also presents the elevation of the respective bog outfalls. Outfalls generally discharge into outfall drains with the flowpaths along these outfall drains to the nearest EPA mapped watercourse ranging from 15m to 1.32km. Several of the EPA mapped watercourses have been integrated into the existing bog drainage system. The EPA map natural watercourses upstream of several IPC licence settlement ponds. These sections of the streams have been altered and integrated into the existing bog drainage system, upstream of the settlement ponds. Note that SW68, SW69 and SW70 in Ticknevin Bog are located along EPA mapped watercourses. These watercourses have been integrated into the existing bog drainage system. Similarly, SW65 and SW65A in Blackriver Bog are located in close proximity (15-20m) to the EPA mapped Lullybeg 14 Stream. Note that this stream is mapped to extend into the bog and has also been integrated into the existing bog drainage system, upstream of these outfall locations.

Table 3-5 Drainage from the Proposed Wind Farm site

Outfall	Easting	Northing	Outfall Elevation (mOD)	Bog Name	Receiving EPA Mapped Watercourse	Length of Flowpath from Outfall to Watercourse (m)
SW45	663527.78	726653.71	66.16	Codd South	Figile River	95
SW45A	662256.19	726971.90	68.40	Codd South	Figile River	1,325
SW47	669131.73	728060.14	72.70	Glashabaun South	Figile River	780

Outfall	Easting	Northing	Outfall Elevation (mOD)	Bog Name	Receiving EPA Mapped Watercourse	Length of Flowpath from Outfall to Watercourse (m)
SW48	668758.20	728217.78	71.12	Glashabaun South	Figile River	1,040
SW49	668988.62	728084.73	71.94	Glashabaun South	Figile River	1,190
SW50	669212.32	727966.35	72.47	Glashabaun South	Figile River	1,300
SW51	666403.40	726805.68	67.45	Glashabaun South	Figile River	320
SW52	666465.51	726531.67	67.30	Glashabaun South	Lullymore East Stream	380
SW53	666612.12	726351.97	67.63	Glashabaun South	Lullymore East Stream	240
SW56	668389.31	725645.95	68.36	Lullybeg	Lullymore East Stream	20
SW60	673194.35	724739.05	72.46	Lodge	Killinagh Upper Stream	140
SW61	673091.43	724411.58	72.43	Lodge	Killinagh Upper Stream	55
SW62	667936.06	723654.44	67.94	Barnaran	Lullybeg Stream	480
SW65	665875.07	724954.12	67.0	Blackriver	Lullybeg Stream	15
SW65A	665458.68	725293.01	66.54	Blackriver	Lullybeg Stream	20
SW67	664392.87	725678.79	66.91	Codd South	Figile River	450
SW67A	664442.55	723287.69	67.50	Ballydermot South	Ballygarrett Stream	140
SW68	666729.17	729690.42	70.66	Ticknevin	Temp Stream	0
SW69	666201.27	729620.71	71.64	Ticknevin	Temp Stream	0
SW70	665703.89	729959.63	69.58	Ticknevin	Temp Stream	0
SW71	664995.88	728219.88	69.26	Glashabaun North	Cloncant Stream	25
SW72	664234.47	727749.54	68.22	Codd North	Cloncant Stream	20
SW73	663537.72	727291.52	66.42	Codd North	Cloncant Stream	40
SW74	663647.75	726742.12	65.91	Codd North	Figile River	55

Outfall	Easting	Northing	Outfall Elevation (mOD)	Bog Name	Receiving EPA Mapped Watercourse	Length of Flowpath from Outfall to Watercourse (m)
SW75	663766.63	726597.55	65.91	Codd North	Figile River	130
SW76	664406.66	726320.81	65.59	Codd North	Figile River	140

As stated above in Section 3.5.1.1, the EPA map several watercourses within the Proposed Wind Farm site. The EPA mapped watercourse network has been reviewed in conjunction with site walkover surveys and BnM drainage mapping. Given the extensive historic peat extraction within the Proposed Wind Farm site, a number of the EPA mapped watercourses have been modified and now form part of the existing peatland drainage network, including locations where settlement ponds have been constructed along the watercourses. Existing site drainage maps showing the locations of the watercourses, silt ponds, pumping stations and outfall locations are presented in Figure 3-6 below.

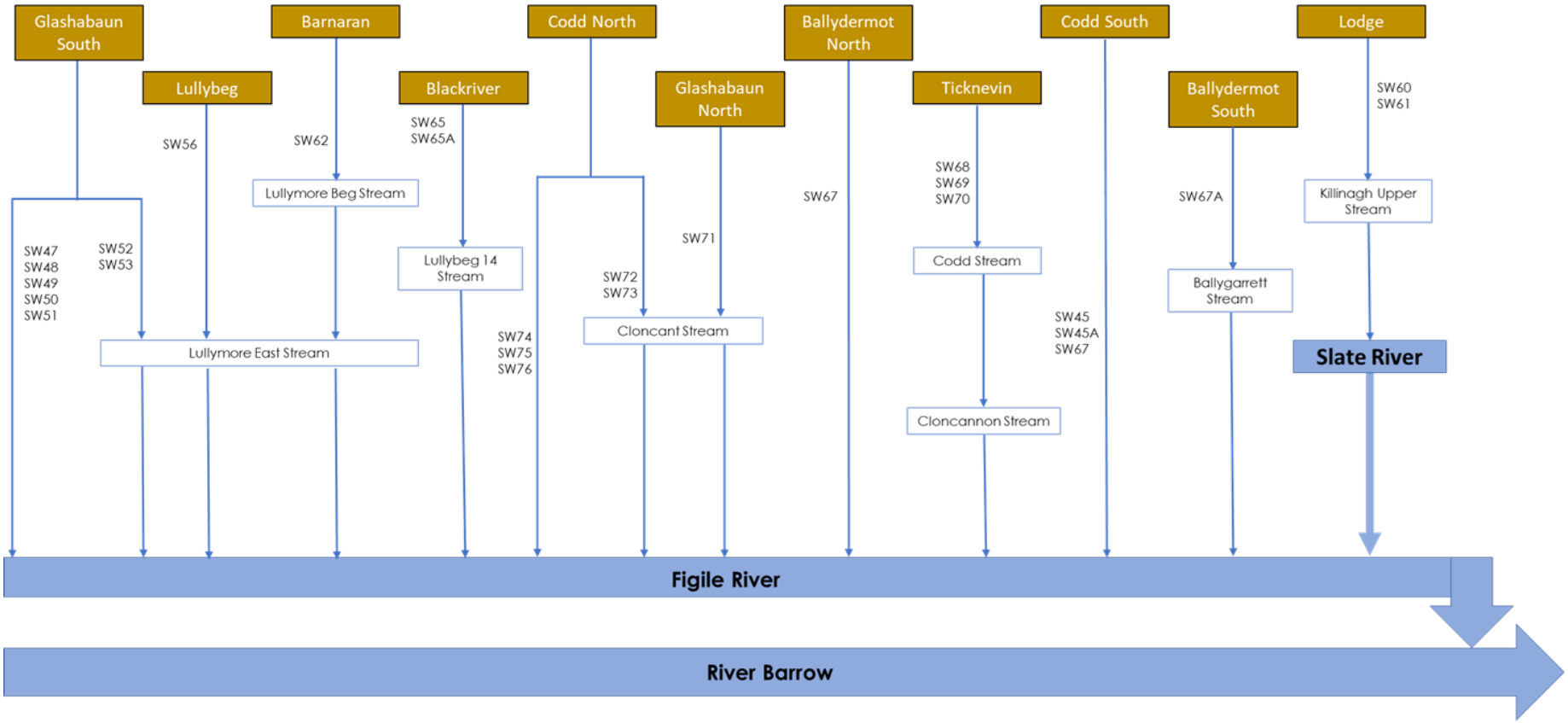


Plate 3-60 Flow Pathways from Bog Comprising the Proposed Wind Farm

3.5.3 Surface Water Body Status

River Basin Management Plans (RBMPs) have been published for all River Basin Districts in Ireland in accordance with the requirements of the Water Framework Directive (WFD). The online EPA map viewer[18] provides access to water quality information at individual waterbody status for all the River Basin Districts in Ireland. The EPA map viewer was consulted on June 25th 2026 regarding the water quality status of the river which run within and directly adjacent to the Project Site. The WFD River Waterbody Status 2019-2024 for the watercourses which flow through the Project Site have been assessed in Table 3-6.

Table 3-6 Watercourses on site with relevant water quality statuses

River Waterbody	Status 2010-2015	Status 2013-2018	Status 2016-2021	Status 2019-2024	3rd Cycle Risk Status	WFD Pressures
Figile_SC_010 river sub-catchment						
Abbeylough_010	Unassigned	Poor	Moderate	Moderate	At Risk	Peat Drainage and Extraction
Figile_010 (Upstream of Project Site)	Poor	Poor	Poor	Poor	At Risk	Hydromorphology, Industry, Urban Wastewater and Peat Drainage and Extraction
Figile_020	Moderate	Moderate	Moderate	Moderate	At Risk	Peat Drainage and Extraction
Figile_030	Moderate	Moderate	Moderate	Moderate	At Risk	Peat Drainage and Extraction
Figile_SC_020 river sub-catchment						
Figile_040	Moderate	Moderate	Moderate	Poor	At Risk	Peat Drainage and Extraction
Figile_050	Good	Good	Poor	Poor	At Risk	Agriculture and Peat Drainage and Extraction
Figile_060	Good	Good	Good	Good	Not at Risk	None
Slate_SC_010 river sub-catchment						
Slate_010	Unassigned	Moderate	Poor	Poor	At risk	Hydromorphology, anthropogenic and urban runoff
Slate_020	Poor	Poor	Poor	Poor	At risk	Agriculture and urban wastewater
Slate_030	Unassigned	Poor	Poor	Poor	At risk	Agriculture and forestry
Slate_040	Poor	Poor	Poor	Poor	At risk	Hydromorphology and Peat Drainage and Extraction
Slate_050	Moderate	Moderate	Moderate	Moderate	At Risk	Hydromorphology and Peat Drainage and Extraction
Slate_060	Moderate	Moderate	Moderate	Moderate	At Risk	Urban run-off

[18] *https://gis.epa.ie/EPAMaps/*

River Waterbody	Status 2010-2015	Status 2013-2018	Status 2016-2021	Status 2019-2024	3rd Cycle Risk Status	WFD Pressures
Slate_070	Good	Moderate	Moderate	Moderate	At Risk	Agriculture, Hydromorphology, Urban Wastewater and Peat Drainage and Extraction
Boyne_SC_010 river sub-catchment						
Boyne_010	Moderate	Moderate	Moderate	Poor	At Risk	Domestic Wastewater, Hydromorphology and Peat Drainage and Extraction
Boyne_020	Moderate	Moderate	Poor	Moderate	At Risk	Agriculture, Hydromorphology and Urban Run-off
Boyne_030	Good	Moderate	Good	Good	Not at Risk	None
Liffey_SC_050 river sub-catchment						
Awillyinish Stream_010	Unassigned	Unassigned	Moderate	Moderate	Under review	None
Liffey_100	Moderate	Moderate	Good	Good	Not at risk	None
Heavily Modified Waterbodies						
Grand Canal Main Line (Boyne)	Good Ecological Potential	Good Ecological Potential	Good Ecological Potential	Good Ecological Potential	Not at risk	None
Grand Canal Main Line East (Barrow)	Unassigned	Good Ecological Potential	Good Ecological Potential	Good Ecological Potential	Not at risk	None
Grand Canal Barrow Line	Good Ecological Potential	Good Ecological Potential	Good Ecological Potential	Good Ecological Potential	Under review	None

Status– WFD River Waterbody Status 2013-2018 Risk – WFD River Waterbodies Risk

3.5.4 EPA Biological Q-Rating

The Biotic Index of Water Quality (BIWQ) was developed in Ireland by the EPA. Q-values are assigned using a combination of habitat characteristics and structure of the macro-invertebrate community within the waterbody. Individual macro-invertebrate families are classified according to their sensitivity to organic pollution and the Q-value is assessed based primarily on their relative abundance within a sample. Table 3-7 illustrates the respective Q-value status results from monitoring stations located along rivers which flow through the site or along rivers which are fed directly by watercourses which flow through or around the Project Site. The results are colour coded based on the Q-value results.

Table 3-7 Water quality monitoring stations and associated Q values

River	Station ID	Location	EPA Q-Rating (Year)	Q-Value Status
Figile_SC_010 river sub-catchment				
Figile River	RS14F010050	Bridge S of Ticknevin Bridge	2023	**Q2-3 (Poor)**
	RS14F010100	Cushaling Bridge	2023	**Q3-4 (Moderate)**

River	Station ID	Location	EPA Q-Rating (Year)	Q-Value Status
	RS14F010200	Kilcumber Bridge	2023	Q3-4 (Moderate)
Figile_SC_020 river sub-catchment				
Figile River	RS14F010300	Figile - Bridge in Clonbullogue	2024	Q3 (Poor)
	RS14F010400	Derrygarran Bridge	2023	Q3 (Poor)
Slate_SC_010 river sub-catchment				
Slate River	RS14S010020	Quigley's Bridge	2023	Q3 (Poor)
	RS14S010050	Ford Bridge	2023	Q3 (Poor)
	RS14S010100	Agar Bridge	2023	Q3-4 (Moderate)
	RS14S010150	E Bridge Rathangan (Opp Church)	2023	Q3-4 (Moderate)
	RS14S010210	Slate - 100 m d/s Bridge near Spencer Br	2023	Q3-4 (Moderate)
	RS14S010300	River Bridge	2023	Q3-4 (Moderate)
Boyne_SC_010 river sub-catchment				
Boyne River	RS07B040200	Boyne Bridge	2024	Q3-4 (Moderate)
	RS07B040300	Kinnafad Bridge	2024	Q3-4 (Moderate)
Liffey_SC_050 river sub-catchment				
Liffey River	RS09L011500	Alexandra Br Clane	2025	Q4 (Good)

3.5.5 Hydrogeology

3.5.5.1 Proposed Wind Farm

The Proposed Wind Farm site is underlain by several mapped bedrock geological formations including the Lucan Formation, Ballyadams Formation, Allenwood Formation, Waulsortian Limestones and Boston Hill Formation. The Lucan Formation is classified as Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones (LI). The Ballyadams Formation is classified as Regionally Important Aquifer - Karstified (diffuse) (Rkd) and the Waulsortian Limestones and the Boston Hill Formation are classified as Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones (LI).

In terms of Groundwater Bodies (GWBs), the Proposed Wind Farm site is mapped to be underlain by a total of 4 no. GWBs. The western section of the Proposed Wind Farm site is mapped within the Cushina GWB (IE_SE_G_048), the centre is mapped within the Bagenalstown Upper GWB (IE_SE_G_153), the east is mapped within the Kildare GWB (IE_SE_G_077) and the north is mapped within the Trim GWB (IE_EA_G_002).

The GSI's GWB Characterisation Reports were consulted to provide additional information for each of the underlying GWBs. These reports are available as https://www.gsi.ie/programmes-projects/groundwater/groundwater-activities/understanding-irelands-groundwater/groundwater-bodies/.

The GSI's Cushina GWB Characterisation Report (GSI, 2003) states that this GWB is located in eastern Co. Offaly but also extends into counties Laois and Kildare. The topography in the area is extremely low lying to the north with some small hills in the south. In general, the land surface slopes to the centre and south of the body towards the River Figile. The boundaries of this GWB are defined by the extent of the Calp and Ballyadams Formations in this area. The boundary to the north is the topographic boundary between the South-Eastern and Eastern River Basin Districts. The GWB is composed

primarily of low permeability rocks, although localized zones of enhanced permeability do occur. It appears likely from investigation that the pure bedded limestones can be encountered beneath the Calp. Recharge occurs diffusely through the subsoils and via outcrops. The aquifers within the GWB are generally unconfined, but may become locally confined where the subsoil is thicker and/or lower permeability. Most flow in this aquifer will occur near the surface. In general, the effective thickness of this aquifer is likely to be about 10m, comprising a weathered zone of a few metres and a connected fractured zone below this. However, deep water strikes in more isolated faults/ fractures can be encountered at 50-70mbgl. Regional groundwater flow is from north to south, but on a local scale, groundwater discharges to the streams and rivers crossing the aquifer. Flow path lengths are variable and will depend on the degree of karstification of the limestone and hence its purity. Groundwater discharges to the numerous small streams crossing the aquifer, and to the springs and seeps.

The GSI's Bagenalstown GWB Characterisation Report (GSI, 2003) states that the Barrow Valley has been divided into three areas (Daly & Wright 1979): (i) A recharge area along the slopes of the Castlecomer Plateau where the water table is 15 – 30mbgl. and there is an annual water level fluctuation of 10-20m. (ii) An intermediate area where the aquifer is covered by extensive till deposits of 10-20m thickness, the water table is usually within 5-15m of the surface with an annual fluctuation of less than 7.5m. Both confined and unconfined conditions exist here, depending on the subsoil. (iii) A discharge zone occurs where the aquifer comes in contact with the Barrow River either directly or through the overlying sands and gravels. Here the water table is within 5m of the surface and fluctuations will be less than 2.5m and mostly controlled by the levels in the river.

The GSI's Kildare GWB Characterisation Report (GSI, 2003) states that this aquifer is located northwest of Kildare town. The area is defined by the South-Eastern River Basin District – Eastern River Basin District boundary to the northeast and elsewhere by the extent of the Waulsortian and Boston Hill formations. Recharge to the GWB will be highest in exposed areas and there may also be some flow of groundwater into the aquifer from adjacent groundwater bodies. Groundwater flow will be through a poorly developed karstic system over most of the area (i.e. the karst network is poorly connected and there are no well-developed karst conduits). The extent of the karstic development will depend partly on the nature and thickness of the overlying strata. There are numerous hydrogeological settings in the area due to the variation in subsoil (bog, till, outcrop and major gravel aquifers), the degree of structural deformation (from intense faulting in the area of Allenwood to little or none in the south) and the variety of rock type and hence aquifer types. Such variations make broad statements fallible and individual site investigation will be essential to understanding any given location of interest.

The GSI's Trim GWB Characterisation Report (GSI, 2003) states that this GWB is extends from northeast Offaly through Meath and narrows towards Navan and Slane. The area is generally low-lying with some hillier areas to the southeast. The aquifers are classified as Locally important aquifer which is generally moderately productive (Lm) and there are small areas of Regionally important karstified aquifer dominated by diffuse flow (Rkd), Locally important aquifer which is moderately productive only in local zones (LI) and Poor aquifer which is generally unproductive except for local zones (PI) aquifers. The Lm aquifer is comprised of the Edenderry Oolite and the Lucan formation. The boundaries of the GWB are defined by the extent of the Calp, which is classified as Lm, which is in turn determined by the location of a region of higher structural deformation (Dumphy 1993). The variety in the structural deformation of the rock increases the complexity of the conceptual model for the area. Firstly, the area northeast of Navan including the highly fractured Lucan formation will have a different groundwater flow system than the low-lying aquifer, which comprises the remainder of the GWB. This difference in geological structure can be seen in all aspects of the conceptual model i.e. recharge, groundwater flow and discharge. The intense structural deformation in the northeast of the GWB has given rise to the development of karstic groundwater flow systems. Although karst features can be expected throughout the GWB, it is in the northeast with the more fractured bedrock where karstification will be greatest. Both point and diffuse recharge occur over the area of this GWB. Point recharge is known to occur at the contact between the non-calcareous rocks and the limestones. This form of recharge is most likely to occur over cleaner and more fractured limestones. Diffuse recharge is a more widespread process occurring over the entire area of the GWB. This will be the main recharge process in the large lowland areas of this GWB. Groundwater flow will be from local areas of high

recharge e.g. areas of thin subsoils in the uplands, to the main surface water bodies overlying the aquifer, such as the Boyne. Where overlying quaternary deposits consist of thick limestone tills, they can act as a confining layer, thus producing artesian supplies. This occurs, for example at Kilmoon, Dunshaughlin and Longwood public water supplies in County Meath. Discharge from the aquifer is also varied. Water will leave the aquifer in a diffuse nature as baseflow along riverbeds and also as point source at springs. The development of a karstic groundwater system has a key influence on the transportation of pollutants to receptors. Groundwater flow will be faster and more concentrated along karstic conduits.

The GSI's Dublin GWB Characterisation Report (GSI, 2003) states that this GWB occupies a large area extending across the County Dublin from Malahide to Blackrock west across the whole county and extending into Kildare and Meath as far as Kilcock. The area is mostly low-lying with very little surface topography. The GWB is composed of moderate permeability karstified limestone. Very small areas of low permeability impure limestones are incorporated with this GWB, since they are isolated and do not alter significantly the flow system. The boundaries of this GWB are defined to the south by the contact with the Granites and Lower Paleozoic rocks, to the west and north by the extent of the Liffey catchment to the east by the coast. Groundwater flow occurs along fractures, joints and major faults. There are a number of warm springs located within this GWB, which suggest deep groundwater circulation is possible. Recharge occurs diffusely through the subsoils and via outcrops. Special attention must be paid to recharge assessments for the urban areas, which account for almost a quarter of the area of this GWB. The aquifers within the GWB are generally unconfined, but may become locally confined where the subsoil is thicker and/or lower permeability. Most flow in this aquifer will occur near the surface. In general, the effective thickness of this aquifer is likely to be about 10 m, comprising a weathered zone of a few metres and a connected fractured zone below this. However, deep water strikes are commonly found in more isolated faults/ fractures at depths of 30 – 50 m.b.g.l. Flow path lengths are not considered to be on a regional scale, and are typically less than 1km in length. Groundwater discharges to the numerous streams and rivers crossing the aquifer, and to the springs and seeps towards the coast.

The Proposed Turbine Delivery Route accommodation areas are underlain by Locally Important Bedrock Aquifers, and the Geashill and Rhode GWBs. Given the minor and localised nature of the Proposed Turbine Delivery Route accommodation works, and the limited depth and extent of excavation anticipated, the works are not expected to result in significant interaction with the underlying groundwater regime. Accordingly, detailed site-specific assessment of the underlying aquifer and groundwater body at each accommodation works location is not considered necessary.

3.5.5.2 Proposed Grid Connection

The Proposed Grid Connection is underlain by Waulsortian Limestones, Boston Hill Formation, Allenwood Formation and Feighcullen Formation. The Boston Hill Formation and the Feighcullen Formation are classified as Locally Important Aquifers - Bedrock which is Moderately Productive only in Local Zones (Ll). The Waulsortian Limestones in this area are classified as a Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones. The Allenwood Formation is classified as a Locally Important Aquifer – Karstified, and is mapped to underlie approximately 2.27km of the Proposed Grid Connection underground cabling route near Allenwood. Approximately 2.37km of the Proposed Grid Connection underground cabling route is also mapped to be underlain by a Locally Important Robertstown Gravel Aquifer (Lg) to the east of Allenwood.

Within the Study Area for water, the majority of the Proposed Grid Connection is mapped within the Kildare GWB (IE_SE_G_077) with some area in the east mapped within the Dublin GWB (IE_EA_G_008).

Details from the GSI's Initial Characterisation Report for the Kildare GWB are provided above.

The GSI's Dublin GWB Characterisation Report (GSI, 2003) states that this GWB occupies a large area extending across the County Dublin from Malahide to Blackrock west across the whole county and

extending into Kildare and Meath as far as Kilcock. The area is mostly low-lying with very little surface topography. The GWB is composed of moderate permeability karstified limestone. Very small areas of low permeability impure limestones are incorporated with this GWB, since they are isolated and do not alter significantly the flow system. The boundaries of this GWB are defined to the south by the contact with the Granites and Lower Paleozoic rocks, to the west and north by the extent of the Liffey catchment to the east by the coast. Groundwater flow occurs along fractures, joints and major faults. There are a number of warm springs located within this GWB, which suggest deep groundwater circulation is possible. Recharge occurs diffusely through the subsoils and via outcrops. The aquifers within the GWB are generally unconfined, but may become locally confined where the subsoil is thicker and/or lower permeability. Most flow in this aquifer will occur near the surface. In general, the effective thickness of this aquifer is likely to be about 10 m, comprising a weathered zone of a few metres and a connected fractured zone below this. However, deep water strikes are commonly found in more isolated faults/ fractures at depths of 30 – 50 mbgl. Flow path lengths are not considered to be on a regional scale, and are typically less than 1km in length. Groundwater discharges to the numerous streams and rivers crossing the aquifer, and to the springs and seeps towards the coast.

The GWBs underlying the Proposed Project infrastructure is presented in Table 3-8 below.

Table 3-8 WFD Groundwater Bodies and Proposed Project Infrastructure

GWB	Proposed Project Infrastructure
Cushina	14 no. Proposed Turbines, Access Roads, Peat and Spoil Areas, 4 no. Construction compounds and Proposed Enhancement Areas
Bagenalstown Upper	28 no. Proposed Turbines, Access Roads, Peat and Spoil Areas, 5 no. Construction compounds and Proposed Enhancement Areas
Trim	3 no. Proposed Turbines, Access Roads, Peat and Spoil Areas and Proposed Enhancement Areas
Kildare	1 no. Proposed Turbine, Access Roads, Peat and Spoil Areas, Proposed Onsite Substation, Proposed Grid Connection underground cable route, and Proposed Enhancement Areas
Dublin	Proposed Grid Connection underground cable route, Proposed Offsite Substation, steel masts and associated hardstands for the OHL

3.5.5.3 Groundwater Body Status

Local GWB status and risk results are available from www.catchments.ie and are summarised in Table 3-9 below. This status is defined based on the quantitative status and chemical status of each GWB.

Within the Study Area for water, all GWBs underlying the Project Site achieved 'Good' status in the latest three WFD cycles (2013-2018, 2016-2021 and 2019-2024). The Cushina, Bagenalstown and Kildare GWBs have been deemed to be "not at risk" of failing to meet their respective WFD objectives. The Trim GWB is "at risk" while the risk status of the Dublin GWB is currently under review. No significant pressures have been identified to be impacting upon the Cushina, Bagenalstown, Kildare or Dublin GWBs. The Trim GWB is listed to be under significant pressure from agriculture, anthropogenic and domestic wastewater.

Table 3-9 WFD Groundwater Body Status

Groundwater body	Status 2013-2018	Status 2016-2021	Status 2019-2024	3rd Cycle Risk Status	WFD Pressures
Cushina	Good	Good	Good	Not at risk	None
Bagenalstown Upper	Good	Good	Good	Not at risk	None
Kildare	Good	Good	Good	Not at risk	None
Trim	Good	Good	Good	At risk	Agriculture, Anthropogenic and Domestic Waste water
Dublin	Good	Good	Good	Under review	None

3.5.5.4 Groundwater Vulnerability

The GSI describe groundwater vulnerability as a term used to represent the natural ground characteristics that determine the ease with which groundwater may be contaminated by human activities. Groundwater vulnerability embodies the characteristics of the intrinsic geological and hydrogeological features at a site that determine the ease of groundwater contamination. Groundwater vulnerability is related to recharge acceptance, whereby in areas where recharge occurs more readily, a higher quantity of contaminants will have access to groundwater.

3.5.5.4.1 *Proposed Wind Farm*

The GSI mapped groundwater vulnerability rating of the bedrock aquifers underlying Proposed Wind Farm site ranges from 'Low' to 'High'. The vast majority of the Proposed Wind Farm is mapped as having 'Low' and 'Moderate' groundwater vulnerability. Meanwhile, a very small, isolated pocket of 'High' groundwater vulnerability is mapped in the centre and northeast of the Proposed Wind Farm within the Lullybeg, Lullymore, Glashabaun South and Derrybrennan bogs.

The majority of the Proposed Wind Farm infrastructure (wind turbines, construction compounds etc) avoids the areas mapped as having 'High' groundwater vulnerability. 28 no. Proposed Turbines, 5 no. temporary construction compounds and 1 no. met mast are mapped in areas of low groundwater vulnerability. 18 no. Proposed Turbines, 3 no. temporary construction compounds and 1 no. met mast are mapped in areas of moderate groundwater vulnerability. The only Proposed Wind Farm infrastructure mapped in areas of high groundwater vulnerability comprises approximately 720m of access road between Proposed Turbine 40 and Proposed Turbine 43, approximately 110m access road between Proposed Turbine 43 and Proposed Turbine 44 and approximately 170m access road to the south of Proposed Turbine 45.

Based on site walkover surveys and site investigations (1,026 no. peat probes and 46 no. trial pit excavations at the Proposed Wind Farm site and an additional 7 no. trial pits and 3 no. boreholes in land adjacent to Codd 1 Bog), the Proposed Wind Farm site is overlain by peat deposits with an average thickness of 1.6m. The peat is predominantly underlain by lacustrine clay described as gravelly SILT/CLAY with some cobbles and boulders. Bedrock was not encountered in any of the trial pit excavations completed at the Proposed Wind Farm site which extended to a maximum depth of 4.7m. Given the presence of low permeability peat at the surface of Proposed Wind Farm site which is in turn underlain by low permeability lacustrine clay, the groundwater vulnerability at the Proposed Wind Farm site is considered to be predominantly 'Low'. Some local areas of 'Moderate' or 'High' groundwater vulnerability may occur where the overburden deposits are thin.

The Proposed Turbine Delivery Route accommodation areas are mapped in areas of low to high groundwater vulnerability.

3.5.5.4.2 *Proposed Grid Connection*

The vast majority of the Proposed Grid Connection underground electrical cabling route, the Proposed Onsite Substation and the Proposed Offsite Substation are mapped in areas of 'Low' and 'Moderate' groundwater vulnerability. Only approximately 1.76km of the Proposed Grid Connection underground cabling route along the R403 to the east of Allenwood is mapped in an area of 'High' groundwater vulnerability. This area corresponds to the area mapped by the GSI to be underlain by the Locally Important Roberstown Gravel Aquifer

3.6 Description of the Likely Future Receiving Environment

This section identifies the future receiving environment likely to exist at the Proposed Wind Farm site at the commencement of the construction phase. In accordance with the approach set out in Section 1.8.4 of Chapter 1 of the accompanying EIAR, the likely future receiving environment has been established having regard to the existing ecological, ornithological, and hydrological baseline conditions presented in Section 3.1 to 3.5 and has been informed by desk study and range of field surveys undertaken between April 2020 and September 2026.

The likely future receiving environment has been established having regard to:

- The existing ecological and ornithological baseline described throughout Section 3;
- The additional relevant findings of Chapter 6 (Biodiversity), Chapter 7 (Ornithology), and Chapter 9 (Water) of the EIAR submitted as part of this planning application;
- Observed environmental change during site specific surveys covering the period April 2020 to September 2026, including natural revegetation;
- Available BnM site records and environmental data, including management and monitoring undertaken under IPC Licence Reg. No. P0503-01 included within the Annual Environment Reports (AERS) for the Allen Bog Group;
- BnM Draft Cutaway Bog Decommissioning and Rehabilitation Plans for the 14 no. Allen Bog Group bogs which form the Proposed Wind Farm site (included in Appendix 3);
- Published guidance and scientific reports pertaining to habitats and species as applicable as outlined in Section 1.5.1.1 above.

The Project Site is located predominantly on former industrial peat extraction lands within the Allen Bog Group. Industrial peat extraction ceased in June 2020. Since then, environmental conditions across these lands have continued to develop through natural revegetation, alongside ongoing site management, decommissioning works, and environmental monitoring undertaken in accordance with IPC Licence P0503-01. At the commencement of the construction phase the likely future receiving environment will reflect the continued establishment and maturation of natural revegetation in suitable areas, in combination with the continuation of site management and environmental monitoring under IPC Licence P0503-01.

Natural succession is expected to be spatially variable and is not assumed to follow a uniform trajectory across the Proposed Wind Farm site. Following the trends observed within the Proposed Wind Farm site to date following cessation of industrial peat extraction, at the commencement of construction it is likely that birch and willow scrub will have begun to develop on areas of dry cutaway, shallow peat, and some areas currently identified as scrub may have developed into birch and willow-dominated woodland in this timeframe. Birch-dominated woodlands have already established in many areas of the Proposed Wind Farm site, particularly in Glashabaun North, Glashabaun South, Ballydermot North

and Barnaran Bogs. As such the overall cover of scrub and woodland habitats within the Proposed Wind Farm site is expected to have increased by the time construction commences.

Pioneer poor fen habitats, most frequently dominated by common cottongrass (*Eriophorum angustifolium*) and soft-rush (*Juncus effusus*), have commonly been observed revegetating on areas of bare peat within the Proposed Wind Farm site. In drier areas, *Calluna*-dominated secondary communities may also revegetate bare peat. Therefore, the extent of these pioneer habitats is also likely to have increased by the commencement of the construction phase of the Proposed Project. However, as industrial peat extraction has ceased within the Proposed Wind Farm site for over 6 years at the time of writing, and significant areas of the Proposed Wind Farm site remain dominated by bare peat, it has been shown that these habitats are slow to develop in many areas.

This natural revegetation, primarily with pioneer fen, scrub and *Calluna*-dominated communities, will reduce the overall extent of exposed bare peat across the Proposed Wind Farm site by the commencement of the construction phase of the Proposed Project. In addition to augmenting the biodiversity value of these habitats, this will result in the creation of additional suitable habitat for a range of rare and protected flora and faunal species including badger, Irish hare, marsh fritillary, amphibians, reptiles and bird species with a preference towards scrub and woodland (e.g. woodcock and sparrowhawk). However, it will also reduce the available areas for some species, including open habitat bird species (e.g. golden plover and lapwing) and marsh fritillary.

Additionally, revegetation will influence site greenhouse gas dynamics and air pollutants and will likely stabilise peat surfaces. This will reduce the potential for wind-blown peat and dust emission. In relation to water, the wider hydrological regime of the Proposed Wind Farm site will continue to be influenced principally by the existing artificial drainage network and associated water management infrastructure. Accordingly, at the commencement of the construction phase, the surface water drainage patterns, surface water quality, watercourse network and general surface water flow regime are anticipated to remain materially comparable to those described in the existing baseline in Section 3.5 above; having regard to the monitoring and site investigation data collected during the assessment period and the existing drainage arrangements. The ongoing operation and maintenance of the existing IPC-licensed drainage and settlement infrastructure will continue to manage sediment-laden runoff from the former peat extraction areas.

Similarly, the hydrogeological environment at the commencement of construction is anticipated to remain materially comparable to the existing baseline. The hydrogeological setting of the Proposed Wind Farm site is characterised by relatively low groundwater recharge and restricted groundwater flowpaths, with the existing drainage network exerting an influence on the hydrological regime. No material alteration in the groundwater environment is anticipated as a result of the continued natural revegetation and ongoing site management, decommissioning works, and environmental monitoring in accordance with the IPC Licence P0-503-01.

On this basis, the likely future receiving environment of the Proposed Wind Farm site at the commencement of the construction phase will be a former industrial peat-extraction landscape with a developing but spatially variable cover of natural revegetation, managed and monitored under IPC Licence Reg. No. P0503-01. Regarding the project temporal interval between the existing baseline survey data and the commencement of the construction phase, it is not anticipated that natural revegetation will have taken place to a degree that would materially alter the existing ecological, ornithological, or hydrological baseline as established in Section 3. Therefore, the existing ecological, ornithological, and hydrological baseline conditions presented in Section 3.1 to 3.5 remains representative of the likely future receiving environment for this AASR and NIS against which the Proposed Project is assessed.

3.6.1 Future Environmental Trends

This section identifies the future ecological, ornithological, and hydrological trends likely to exist at the Proposed Wind Farm site following implementation of targeted rehabilitation within the Draft Rehabilitation Plans throughout the operational phase. The Draft Rehabilitation Plans are included as Appendix 3 to this AASR and NIS.

Continued natural revegetation, ongoing site management, environmental monitoring, and decommissioning works and implementation of the Draft Rehabilitation Plans are anticipated to facilitate the progressive rehabilitation of peatland across the Proposed Wind Farm site. These rehabilitation works are mandatory and will proceed irrespective of whether the Proposed Project is permitted, in order to ensure compliance with the IPC Licence.

Rehabilitation measures have been designed to accelerate and work with natural revegetation and other natural processes. BnM's experience of rehabilitation and restoration has shown that re-wetting improves conditions for natural revegetation and that natural revegetation is accelerated where the environmental conditions are most suitable. Rehabilitation measures have been designed to modify the conditions of areas within sites where conditions are less suitable for natural colonisation (modifying hydrology, topography, nutrient status or availability of potential seed sources).

Targeted rehabilitation measures will include drain-blocking and other measures to raise water levels to the surface of the bog, thus encouraging the development of more naturally functioning cutaway peatland habitats. However, as outlined within the Draft Rehabilitation Plans, it is not expected that the majority of the Proposed Wind Farm site has the potential to develop Active raised bog analogous to the priority EU Habitats Directive Annex I habitat within the foreseeable future (c.50 years), as the majority of peat has been removed and the environmental conditions have been modified. Areas of the Proposed Wind Farm site with deeper residual peat (>2m depth) have the potential to develop embryonic *Sphagnum*-rich peat-forming communities if optimum hydrological conditions can be developed in this timeframe. *Sphagnum* is a key species for restoring naturally functioning raised bog conditions.

On shallower peat, other natural habitats will also develop, including poor fen, wetlands with reedbeds and birch woodland. Birch and willow scrub is expected to develop on the drier areas and along peripheral headlands, which over time will develop into woodland habitats. Birch-dominated woodlands have already established in many areas of the Proposed Wind Farm site, particularly in Glashabaun North, Glashabaun South, Ballydermot North and Barnaran Bogs. These trends are expected continue in areas of dry cutaway peat during the implementation of the Draft Rehabilitation Plans. In some areas of the Proposed Wind Farm site, such as Derrybrennan and Codd Bogs, the majority of the original raised bog has now been removed, with much of the bog comprising shallow residual peat of less than 1 metre depth with some deeper pockets of peat interspersed. In these areas, the majority of the bog is expected to develop into birch woodland. Areas of *Calluna*-dominated habitats may also develop in areas of dry cutaway peat depending on the seed bank present.

Other areas of shallower residual peat in topographical depressions are expected to develop wetland mosaic habitats on shallow peat with open water, reed swamp and fen habitats. Regenerating wet deep peat vegetation and *Sphagnum* rich embryonic bog communities will likely be interspersed in the pockets of deeper peat.

The development of naturally functioning semi-natural habitats on cutaway peatland takes time. Pioneer vegetation can develop relatively quickly (3-10 years) and wetland habitats can develop relatively quickly. As such it is expected that most of the Proposed Wind Farm site will be developing pioneer habitats after 5-10 years. Birch woodland make take 20-30 years to develop. However, it may take 50 years for active raised bog vegetation to re-develop on ground that was previously cutaway and as such may not fully develop during the lifespan of the Proposed Project. Different environmental conditions will have a significant impact on the rate of natural revegetation, and as a result of the combination of

different environmental conditions and the application of different rehabilitation measures, there will be a variety of habitat outcomes.

The development of a range of habitats at the Proposed Wind Farm site as a result of the implementation of the Draft Rehabilitation Plans will support biodiversity including plants, insects, birds and mammals. This includes some species that are rare and protected in the wider landscape, including those associated with European Sites within the likely ZoI. In relation to marsh fritillary, it is likely that the areas of suitable habitat for this species will be dynamic in nature. Additional areas of suitable habitat will likely develop, particularly in marginal areas where grasslands may revegetate, as well as along the former railway lines through the site which create calcareous ground conditions. However, as outlined above in relation to the likely future receiving environment at the commencement of construction, it is also expected that areas of suitable habitat will become unsuitable over time as scrub develops in both wet and dry cutaway habitats.

As described in Section 3.6 above in relation to the likely future receiving environment at the commencement of construction, scrub encroachment and woodland succession from open habitat to closed during the operational phase would result in the Project Site becoming more suitable for bird species with a preference towards scrub and woodland such as woodcock and sparrowhawk, and less suitable for open habitat species such as golden plover and lapwing. The availability of more scrub and heath habitat would temporarily create more roosting habitat for hen harrier, however as woodland coverage increases, roosting habitat availability would also decrease. While the individual environmental factors influencing the ornithological assemblage within the Proposed Wind Farm site may evolve over time, on balance, these changes are not expected to materially alter the overall ornithological baseline for the majority of bird species.

In relation to water quality, which could impact local and downstream fisheries and aquatic fauna as well as downstream habitats, the likely future hydrological and hydrogeological baseline is expected to evolve over time with the implementation of the Draft Rehabilitation Plans as the bogs comprising the Proposed Wind Farm site transition towards rehabilitating peatlands. The proposed drain blocking measures will re-wet the bogs, increasing water retention and attenuation times, and reducing surface water runoff rates. Over time, as vegetation becomes established across the rehabilitated areas, the bogs will begin to function more naturally in comparison to their existing baseline condition. The targeted rehabilitation measures within the Draft Rehabilitation Plans are also expected to result in improvements in surface water quality including reducing the mobilisation of suspended solids and nutrients. The reduction in exposed peat surface, the stabilisation of soils by vegetation and the blocking of drains, will all contribute to a reduction in suspended solids concentrations in the discharge from the Proposed Wind Farm site. The continuation of the environmental monitoring as per the IPC licence, combined with the monitoring, aftercare and maintenance programme will verify the effectiveness of the measures with the future management of existing silt ponds to be reviewed as rehabilitation progresses. Therefore, the future environmental trends assume a progressively rehabilitated peatland with enhanced attenuation of surface water, and improved water quality in comparison to the existing baseline conditions. This would result in improved hydrological conditions within and downstream of the Proposed Wind Farm site, which in turn will benefit aquatic species, including those associated with European Sites within the likely ZoI, including otter, lamprey and Atlantic salmon.

Within the Draft Rehabilitation Plan for Ticknevin Bog, one of the key criteria for successful rehabilitation to meet EPA IPC licence conditions (Section 7.1 of the Draft Rehabilitation Plan, Appendix 3), is the '*Removal of Japanese knotweed from the bog*'. Therefore, with the implementation of the Draft Rehabilitation Plan for Ticknevin Bog, this invasive species, which is listed on the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) and the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011, as amended), will continue to be controlled and its spread managed.

Accordingly, the future environmental trends of the receiving environment for ecology, ornithology and hydrology will materially alter the baseline as established in Section 3.1 to Section 3.5 above and have been brought through the assessment contained in Sections 4 to 7 below.

The continuation of the aforementioned activities is assessed cumulatively in Section 8 below.

4. APPROPRIATE ASSESSMENT SCREENING

4.1 Identification of Relevant European Sites

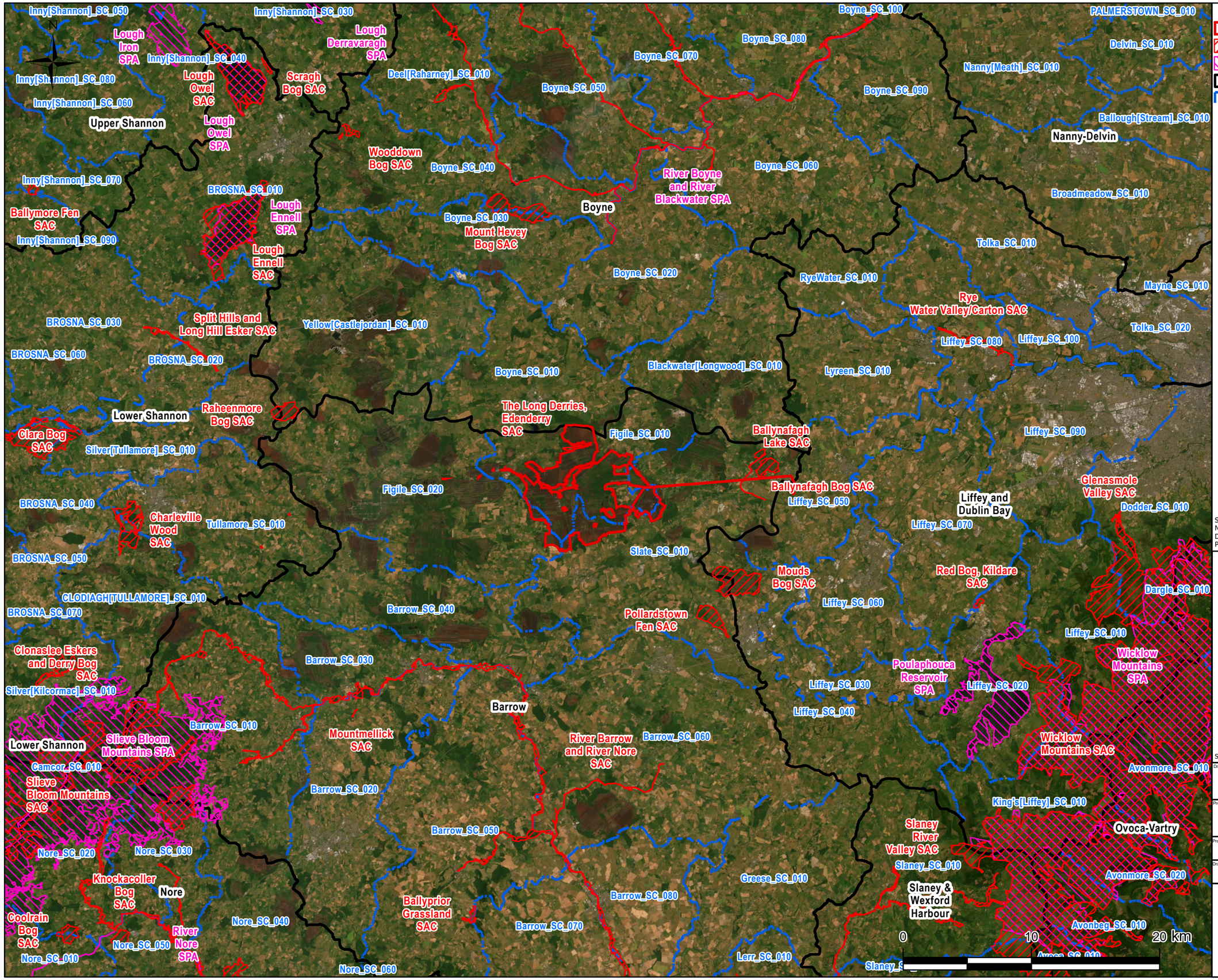
The following methodology was used to establish any European Sites upon which there is a potential for a likely significant effect to occur either individually or in combination with other plans and projects as a result of the Proposed Project:

- Initially the most up to date GIS spatial datasets for European designated sites and water catchments were downloaded from the NPWS website (www.npws.ie)[19] and the EPA website (www.epa.ie). The datasets were utilised to identify European Sites which could feasibly be affected by the Proposed Project.
- All European Sites that could potentially be affected were identified using a source-pathway - receptor model and are shown on Figures 4-1 and 4-2. Information on these European Sites according to the site-specific conservation objectives is provided in Table 4-1.
- The catchment mapping was used to establish or discount potential hydrological connectivity between the Project Site and any European Sites. The hydrological catchments are also shown in Figure 4-1.
- Overlap between the Project Site and ground water bodies (GWBs) was also used to establish or discount potential hydrogeological connectivity between the Project Site and any European Sites. The GWBs underlying the Project Site are shown in Figure 4-2.
- In relation to Special Protection Areas (SPAs), 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*' (2016) was consulted. This document provides guidance in relation to the identification of connectivity between Proposed Project and SPAs. 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. Where SCI species for SPAs in the likely ZoI of the Project Site were recorded which are not included in SNH guidance, relevant scientific literature on the foraging ranges of these species was consulted.
- 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 effects of the Proposed Project, both alone and in combination with other plans and projects, on European Sites by virtue of criteria including the following: size and scale, land-take, distance from the European Site or key features of the site, resource requirements, emissions, excavation requirements, transportation requirements and duration of construction, operation and decommissioning were considered in this assessment.
- The site synopses and conservation objectives of these European 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, further assessment is required within the Stage 2 Appropriate Assessment.
- 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 in Table 4-1 below. The list of plans and projects considered in-combination with the Proposed Project is included in Appendix 8.

[19] *The following SAC and SPA GIS boundary datasets are the most recently available at the time of writing: SAC_ITM_2026_01 and SPA_ITM_2026_02*

4.1.1 European Designated Sites Within the Likely Zone of Influence

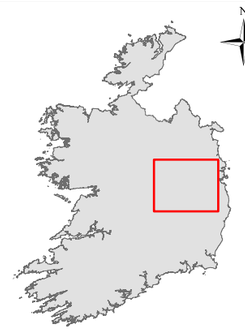
An assessment of the potential for the Proposed Project to result in likely significant effects on European Sites is provided in Table 4-1. European Sites within the likely ZoI of the Project Site are shown on Figure 4-1 below. Distances presented in Table 4-1 are measured from the Proposed Wind Farm, Proposed Grid Connection and Proposed Turbine Delivery Route accommodation works at their nearest points. All three distances are presented in Table 4-1 below as the potential for likely significant effects on European Sites arising from each component of the Proposed Project may differ. The Project Site also includes a number of geographically separate areas associated with the Proposed Turbine Delivery Route accommodation works, located to the west of the Proposed Wind Farm site. As these areas are located separately from the remainder of the Project Site, the distance from the Proposed Turbine Delivery Route accommodation areas to each European Site is also provided in Table 4-1 to provide spatial context where proximity to the Proposed Turbine Delivery Route works differs from that of the remainder of the Project Site. In some cases, the distances will be the same where the nearest point of the Project Site occurs at the Proposed Turbine Delivery Route accommodation areas.



Map Legend

- Project Site
- Special Area of Conservation (SAC)
- Special Protection Areas (SPA)
- WFD Hydrological Catchments
- WFD Hydrological Subcatchments

Spatial Reference
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Datum: IRENET95
Projection: Transverse Mercator



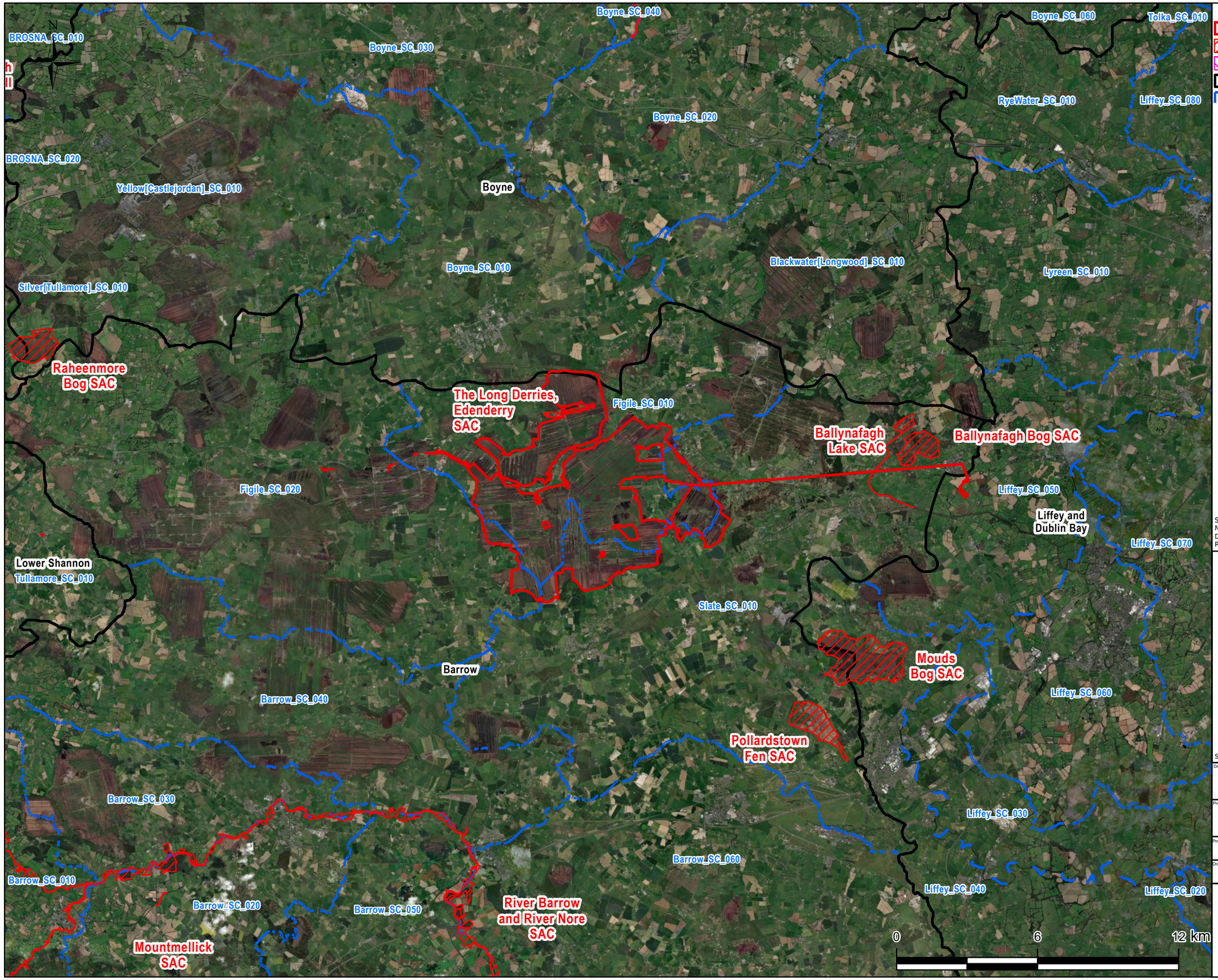
SITE LOCATION - NOT TO SCALE

Drawing Title
European Site with Hydrological Catchments

Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
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Drawn By	Checked By	Date
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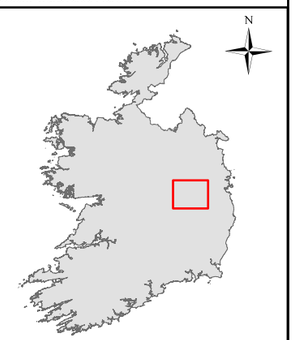
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Map Legend

- Project Site
- Special Area of Conservation (SAC)
- Special Protection Areas (SPA)
- WFD Hydrological Catchments
- WFD Hydrological Subcatchments

Spatial Reference
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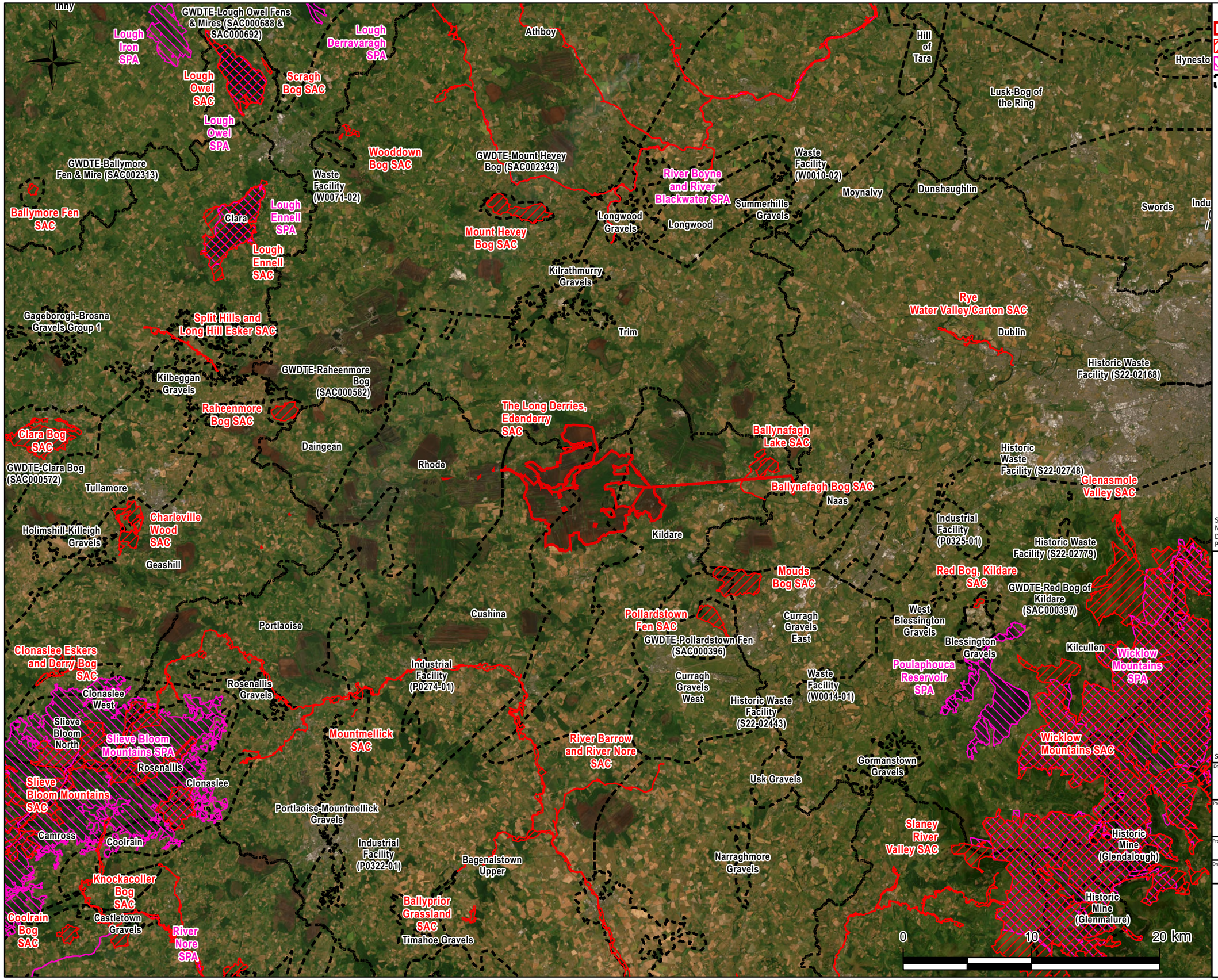
SITE LOCATION - NOT TO SCALE

Drawing Title
European Sites with Hydrological Catchments

Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
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Drawn By	Checked By	Date
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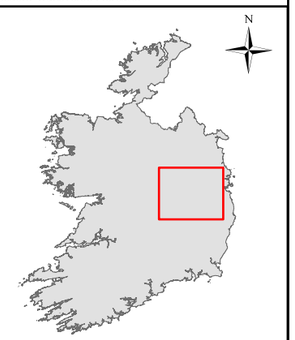
Email: info@mkoireland.ie/ Website: www.mkoireland.ie



Map Legend

- Project Site
- Special Area of Conservation (SAC)
- Special Protection Areas (SPA)
- WFD Ground Waterbodies

Spatial Reference
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Datum: IRENET95
Projection: Transverse Mercator



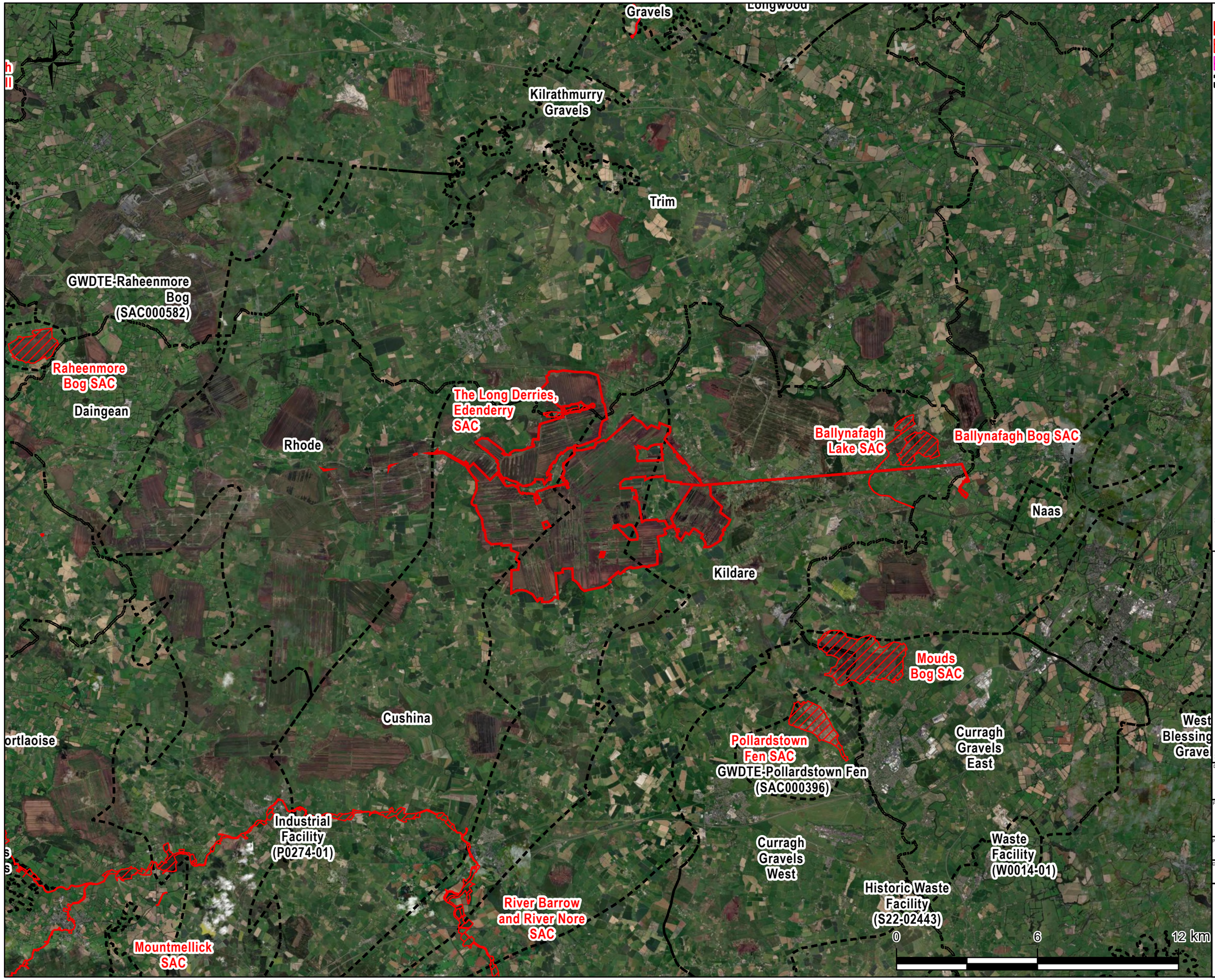
SITE LOCATION - NOT TO SCALE

Drawing Title
European Site with Groundwater Catchments

Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
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Drawn By	Checked By	Date
MNR	KB	27/10/2026

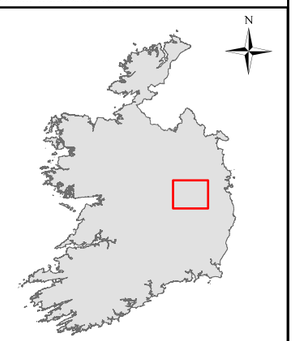
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Map Legend

- Project Site
- Special Area of Conservation (SAC)
- Special Protection Areas (SPA)
- WFD Ground Waterbodies

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



SITE LOCATION - NOT TO SCALE

Drawing Title
European Sites with Hydrological Catchments

Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	4-2b	1:150,000
Drawn By	Checked By	Date
MNR	KB	27/10/2026

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

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

European Sites and distance from Project Site	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Special Areas of Conservation (SAC)				
The Long Derries, Edenderry SAC [000925] **Distance to the Proposed Wind Farm:** The Project Site is directly adjacent to this SAC. The nearest proposed infrastructure associated with the Proposed Wind Farm (i.e. electrical cabling) is located at a distance of approximately 230m away at its nearest point. **Distance to the Proposed Grid Connection:** 6.1km at its nearest point (i.e. the proposed underground electrical cabling route).	› [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (*important orchid sites)	Detailed conservation objectives for this site, (Version 1, November 2021[20]) and the site's statutory instrument[21] were reviewed as part of the assessment and are available at www.npws.ie	There is no potential for direct effect as the Project Site is located entirely outside of this European Site. The closest infrastructure associated with the Project Site, i.e. the internal 33kV electrical cabling, internal access roads and Proposed Turbine hardstands are located >230m away. Additionally, the proposed amenity track which follows the proposed new roads will not provide access to or encourage footfall to the SAC, being located over 250m from this European Site. As such there is no potential for likely significant effects on this SAC as a result of direct habitat loss or fragmentation of the QI grassland habitat during the construction, operation, or decommissioning phases of the Proposed Project. In terms of potential for indirect effects, the Long Derries, Edenderry SAC is hydrologically connected to the Project Site via the CODD River (IE_SE_14F010200) which flows in a general northeast to southwest direction within the Project Site, traversing part of the SAC, then flowing east to west along the SAC southern boundary. However, given the terrestrial nature of the QI habitat for which the SAC is designated there is no potential for likely significant effects on this European Site due to deterioration of water quality. The potential for indirect effects on the SAC arising from dust deposition has also been considered. During the construction phase of the Proposed Project,	**Yes**

[20] *NPWS (2021) Conservation Objectives: The Long Derries, Edenderry SAC 000925. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.*
[21] *S.I. No. 528/2016 - European Union Habitats (The Long Derries, Edenderry Special Area of Conservation 000925) Regulations 2016.*

European Sites and distance from Project Site	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Distance to the Proposed Turbine Delivery Route accommodation areas: 5.6km at its nearest point			there is potential for temporary and localised dust generation associated with site preparation, excavation works and construction traffic. The closest infrastructure associated with the Proposed Project is located within 230 metres of the SAC at its closest point. Therefore, on a highly precautionary basis, there is potential for likely significant effects on the SAC and its QI habitat as a result of dust deposition and potential resulting degradation of the grassland habitat. While Japanese knotweed was recorded within the Project Site, it was recorded >350m from the nearest infrastructure associated with the Proposed Project and will not be disturbed by the works associated with the Proposed Project. Therefore, there is no potential for likely significant effects on the SAC as a result of the spread of invasive species. **A complete source-pathway-receptor chain for likely significant effects on The Long Derries, Edenderry SAC has been identified in the absence of mitigation. It cannot be ruled out that the Proposed Project, individually or in combination with other plans and projects, will have a significant effect on this European Site in view of its Site-Specific Conservation Objectives. Therefore, further assessment is required.**	
Ballynafagh Lake SAC [001387]	› [1016] Desmoulin's Whorl Snail (*Vertigo moulinsiana*) › [1065] Marsh Fritillary (*Euphydryas aurinia*)	Detailed conservation objectives for this site, (Version 1, December 2021[22]) and the site's	This SAC is located approximately 6.1km from the Proposed Wind Farm site. However, the Project Site overlaps with Ballynafagh Lake SAC where the Proposed Grid Connection underground electrical cabling route crosses the Blackwood feeder canal. The canal has been largely infilled, including at the location of the proposed crossing and was dry in nature at the time of survey	**Yes**

[22] *NPWS (2021) Conservation Objectives: Ballynafagh Lake SAC 001387. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.*

European Sites and distance from Project Site	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Distance to the Proposed Wind Farm: 6.1km at its nearest point **Distance to the Proposed Grid Connection:** The Proposed Grid Connection underground electrical cabling crosses the SAC at the Blackwater feeder canal. **Distance to the Proposed Turbine Delivery Route accommodation areas:** 19.2km at its nearest point	› [7230] Alkaline fens	statutory instrument[23] were reviewed as part of the assessment and are available at www.npws.ie	and characterised by the presence of scrubby vegetation with no alkaline fen or suitable habitat for marsh fritillary or Desmoulin's whorl snail present. Furthermore, no in-channel works will be required to facilitate the crossing as the cables will be laid within the existing road (R403) bridge which crosses over the feeder canal using Flatbed Formation Under (Type B) or Flatbed Formation Over (Type C) construction methods. There is no potential for direct loss of any QI habitat or supporting habitat for QI species at this location. There is no surface water connectivity between the Proposed Wind Farm site and the SAC or between the Proposed Turbine Delivery Route accommodation areas and SAC. Therefore no potential for likely significant effects on Ballynafagh Lake SAC via surface water pathways arising from works at these locations has been identified. However, in the absence of mitigation, there is potential for likely significant effects on the SAC due to deterioration of water quality during the crossing of the Blackwood feeder canal by the Proposed Grid Connection underground electrical cabling route. This could arise due to run-off of pollutants, including silts, rubble, hydrocarbons and cementitious material to the canal during the excavation of trenches and laying of the Proposed Grid Connection underground electrical cabling in the existing road bridge. The feeder canal has been largely infilled and no flowing water was present at the location of the crossing or 150m up or downstream during the surveys undertaken. Nonetheless, there is potential for water to be present at different locations in the canal at different times of the year and for contaminated water to make its way to parts of the feeder canal where flowing water may be present and therefore the identification of this	

[23] *S.I. No. 493/2018 - European Union Habitats (Ballynafagh Lake Special Area of Conservation 001387) Regulations 2018*

European Sites and distance from Project Site	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
			potential pathway is based on very precautionary approach. Deterioration of water quality has potential to result in degradation of the QI habitat alkaline fen and supporting habitat for the QI species Desmoulin's whorl snail where they occur downstream of the works. Both alkaline fen and Desmoulin's whorl snail are groundwater dependent QIs. The easternmost sections of the Proposed Wind Farm and the Proposed Grid Connection underground electrical cabling route are underlain by the same GWB as Ballynafagh Lake SAC, the Kildare GWB. Therefore, in the absence of mitigation, there is potential for indirect effects on the SAC due to deterioration of groundwater quality arising from percolation of pollutants, including silts and hydrocarbons, to groundwater during construction, operation and decommissioning of the Proposed Project. In relation to potential changes in groundwater levels/flow, as outlined in Chapter 9 Water of the EIAR which is included here as Appendix 5, while dewatering associated with excavation works in the construction of the Proposed Wind Farm and Proposed Grid Connection may cause temporary local changes in groundwater flows and levels, these will be temporary and are unlikely to be significant beyond 50m from any excavation. The Proposed Grid Connection underground electrical cable trench will be shallow in nature and as outlined in Section 9.5.2.2 of Chapter 9 of the EIAR, which is included as Appendix 5, will not interact with deep groundwater or cause any changes to groundwater flow or levels. Taking the above into account, no significant effects on the local groundwater table or flows which could affect the SAC will occur due to the construction of the Proposed Project. The potential for indirect effects arising from potential dust deposition during the transportation of construction materials along the Proposed Construction	

European Sites and distance from Project Site	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
			Haul Route to the Project Site was also considered. The Proposed Construction Haul Route which passes through this SAC will be used by HGVs to deliver stone and ready-mix concrete from to the location of the Proposed Offsite Substation within the Project Site. The Proposed Construction Haul Route along the existing R403 road, which is a tarmacadam surface, which will not generate significant dust according to Chapter 10 'Air Quality' Section 10.3.2.2 of the EIAR. Therefore, there is no potential for significant effects on the SAC due to dust deposition during the transportation of construction materials to the Project Site. **A complete source-pathway-receptor chain for likely significant effects on Ballynafagh Lake SAC has been identified in the absence of mitigation. It cannot be ruled out that the Proposed Project, individually or in combination with other plans and projects, and will have a significant effect on this European Site in view of its Site-Specific Conservation Objectives. Therefore, further assessment is required**	
Ballynafagh Bog SAC [000391] **Distance to the Proposed Wind Farm:** 7.6km at its nearest point	› [7110] Active raised bogs* › [7120] Degraded raised bogs still capable of natural regeneration › [7150] Depressions on peat substrates of the *Rhynchosporion*	Detailed conservation objectives for this site, (Version 1, November 2015[24]) and the site's statutory instrument[25] were reviewed as part of the assessment and are available at www.npws.ie	There is no potential for direct effect as the Project Site is located entirely outside of this European Site. There will be no works within or directly adjacent to the SAC and no direct loss of any QI habitats. There is no surface water connectivity between the Proposed Wind Farm site and the SAC or between the Proposed Turbine Delivery Route accommodation works and the SAC and therefore no potential for likely significant effects on the SAC via surface water pathways arising from works at	**Yes**

[24] *NPWS (2015) Conservation Objectives: Ballynafagh Bog SAC 000391. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.*
[25] *S.I. No. 141/2017 - European Union Habitats (Ballynafagh Bog Special Area of Conservation 000391) Regulations 2017*

European Sites and distance from Project Site	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Distance to the Proposed Grid Connection: 146 m from the underground cabling route at its nearest point. **Distance to the Proposed Turbine Delivery Route accommodation areas:** 20.4km at its nearest point **Distance via Surface Water:** approximately 740m downstream of the Proposed Grid Connection at its nearest point.			these locations. There is hydrological connectivity between the Proposed Grid Connection and Ballynafagh Bog SAC via the TEMP_14A46 watercourse (a 1st order stream), which is crossed by the Proposed Grid Connection underground electrical cabling route at Black Stick Crossroads in Prosperous, Co. Kildare using Flatbed Formation Under (Type B) or Flatbed Formation Over (Type C) construction methods. The TEMP_14A46 flows into the Slate River (14S01) approximately 560m downstream of the crossing, which in turn flows along the southern boundary of the SAC at a hydrological distance of 740m from the crossing of the watercourse. In the absence of mitigation, there is potential for indirect effects on the SAC due to deterioration of water quality arising from run-off of pollutants, including silts, hydrocarbons and cementitious materials, to the TEMP_14A46 watercourse during the construction works associated with the Proposed Grid Connection underground electrical cabling crossing of the TEMP_A14A46. **A complete source-pathway-receptor chain for likely significant effects on Ballynafagh Bog SAC has been identified in the absence of mitigation. It cannot be ruled out that the Proposed Project, individually or in combination with other plans and projects, will have a significant effect on this European Site in view of its Site-Specific Conservation Objectives. Therefore, further assessment is required.**	
Mouds Bog SAC [002331]	› [7110] Active raised bogs* › [7120] Degraded raised bogs still capable of natural regeneration	Detailed conservation objectives for this site, (Version 1, November 2015[26]) and the site's	There is no potential for direct effect as the Project Site is located entirely outside of this European Site.	No

[26] *NPWS (2015) Conservation Objectives: Mouds Bog SAC 002331. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.*

European Sites and distance from Project Site	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Distance to the Proposed Wind Farm: 5.9km at its nearest point. **Distance to the Proposed Grid Connection:** 6.6km at its nearest point. **Distance to the Proposed Turbine Delivery Route accommodation areas:** 18.8km at its nearest point	› [7150] Depressions on peat substrates of the *Rhynchosporion*	statutory instrument[27] were reviewed as part of the assessment and are available at www.npws.ie	No pathway for likely significant effects on the SAC as a result of surface water quality deterioration was identified. There is no hydrological connectivity between the watercourses which flow through the Project Site and this European Site. Furthermore, as the peatland habitats for which this SAC is designated are ombrotrophic, terrestrial in nature and located over 5km from the Project Site, there is no potential for likely significant effects on these habitats as a result of the Proposed Project. **No pathway for likely significant effects on Mouds Bog SAC was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, this European Site is not considered further in this assessment.**	
River Barrow and River Nore SAC [002162] **Distance to the Proposed Wind Farm:** 9.8km at its nearest point. **Distance to the Proposed Grid Connection:** 17.9km at its nearest point.	› [1130] Estuaries › [1140] Mudflats and sandflats not covered by seawater at low tide › [1170] Reefs › [1310] *Salicornia* and other annuals colonising mud and sand	Detailed conservation objectives for this site, (Version 2, June 2025[28]) and the site's statutory instrument[29] were reviewed as part of the assessment and are available at www.npws.ie	There is no potential for direct effect as the Project Site is located entirely outside of this European Site. The potential for the Proposed Project to result in significant indirect effects on the SAC has also been considered. There is surface water connectivity between the Project Site and this SAC (approximately 17km hydrological flowpath) via drainage ditches and watercourses within the Proposed Wind Farm and along the Proposed Grid Connection underground electrical cabling route. The majority of the Proposed Wind Farm lies within the Barrow (14) catchment, specifically the Figile sub-catchment. This area is drained by	**Yes**

[27] *S.I. No. 62/2022 - European Union Habitats (Mouds Bog Special Area of Conservation 002331) Regulations 2022*
[28] *NPWS (2025) Conservation Objectives: River Barrow and River Nore SAC 002162. Version 2. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.*
[29] *S.I. No. 648/2024 - European Union Habitats (River Barrow and River Nore Special Area of Conservation 002162) Regulations 2024*

European Sites and distance from Project Site	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Distance to the Proposed Turbine Delivery Route accommodation areas: 7.3km at its nearest point. **Distance via Surface Water:** approximately 17km from the Proposed Wind Farm at its nearest point.	› [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 › [4030] European dry heaths › [6430] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels › [7220*] Petrifying springs with tufa formation (*Cratoneurion*) › [91A0] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles › [91E0*] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) › [1016] Desmoulin's Whorl Snail (*Vertigo moulinsiana*)		several streams including the Codd Stream, Clonbullogue Stream, Ballygarrett Stream, Cloncant Stream, Ballyhagan Stream and the Slate Stream all of which flow to the Figile River, which then flows into the Barrow River. Streams draining the southern part of the Proposed Wind Farm, as well as those along the Proposed Grid Connection underground electrical cabling route flow into the Slate River, which confluences with the Figile River approximately 6.6km southwest of the Proposed Wind Farm, which lies approximately 15.3km downstream of the Slate River. The Figile River then in turn converges with the River Barrow within the SAC approximately 6.4km downstream. In addition, areas of the Proposed Project are underlain by the same groundwater bodies (Cushina, Kildare and Bagenalstown) as the River Barrow and River Nore SAC and therefore there is also potential hydrological connectivity with the SAC via groundwater pathways. In the absence of mitigation, there is potential for indirect effects on the SAC due to deterioration of water quality arising from run-off of or percolation of pollutants (including silts, hydrocarbons and cementitious materials) to watercourses within and downstream of the Project Site which have connectivity downstream with the SAC, or to groundwater, during the construction, operation and decommissioning of the Proposed Project. Deterioration of water quality has potential to result in degradation of aquatic QI habitats and supporting habitat for the aquatic QI species associated with the SAC. As outlined in Chapter 9 Water of the EIAR, which is included here as Appendix 5, some dewatering may be required during the excavation works associated with the construction phase of the Proposed Project which may cause local changes in groundwater flows and levels. However, water level changes will be temporary and are unlikely to be significant beyond 50m from any excavation. Given the nature of the works and the intervening distance	

European Sites and distance from Project Site	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
	› [1029] Freshwater Pearl Mussel *(Margaritifera margaritifera*) › [1092] White-clawed Crayfish (*Austropotamobius pallipes*) › [1095] Sea Lamprey (*Petromyzon marinus*) › [1096] Brook Lamprey (*Lampetra planeri*) › [1099] River Lamprey (*Lampetra fluviatilis*) › [1103] Twaite Shad (*Alosa fallax fallax*) › [1106] Salmon (*Salmo salar*) › [1355] Otter (*Lutra lutra*) › [6985] Killarney Fern (*Trichomanes speciosum*)		between the SAC and the Project Site and the likely ZoI for hydrogeological effects, in the absence of mitigation, there is no potential for the Proposed Project to have significant effects on the River Barrow and River Nore SAC as a result of impacts to groundwater levels or flows. While the SAC is located approximately 17km downstream of the Project Site at its nearest point, taking a precautionary approach a potential pathway for indirect effects on the SAC due to *ex-situ* disturbance or displacement of otter has been identified. Otters can utilise extensive territories, (approximately 7.5 ± 1.5km for females and 13.2 ± 5.3km for males (Ó'Neill, 2008) and therefore otter utilising watercourses within or downstream of the Proposed Project, within this range, have potential to be associated with the SAC. A number of the larger watercourses within the Project Site, including the Figile River, were found to provide suitable habitat for a number of fisheries and aquatic species, including Atlantic salmon, white-clawed crayfish and some low suitability for lamprey species (see detail in Section 3.4.5 above and Aquatic Baseline Report, Appendix 2). Due to the downstream hydrological connectivity with this SAC, populations of aquatic QI species occurring within and downstream of the Project Site are considered to comprise part of the SAC populations. As outlined in Section 2.3.1.11 above, in-stream works will be required at up to 8 no. locations to facilitate crossings of watercourses within the Proposed Wind Farm site. Due to the nature of these in-stream works and the fisheries suitability of these watercourses, in the absence of mitigation, there is potential for direct disturbance and mortality of sensitive aquatic QI species which may reside within these watercourses. **A complete source-pathway-receptor chain for likely significant effects on River Barrow and River Nore SAC has been identified in the absence of**	

European Sites and distance from Project Site	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
			mitigation. It cannot be ruled out that the Proposed Project, individually or in combination with other plans and projects, will have a significant effect on this European Site in view of its Site-Specific Conservation Objectives. Therefore, further assessment is required.	
Pollardstown Fen SAC [000396] **Distance to the Proposed Wind Farm:** 7.5km at its nearest point. **Distance to the Proposed Grid Connection:** 9.5km at its nearest point. **Distance to the Proposed Turbine Delivery Route accommodation areas:** 19.2km at its nearest point.	› [1013] Greyer's Whorl Snail (*Vertigo geyeri*) › [1014] Narrow-mouthed Whorl Snail (*Vertigo angustior*) › [1016] Desmoulin's Whorl Snail (*Vertigo moulinsiana*) › [7210] Calcareous fens with *Cladium marisus* and species of the *Caricion davallianae** › [7220] Petrifying springs with tufa formation (*Cratoneurion*)* › [7230] Alkaline fens	Detailed conservation objectives for this site, (Version 1, January 2022[30]) and the site's statutory instrument[31] were reviewed as part of the assessment and are available at www.npws.ie	There is no potential for direct effect as the Project Site is located entirely outside of this European Site. No pathway for indirect effects on the SAC was identified. There is no hydrological connectivity between the watercourses which flow through the Project Site and this European Site and therefore no potential for likely significant effects due to deterioration of water quality via surface water pathways. Furthermore, while this SAC is designated for a number of groundwater-dependent QIs, no pathway for likely significant effects as a result of groundwater quality deterioration or altered groundwater levels or flows was identified as this SAC is underlain by a separate groundwater body, the Curragh aquifer catchments, to the Project Site. **No pathway for likely significant effects on Pollardstown Fen SAC was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, this European Site is not considered further in this assessment.**	No
Charleville Wood SAC [000571]	› [91E0] Alluvial forests with *Alnus glutinosa* and	Detailed conservation objectives for this site,	The Proposed Construction Haul Route between Kilsaran Concrete (Bunaterin, Tullamore) and the Project Site is located along the existing N52	No

[30] *NPWS (2022) Conservation Objectives: Pollardstown Fen SAC 000396. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.*
[31] *S.I. No. 542/2018 - European Union Habitats (Pollardstown Fen Special Area of Conservation 000396) Regulations 2018*

European Sites and distance from Project Site	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Distance to the Proposed Wind Farm: 28.1km at its nearest point. **Distance to the Proposed Grid Connection:** 39.9km at its nearest point. **Distance to the Proposed Turbine Delivery Route accommodation areas:** 9.4km at its nearest point. The SAC overlaps with the Proposed Construction Haul Route along the existing N52 road.	› *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) › [1016] Desmoulin's Whorl Snail (*Vertigo moulinsiana*)	(Version 1, November 2021[32]) and the site's statutory instrument[33] were reviewed as part of the assessment and are available at www.npws.ie	road, which passes through this SAC. However, there will be no works required along the N52 to facilitate construction traffic, therefore no pathway for direct effects as a result of habitat loss or fragmentation was identified. There is no hydrological connectivity between the Project Site and this SAC via surface or groundwater pathways. There is no hydrological connectivity between the watercourses which flow through the Project Site and this European Site, and this SAC is underlain by a separate GWB, the Geashill GWB, to the Proposed Project. Therefore, no pathway for likely significant effects on this SAC was identified as a result of ground or surface water quality deterioration. The potential for indirect effects arising from potential dust deposition during the transportation of construction materials along the Proposed Construction Haul Route to the Project Site was also considered. The Proposed Construction Haul Route which passes through this SAC will be used by HGVs to deliver stone and ready-mix concrete from Kilsaran batching plant, Bunaterin, Co. Offaly to the Project Site. The Proposed Construction Haul Route along the existing N52 road, which is a tarmacadam surface, which will not generate significant dust according to Section 10.3.2.2 of Chapter 10 'Air Quality' of the accompanying EIAR. Therefore, there is no potential for significant effects on the SAC due to dust deposition during the transportation of construction materials to the Project Site.	

[32] *NPWS (2021) Conservation Objectives: Charleville Wood SAC 000571. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.*
[33] *S.I. No. 658/2019 - European Union Habitats (Charleville Wood Special Area of Conservation 000571) Regulations 2019*

European Sites and distance from Project Site	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
			No pathway for likely significant effects on Charleville Wood SAC was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, this European Site is not considered further in this assessment.	
Raheenmore Bog SAC [000582] **Distance to the Proposed Wind Farm:** 16.4km at its nearest point. **Distance to the Proposed Grid Connection:** 28.4km at its nearest point. **Distance to the Proposed Turbine Delivery Route accommodation areas:** 7.3km at its nearest point.	› [7110] Active raised bogs › [7120] Degraded raised bogs still capable of natural regeneration › [7150] Depressions on peat substrates of the *Rhynchosporion*	Detailed conservation objectives for this site, (Version 1, November 2015[34]) and the site's statutory instrument[35] were reviewed as part of the assessment and are available at www.npws.ie	There is no potential for direct effect as the Project Site is located entirely outside of this European Site. No pathway for indirect effects on the SAC due to deterioration of surface water quality was identified as there is no hydrological connectivity between the Project Site and this European Site. Additionally, as the peatland habitats for which this SAC is designated are ombrotrophic, terrestrial in nature and located over 9km from the Project Site, there is no potential for likely significant effects on these habitats as a result of the Proposed Project. **No pathway for likely significant effects on Raheenmore Bog SAC was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, this European Site is not considered further in this assessment.**	No
River Boyne and River Blackwater SAC [002299]	› [7230] Alkaline fens › [91E0*] Alluvial forests with *Alnus glutinosa* and	Detailed conservation objectives for this site, (Version 1, December	There is no potential for direct effects as the Project Site is located entirely outside of this European Site.	No

[34] *NPWS (2015) Conservation Objectives: Raheenmore Bog SAC 000582. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.*
[35] *S.I. No. 299/2019 - European Union Habitats (Raheenmore Bog Special Area Of Conservation 000582) Regulations 2019*

European Sites and distance from Project Site	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Distance to the Proposed Wind Farm: 14.3km at its nearest point. **Distance to the Proposed Grid Connection:** 19.3km at its nearest point. **Distance to the Proposed Turbine Delivery Route accommodation works:** 19.9km at its nearest point. **Distance via Surface Water:** approximately 22km from the Proposed Wind Farm at its nearest point.	*Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) › [1099] River Lamprey (*Lampetra fluviatilis*) › [1106] Salmon (*Salmo salar*) › [1355] Otter (*Lutra lutra*)	2021[36]) and the site's statutory instrument[37] were reviewed as part of the assessment and are available at www.npws.ie	The potential for indirect effects on the SAC as a result of the Proposed Project has also been considered. The Clonkeen River flows in a westerly direction along the northern boundary of Ticknevin Bog in the north of the Project Site and discharges into the River Boyne and River Blackwater SAC approximately 22km downstream. According to Chapter 9 Water of the EIAR which is included here as Appendix 5, there is no surface water outfall from the bog within this catchment. All water from Ticknevin Bog is directed to the south and discharges via several settlement ponds to the Codd Stream, a tributary of the Figile River. In addition, the nearest significant infrastructure associated with the Proposed Project, i.e. Proposed Turbine 32, is located over 700m from the Clonkeen River. While the proposed amenity track in Ticknevin Bog extends to the edge of the bog and is located approximately 70m from the Clonkeen River at the nearest point, the works associated with the construction of the amenity track are minor in nature and will not require significant excavations which could result in significant silt-laden runoff. Therefore, due to the nature of the existing drainage within the Proposed Wind Farm site and the layout of the proposed infrastructure associated with the Proposed Wind Farm (i.e. there is no significant infrastructure located within the same catchment), there is no potential for likely significant effects on River Boyne and River Blackwater SAC, in the absence of mitigation, due to surface water quality deterioration as a result of the Proposed Project. The northernmost part of the Proposed Wind Farm (Ticknevin bog) lies within the same groundwater body (Trim) as River Boyne and River Blackwater SAC. The SAC is designated for a number groundwater	

[36] *NPWS (2021) Conservation Objectives: River Boyne and River Blackwater SAC 002299. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage*
[37] *S.I. No. 451/2024 - European Union Habitats (River Boyne and River Blackwater Special Area of Conservation 002299) Regulations 2024*

European Sites and distance from Project Site	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
			dependent QIs: Alkaline fens [7230] and Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]. Some dewatering may be required during excavation works associated with the construction of the Proposed Project, which may cause temporary local changes in groundwater flows and levels. However, as outlined within Chapter 9 Water of the EIAR which is included here as Appendix 5, water level impacts will be temporary and are unlikely to be significant beyond 50m from any excavation. Therefore, due to the intervening distance between the SAC and the likely ZoI for hydrogeological effects, there is no potential for likely significant effects on the groundwater-dependent QIs as a result of impacts to groundwater levels or flows as a result of the construction of the Proposed Wind Farm. Given the hydrological distance between the Project Site and the SAC, i.e. 22km, there is no potential for likely significant effects on the SAC due to disturbance or displacement of otter populations associated with the SAC. **No pathway for likely significant effects on River Boyne and River Blackwater SAC was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, this European Site is not considered further in this assessment.**	
Special Protection Areas (SPAs)				
Slieve Bloom Mountains SPA [004160]	› [A082] Hen Harrier (*Circus cyaneus*)	Detailed conservation objectives for this site, (Version 1, September	There is no potential for direct effect as the Project Site is located entirely outside of this European Site, with the Proposed Wind Farm itself located 27.8km from the SPA at its nearest point.	No

European Sites and distance from Project Site	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Distance to the Proposed Wind Farm: 27.8km at its nearest point. **Distance to the Proposed Grid Connection:** 37.4km at its nearest point. **Distance to the Proposed Turbine Delivery Route accommodation areas:** 12.0km at its nearest point.		2022[38]) and the site's statutory instrument[39] were reviewed as part of the assessment and are available at www.npws.ie	The potential for *ex-situ* effects on SCI species where they occur outside the SPA has also been considered. Hen harrier was recorded within the Core Ornithology Survey Area (i.e. the Proposed Wind Farm site, see Section 1.5.2 above) during bird surveys undertaken to inform this assessment. The SPA is located approximately 12km from the Project Site at its nearest point, i.e. the Proposed Turbine Delivery Route accommodation works, and approximately 27.8km from the Proposed Wind Farm. The Proposed Wind Farm site is therefore not considered to represent a significant foraging or roosting resource for SCI populations of this SPA. The maximum foraging distance for breeding hen harrier is considered to be 10km (SNH, 2016) and the Proposed Wind Farm site therefore lies well outside the foraging range of hen harrier associated with this SPA. On this basis, there is no potential for *ex-situ* habitat loss, mortality or disturbance or displacement effects on the SCI population of the SPA. **No pathway for likely significant effects on Slieve Bloom Mountains SPA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, this European Site is not considered further in this assessment.**	
River Boyne and River Blackwater SPA [004232]	› [A229] Kingfisher (*Alcedo atthis*)	Detailed conservation objectives for this site, (Version 1, November 2024[40]) and the site's	There is no potential for direct effect as the Project Site is located entirely outside of this European Site.	No

[38] *NPWS (2022) Conservation Objectives: Slieve Bloom Mountains SPA 004160. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.*
[39] *S.I. No. 184/2012 - European Communities (Conservation of Wild Birds (Slieve Bloom Mountains Special Protection Area 004160)) Regulations 2012.*
[40] *NPWS (2024) Conservation Objectives: River Boyne and River Blackwater SPA 004232. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.*

European Sites and distance from Project Site	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Distance to the Proposed Wind Farm: 14.3km at its nearest point. **Distance to the Proposed Grid Connection:** 19.3km at its nearest point. **Distance to the Proposed Turbine Delivery Route accommodation areas:** 19.9km at its nearest point. **Distance via Surface Water:** approximately 22km from the Proposed Wind Farm at its nearest point.		statutory instrument[41] were reviewed as part of the assessment and are available at www.npws.ie	The potential for indirect effects on the SPA due to deterioration of water quality, which could affect kingfisher forage resource availability, was also considered. The Clonkeen Riverflows in a westerly direction along the northern boundary of Ticknevin Bog in the north of the Proposed Wind Farm site and discharges into the River Boyne and River Blackwater SAC approximately 22km downstream. According to Chapter 9 Water of the EIAR which is included here as Appendix 5, there is no surface water outfall from the bog within this catchment. All water from Ticknevin Bog is directed to the south and discharges via several settlement ponds to the Codd Stream, a tributary of the Figile River. In addition, the closest significant infrastructure associated with the Proposed Project, i.e. Proposed Turbine 32, is located over 700m from the Clonkeen River, while the proposed amenity track in Ticknevin Bog extends to the edge of the bog and is located approximately 70m from the Clonkeen River at the nearest point, the works associated with the construction of the amenity track are minor in nature and will not require significant excavations which could result in significant silt-laden runoff. Therefore, due to the existing drainage within the Project Site and the layout of the Proposed Project infrastructure footprint associated with the Proposed Wind Farm (i.e. there is no significant infrastructure located within the same catchment), in the absence of mitigation there is no potential for likely significant effects on River Boyne and River Blackwater SPA due to surface water quality deterioration as a result of the Proposed Project. The potential for *ex-situ* effects on SCI species where they occur outside the SPA is also considered. Kingfisher was recorded within the Core Ornithology	

[41] *S.I. No. 462/2012 - European Communities (Conservation of Wild Birds (River Boyne and River Blackwater Special Protection Area 004232)) Regulations 2012.*

European Sites and distance from Project Site	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
			Survey Area during bird surveys undertaken to inform this assessment. However, the SPA is located approximately 14.3km from the Project Site at its nearest point, i.e. the Proposed Wind Farm. Given the distance between the Project Site and the SPA, and the known home range for kingfisher (0.25km^2, Musseau *et al.,* 2023; NPWS, 2024) the kingfisher recorded within the Core Ornithology Survey Area are not considered to be associated with the SPA population. There is no potential for *ex-situ* habitat loss, mortality or disturbance or displacement effects on the SCI population of the SPA. **No pathway for likely significant effects on River Boyne and River Blackwater SPA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, this European Site is not considered further in this assessment.**	
Poulaphouca Reservoir SPA [004063] **Distance to the Proposed Wind Farm:** 26.2km at its nearest point. **Distance to the Proposed Grid Connection:** 18.5km at its nearest point.	› [A043] Greylag Goose (*Anser anser*) › [A183] Lesser Black-backed Gull (*Larus fuscus*)	Detailed conservation objectives for this site, (Version 1, June 2024[42]) and the site's statutory instrument[43] were reviewed as part of the assessment and are available at www.npws.ie	There is no potential for direct effect as the Project Site is located entirely outside of this European Site. There is no hydrological connectivity between the watercourses which flow through the Project Site and this SPA, and the SPA is underlain by a separate groundwater body, the Kilcullen GWB, to the Project Site. Therefore, there is no potential for indirect effects on the SPA due to deterioration of water quality. The potential for *ex-situ* effects on SCI species where they occur outside the SPA is also considered. The SPA is located approximately 18.5km from the	**Yes**

[42] *NPWS (2024) Conservation Objectives: Poulaphouca Reservoir SPA 004063. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage*
[43] *S.I. No. 73/2010 - European Communities (Conservation of Wild Birds (Poulaphouca Reservoir Special Protection Area 004063)) Regulations 2010*

European Sites and distance from Project Site	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
Distance to the Proposed Turbine Delivery Route accommodation areas: 39.5km at its nearest point.			Project Site at its nearest point (the Proposed Offsite Substation) and approximately 26.2km from the Proposed Wind Farm. Greylag goose has a core foraging range of 15-20km from night roosts during the winter season (SNH, 2016). However, this species was not recorded within the Core Ornithology Survey Area during any of the extensive ornithological surveys undertaken between 2020 and 2026. Therefore, there is no potential for likely significant effects on the SCI population of this species due to *ex-situ* habitat loss, mortality or disturbance or displacement. Lesser black-backed gull were recorded on a number of occasions within the Core Ornithology Survey Area, as outlined in Section 3.4.1.3 above. The majority of observations were of birds travelling or circling with several observations of birds foraging, roosting or loafing. There were no regular flight paths in any one direction to indicate that the birds observed onsite are commuting to/from Poulaphouca Reservoir SPA. However, lesser black-backed gull have a large foraging range, with an overall mean foraging distance of 30.8km recorded for terrestrial environments (Thaxter *et al.*, 2025). Therefore, given that the Project Site lies within the foraging range of lesser black-backed gull from the Poulaphouca Reservoir SPA, it cannot be ruled out that the birds observed within the Core Ornithology Survey Area are associated with the SPA population. Taking a precautionary approach, the wintering lesser black-backed gull population within the Core Ornithology Survey Area is considered to have the potential to be associated with the SCI population of Poulaphouca Reservoir SPA. Therefore, there is potential for likely significant effects as a result of *ex situ* habitat loss, mortality or disturbance or displacement effects.	

European Sites and distance from Project Site	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
			A complete source-pathway-receptor chain for likely significant effects on Poulaphouca Reservoir SPA has been identified in the absence of mitigation. It cannot be ruled out that the Proposed Project, individually or in combination with other plans and projects, will have a significant effect on this European Site in view of its Site-Specific Conservation Objectives. Therefore, further assessment is required.	
Lough Ennell SPA [004044] **Distance to the Proposed Wind Farm:** 26.3km at its nearest point. **Distance to the Proposed Grid Connection:** 36.7km at its nearest point. **Distance to the Proposed Turbine accommodation areas:** 20.2km at its nearest point.	› [A059] Pochard (*Aythya ferina*) › [A061] Tufted Duck (*Aythya fuligula*) › [A125] Coot (*Fulica atra*) › [A999] Wetland and Waterbirds	Detailed conservation objectives for this site, (Version 1, May 2024[44]) and the site's statutory instrument[45] were reviewed as part of the assessment and are available at www.npws.ie	There is no potential for direct effect as the Proposed Project is located entirely outside of this European Site. No pathway for likely significant effects on the SPA due to water quality deterioration was identified as there is no hydrological connectivity between the watercourses which flow through the Project Site and this SPA, and the SPA is underlain by a separate groundwater body, the Clara GWB, to the Project Site. The potential for *ex-situ* effects on SCI species where they occur outside the SPA is also considered. The SPA is located approximately 22.0km from the Project Site at its nearest point (the Proposed Turbine Delivery Route accommodation areas) and approximately 26.5km from the Proposed Wind Farm. While pochard, tufted duck and coot are mobile species and may use habitats outside of the SPA, they have small core foraging ranges. Furthermore, none of the SCI species associated with Lough Ennell SPA were recorded within the Core Ornithology Survey Area during any of the	No

[44] *NPWS (2024) Conservation Objectives: Lough Ennell SPA 004044. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.*
[45] *S.I. No. 618/2011 - European Communities (Conservation of Wild Birds (Lough Ennell Special Protection Area 004044)) Regulations 2011*

European Sites and distance from Project Site	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
			extensive ornithological surveys undertaken between 2020 and 2026. As such, there is no potential for *ex-situ* habitat loss, mortality or disturbance or displacement effects on the SCI populations associated with the SPA. **No pathway for likely significant effects on Lough Ennell SPA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, this European Site is not considered further in this assessment.**	
Wicklow Mountains SPA [004040] **Distance to the Proposed Wind Farm:** 32.4km at its nearest point. **Distance to the Proposed Grid Connection:** 24.5km at its nearest point. **Distance to the Proposed Turbine accommodation areas:** 51.4km at its nearest point.	› [A098] Merlin (*Falco columbarius*) › [A103] Peregrine (*Falco peregrinus*)	Detailed conservation objectives for this site, (Version 1, July 2024[46]) and the site's statutory instrument[47] were reviewed as part of the assessment and are available at www.npws.ie	There is no potential for direct effect as the Proposed Project is located entirely outside of this European Site. The potential for *ex-situ* effects on SCI species where they occur outside the SPA is also considered. The SPA is located approximately 24.5km from the Project Site at its nearest point (the Proposed Offsite Substation) and approximately 32.2km from the Proposed Wind Farm. As such, the Proposed Project is located outside of the maximum foraging ranges of merlin (5km; SNH, 2016) and peregrine (18km; SNH, 2016). Therefore, while merlin and peregrine were recorded within the Core Ornithology Survey Area, due to the intervening distance and the known foraging range for these species, these individuals are not associated with the Wicklow Mountains SPA populations. As such, there is no potential for *ex-situ* habitat loss, mortality or disturbance effects on the SCI populations of the SPA.	No

[46] *NPWS (2024) Conservation Objectives: Wicklow Mountains SPA 004040. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage*
[47] *S.I. No. 586/2012 - European Communities (Conservation of Wild Birds (Wicklow Mountains Special Protection Area 004040)) Regulations 2012*

European Sites and distance from Project Site	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
			No pathway for likely significant effects on Wicklow Mountains SPA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, this European Site is not considered further in this assessment.	
River Nore SPA [004233] **Distance to the Proposed Wind Farm:** 41.3km at its nearest point. **Distance to the Proposed Grid Connection:** 50.1km at its nearest point. **Distance to the Proposed Turbine accommodation areas:** 29.9km at its nearest point.	› [A229] Kingfisher (*Alcedo atthis*)	Detailed conservation objectives for this site, (Version 1, July 2024[48]) and the site's statutory instrument[49] were reviewed as part of the assessment and are available at www.npws.ie	There is no potential for direct effect as the Proposed Project is located entirely outside of this European Site. The potential for indirect effects has also been considered. No pathway for likely significant effects as a result of water quality deterioration was identified as there is no downstream hydrological connectivity between the watercourses which flow through the Project Site and this SPA, and the SPA is underlain by separate groundwater bodies to the Project Site. The potential for *ex-situ* effects on SCI species where they occur outside the SPA is also considered. Kingfisher was recorded within the Core Ornithology Survey Area during bird surveys undertaken to inform this assessment. However, the SPA is remote from the Project Site (approximately 30km from the Proposed Turbine Delivery Route accommodation areas and over 41km from the Proposed Wind Farm), therefore given the distance between the Proposed Project and this SPA, and what is known of the home range for kingfisher (0.25km^2; Musseau *et al.*, 2023; NPWS, 2024), the kingfisher recorded within the Core Ornithology Survey Area are not considered to be associated with the SPA population. As such, there is no potential for	No

[48] *NPWS (2024) Conservation Objectives: River Nore SPA 004233. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.*
[49] *S.I. No. 193/2012 - European Communities (Conservation of Wild Birds (River Nore Special Protection Area 004233)) Regulations 2012*

European Sites and distance from Project Site	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
			significant *ex-situ* habitat loss, mortality or disturbance or displacement effects on the SCI population of the SPA. **No pathway for likely significant effects on River Nore SPA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, this European Site is not considered further in this assessment.**	
Lough Owel SPA [004047] **Distance to the Proposed Wind Farm:** 34.1km at its nearest point. **Distance to the Proposed Grid Connection:** 42.8km at the nearest point. **Distance to the Proposed Turbine Accommodation Works:** 31.3km at the nearest point.	› [A125] Coot (*Fulica atra*) › [A857] Shoveler (*Spatula clypeata*) › [A999] Wetland and Waterbirds	Detailed conservation objectives for this site, (Version 1, January 2025[50]) and the site's statutory instrument[51] were reviewed as part of the assessment and are available at www.npws.ie	There is no potential for direct effect as the Proposed Project is located entirely outside of this European Site. The potential for indirect effects has also been considered. No pathway for likely significant effects as a result of water quality deterioration was identified as there is no downstream hydrological connectivity between the watercourses which flow through the Project Site and this SPA, and the SPA is underlain by a separate groundwater body, the GWDTE-Lough Owel Fens and Mires GWBs, to the Project Site. The potential for *ex-situ* effects on SCI species where they occur outside the SPA is also considered. The SPA is located approximately 32.3km from the Project Site at its nearest point (the Proposed Turbine Delivery Route accommodation areas) and approximately 33.8km from the Proposed Wind Farm. While coot and shoveler are mobile species and may use habitats outside of the SPA, they have small core foraging ranges (e.g. 2-3km for shoveler; Johnson *et al.,* 2014). Furthermore, coot were not recorded within	No

[50] *NPWS (2025) Conservation Objectives: Lough Owel SPA 004047. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.*
[51] *S.I. No. 71/2010 - European Communities (Conservation of Wild Birds (Lough Owel Special Protection Area 004047)) Regulations 2010.*

European Sites and distance from Project Site	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain	Potential for Likely Significant Effects
			the Core Ornithology Survey Area during any of the extensive ornithological surveys undertaken between 2020 and 2026, and an individual shoveler was observed on only one occasion in November 2022. As such, there is no potential for *ex-situ* habitat loss, mortality or disturbance or displacement effects on the SCI populations of the SPA. **No pathway for likely significant effects on Lough Owel SPA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, this European Site is not 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, will not have a significant effect on the following European Sites. Measures intended to avoid or reduce the harmful effects of the Proposed Project on European Sites (i.e., "mitigation measures") or best practice measures have not been taken into account in the screening stage appraisal.

- The Long Derries, Edenderry SAC [000925]
- Ballynafagh Lake SAC [001387]
- Ballynafagh Bog SAC [000391]
- River Barrow and River Nore SAC [002162]
- Poulaphouca Reservoir SPA [004063]

As a result, a Stage 2 Appropriate Assessment is required, and a Natura Impact Statement shall be prepared in respect of the Proposed Project. It has also been concluded that it can be excluded on the basis of objective information that the Proposed Project, individually or in combination with any other plan or project will not have a significant effect on any other European Site. Accordingly, it is respectfully submitted that a Stage 2 Appropriate Assessment is required for the above European Sites, however ACP, as the competent authority, will make its determination in this regard. An NIS has been prepared in respect of the effects of the Proposed Project individually and in combination with any other plans or projects on the aforementioned European Sites (Section 5).

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:

- The Long Derries, Edenderry SAC [000925]
- Ballynafagh Lake SAC [001387]
- Ballynafagh Bog SAC [000391]
- River Barrow and River Nore SAC [002162]
- Poulaphouca Reservoir SPA [004063]

The following sections consider each European Site individually to:

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

5.1 Identification of Relevant Qualifying Features and Desk Study

5.1.1 The Long Derries, Edenderry SAC [000925]

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

- As outlined in Table 4-1 above, taking a highly precautionary approach, a potential pathway for indirect effects on the SAC due to a deterioration in habitat quality as a result of dust deposition during the construction phase of the Proposed Project was identified.

5.1.1.1 Identification of Individual Qualifying Features with the Potential to be Affected

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

Table 5-1 Assessment of Individual QIs of the Long Derries, Edenderry SAC with the Potential to be Affected by the Proposed Project

Qualifying feature	Conservation Objective (NPWS, Version 1, 2021[52]),	Rationale	Potential for Adverse Effects Yes/No
[6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (*important orchid sites)	To restore the favourable conservation condition of Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*)(*important orchid sites) in The Long Derries, Edenderry SAC	As outlined in Table 4-1 above, there is no potential for direct habitat loss or fragmentation of this QI grassland habitat as a result of the construction, operation or decommissioning phases of the Proposed Project, as the Project Site is located entirely outside of this European Site. All Proposed Project infrastructure (i.e. site underground electrical cabling, access roads and Proposed Turbine hardstands) is located over 230m from the SAC and there are no amenity tracks within or providing access to this SAC which could result in habitat loss or degradation within the SAC due to increased footfall. Additionally, as this is a terrestrial habitat which is not hydrologically sensitive in nature, there is no potential for adverse effects on the integrity of The Long Derries, Edenderry SAC as a result of water quality deterioration.	No

[52] *NPWS (2021) Conservation Objectives: The Long Derries, Edenderry SAC 000925. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.*

Qualifying feature	Conservation Objective (NPWS, Version 1, 2021[52]),	Rationale	Potential for Adverse Effects Yes/No
		During the construction phase of the Proposed Project, the potential for temporary and localised dust generation associated with site preparation, excavation works and construction traffic has been identified, which has the potential to block sunlight and reduce plants' capacity to photosynthesise where they occur in proximity to the dust source. In line with the Institute of Air Quality Management in the UK (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction*'[53], this QI habitat is a 'High' sensitivity receptor, however as per this guidance document, ecological effects as a result of dust deposition are not considered to be significant beyond a distance of 50m from the source. Therefore, taking the above into consideration, as well as the distance between the Proposed Project infrastructure and the SAC (i.e. >230m), there is no potential for adverse effects on the integrity of The Long Derries, Edenderry SAC as a result of dust deposition or other pathways. As such, following detailed assessment, there is no potential for adverse effects on the integrity of The Long Derries, Edenderry SAC, in view of the site's Conservation Objectives, as a result of impacts to Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*). **No further assessment is required.**	

[53] *IAQM (2024) Guidance on the Assessment of Dust from Demolition and Construction. Version 2.2. Available at: https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf [Accessed 28/09/2026]*

5.1.2 Ballynafagh Lake SAC [001387]

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

- In the absence of mitigation, a potential pathway for likely significant effects on the SAC due to deterioration of water quality during the crossing of the Blackwood feeder canal within the existing R403 road bridge by the Proposed Grid Connection underground electrical cabling route was identified. This could arise due to run-off of pollutants including silts, rubble, hydrocarbons and cementitious material to the canal during the excavation of trenches and laying of the Proposed Grid Connection underground electrical cabling in the existing road bridge.
- The easternmost sections of the Proposed Wind Farm and the Proposed Grid Connection (encompassing 1 no. Proposed Turbine, Access Roads, Peat and Spoil Areas, the Proposed Onsite Substation, approximately 11.2km of the Proposed Grid Connection underground cable route, and Proposed Enhancement Areas) are also underlain by the same GWB as Ballynafagh Lake SAC, the Kildare GWB. Therefore, in the absence of mitigation, a potential pathway for indirect effects on the SAC due to deterioration of groundwater quality arising from percolation of pollutants, including silts and hydrocarbons, to groundwater during construction, operation and decommissioning of the Proposed Project was identified.

5.1.2.1 Identification of Individual Qualifying Features with the Potential to be Affected

Table 5-2 below lists the qualifying features of this European Site and determines, in view of their Conservation Objectives, whether there is any complete source-pathway-receptor chain by which adverse effects may occur.

Table 5-2 Assessment of Individual QIs of Ballynafagh Lake SAC with the Potential to be Affected by the Proposed Project

Qualifying feature	Conservation Objective (NPWS, Version 1, 2021[54]),	Rationale	Potential for Adverse Effects Yes/No
Alkaline fens [7230]	To restore the favourable conservation condition of Alkaline fens in Ballynafagh Lake SAC	As outlined in Table 4-1 above, the Proposed Grid Connection underground electrical cabling route crossing of the Blackwood feeder canal will not require in-channel works. The Proposed Grid Connection underground electrical cable will be laid entirely within the existing R403 road bridge at this location. Furthermore, this habitat was not identified at the location of the crossing of the Blackwood feeder canal, which has been infilled at the location of the crossing, therefore there will be no direct loss of this habitat. As also outlined in Table	**Yes**

[54] *NPWS (2021) Conservation Objectives: Ballynafagh Lake SAC 001387. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.*

Qualifying feature	Conservation Objective (NPWS, Version 1, 2021[54]),	Rationale	Potential for Adverse Effects Yes/No
		4-1 above, the construction phase of the Proposed Project will not result in any significant changes to groundwater water levels or flows within the SAC which could affect this QI habitat. Alkaline fen is a groundwater-dependent terrestrial habitat and is sensitive to changes in hydrology and water quality. According to Map 2 of the SSCO document for the SAC, this habitat is mapped in the north of the SAC, at the edge and within the infilling lake, however the SSCO document noted that the extent of Alkaline fen within the SAC has only been partially mapped, and the Blackwood feeder portion of the SAC has not been surveyed for this habitat type. The latest available NPWS Article 17 mapping (2019) was also reviewed, which also shows Alkaline fen within the feeder canal, 240m to the north of the Proposed Grid Connection underground electrical cabling route at its nearest point. While this habitat was not recorded at the location of the Proposed Grid Connection underground electrical cabling route crossing of the Blackwood feeder canal during the surveys undertaken to inform this assessment, or within a 150 metre radius of the crossing (i.e. 150 metres upstream and downstream within the feeder canal), with the canal being infilled at this location, there is potential for it to occur at other locations along the canal. Therefore, taking a precautionary approach, in the absence of mitigation there is potential for adverse effects on this QI habitat as a result of deterioration in water quality arising from the run-off of silts, hydrocarbons and cementitious materials to the Blackwood feeder canal during the underground electrical cabling works associated with the Proposed Grid Connection. In addition to this, the eastern section of the Proposed Wind Farm and the Proposed Onsite Substation are underlain by the same GWB as the SAC. Therefore, taking a very precautionary approach there is potential for deterioration of water quality in the SAC via groundwater pathways arising from percolation of pollutants to groundwater during construction, operation and decommissioning of the Proposed Project. This has potential to result in degradation of this groundwater dependent QI habitat. **Following detailed assessment, the potential for adverse effects on the integrity of Ballynafagh Lake SAC, in view of the site's Conservation Objectives, was identified as a result of impacts**	

Qualifying feature	Conservation Objective (NPWS, Version 1, 2021[54]),	Rationale	Potential for Adverse Effects Yes/No
		to Alkaline fens. The potential adverse effects on this habitat is considered further in this assessment..	
Desmoulin's Whorl Snail (*Vertigo moulinsiana*) [1016]	To maintain the favourable conservation condition of Desmoulin's Whorl Snail (*Vertigo moulinsiana*) in Ballynafagh Lake SAC	As outlined in Table 4-1 above, the Proposed Grid Connection underground electrical cable route crossing of the Blackwood feeder canal will not require in-channel works. The Proposed Grid Connection underground electrical cable route will be laid entirely within the existing road bridge at this location. Furthermore, the canal has been infilled at this location with no suitable habitat present for this species. There will be no direct loss of supporting habitat for Desmoulin's whorl snail. While the SSCO document for the SAC states that this species occurs along the length of the Blackwood feeder canal, and surveys carried out by Long and Brophy (2019) within the SAC during the 2013-2018 monitoring period found Desmoulin's whorl snail within Ballynafagh Lake and along the Blackwood feeder canal (Brophy and Long, 2019), subsequent monitoring surveys undertaken during the 2019-2024 period did not find the species within the Blackwood feeder, and the species was only recorded within Ballynafagh Lake and at Bonynge Bridge (Brophy *et al.*, 2025). During the 2013-2018 monitoring period, the Blackwood feeder was dominated by suitable vegetation, however it was found that the canal no longer has suitable soil moisture to support the species (Brophy *et al.,* 2025). Furthermore, during the aquatic baseline surveys undertaken in 2024 to inform this assessment, suitable habitat for this species, [i.e. tall structured vegetation containing tall riparian grasses and sedges, such as reed sweet-grass (*Glyceria maxima*), common reed (*Phragmites australis*), greater pond-sedge (*Carex riparia*) and great fen-sedge (*Cladium mariscus*)], was not recorded at the location of or within 150m of the Proposed Grid Connection underground electrical cabling route crossing of the canal with the canal found to be infilled and dry at this location. There will be no direct loss of supporting habitat for this species as a result of the Proposed Project. While no suitable habitat for the species was recorded at the location of the Proposed Grid Connection underground electrical cabling route crossing of the canal, on a precautionary basis there is potential for the species to occur at other locations within the canal and within Ballynafagh Lake. This is a ground water dependent faunal species and is sensitive to	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 1, 2021[54]),	Rationale	Potential for Adverse Effects Yes/No
		changes in hydrology and water quality. Therefore, in the absence of mitigation there is potential for adverse effects on this QI species as a result of deterioration in water quality arising from the runoff of silts, hydrocarbons and cementitious materials to the Blackwood feeder canal during the underground cabling works associated with the Proposed Grid Connection. This has potential to result in degradation of supporting habitat for the species. In addition to this, as the eastern section of the Proposed Wind Farm and the Proposed Onsite Substation are underlain by the same GWB as the SAC. Taking a very precautionary approach there is potential for deterioration of water quality in the SAC via groundwater pathways arising from percolation of pollutants to groundwater during construction, operation and decommissioning of the Proposed Project. This has potential to result in degradation of supporting habitat for this groundwater-dependent QI species. **Following detailed assessment, the potential for adverse effects on the integrity of Ballynafagh Lake SAC, in view of the site's Conservation Objectives, was identified as a result of impacts to Desmoulin's whorl snail. The potential for adverse effects on this species is considered further in this assessment.**	
Marsh Fritillary (*Euphydryas aurinia*) [1065]	To maintain the favourable conservation condition of Marsh Fritillary (*Euphydryas aurinia*) in Ballynafagh Lake SAC	While marsh fritillary and suitable marsh fritillary habitat was recorded within the Proposed Wind Farm site, this is located 6km from Ballynafagh Lake SAC. Evidence suggests marsh fritillary rarely disperses beyond 750 metres, although long-range dispersal over longer distances of 5 to 20 km is possible (NPWS, 2025c). Due to the species' average dispersal abilities, it is thought a distance of 2km between habitat patches is appropriate when defining the functional landscape for the species (Fowles, 2003). Therefore, due to the intervening distance between the recorded locations of marsh fritillary within the Proposed Wind Farm site and the SAC, it is considered that the population of marsh fritillary within the Proposed Wind Farm site are not associated with the SAC population. As such, there is no potential for likely significant effects on the SAC due *ex-situ* habitat loss, disturbance or mortality effects on this species as a result of the Proposed Project. Furthermore, no suitable habitat for marsh fritillary was identified in the footprint of the Proposed Grid Connection. There is no potential for adverse effects on this QI species as a result of habitat degradation.	No

Qualifying feature	Conservation Objective (NPWS, Version 1, 2021[54]),	Rationale	Potential for Adverse Effects Yes/No
		As such, following detailed assessment, there is no potential for adverse effects on the integrity of Ballynafagh Lake SAC, in view of the site's Conservation Objectives, as a result of impacts to marsh fritillary. **No further assessment is required.**	

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 5-3. None of the threats or pressures identified in the data form relate to the Proposed Project.

Table 5-3 Ballynafagh Lake SAC site-specific threats, pressures and activities

Negative Impacts			
Rank	Threats and Pressures		Inside/Outside
High	F02.03	Leisure fishing	Inside
Medium	A04	Grazing by livestock	Outside
Low	A04	Grazing by livestock	Inside

5.1.2.3 QI-Specific Information

5.1.2.3.1 *Alkaline fens [7230]*

According to the SSCO document for this SAC, Ballynafagh Lake SAC contains one of the best examples of alkaline fen in eastern Ireland. Ballynafagh Lake is a former reservoir and comprises a shallow alkaline lake with a diverse wetland vegetation. Alkaline fen occurs around the lake and is the main habitat in the SAC, and part of Ballynafagh Lake SAC was surveyed as part of the Kildare Wetland Survey 2012 (Crushell *et al.,* 2012)[55] who mapped c.11.9ha of alkaline fen habitat, including in mosaic with other habitats. However, further unsurveyed areas are present within the SAC. The latest available NPWS Article 17 mapping (2019) was also reviewed, which also shows alkaline fen within the feeder canal, 240m to the north of the Proposed Grid Connection underground electrical cabling route at its nearest point.

The latest Article 17 Report (NPWS, 2025b) states that alkaline fens are relatively widespread in Ireland. The most extensive areas of alkaline fens occur in lowland basins associated with limestone groundwater bodies (most often in western and midland areas). Alkaline fens associated with flushes and open water transitions tend to be smaller, but may be more widespread than those in lowland basins. Alkaline fens are groundwater-fed, generally peat-forming systems with extensive areas of species-rich small sedge and brown moss communities. They occur in areas where there is a high-water table and a base-rich, often calcareous, water supply. Alkaline fens can develop in areas where vertical water movement predominates (topogenous), such as poorly drained basins or hollows and open water transitions; or where horizontal water movement is also important (soligenous), such as flushes, valley fens and the laggs of raised bogs. However, this distinction is not always clear (such as in large flood plain fens which can include both elements). The Overall Status of this habitat was assessed as *Bad*, with a *Deteriorating* trend.

Targets and Attributes

The conservation objective for this QI is:

> '*To restore the favourable conservation condition of Alkaline fens in Ballynafagh Lake SAC.*'

[55] *Crushell, P., Foss, P.J., O'Loughlin, B. and Wilson, F (2012) County Kildare Wetland Survey II. Part 1: Main Report. Report prepared for Kildare County Council and The Heritage Council.*

The attributes and targets for this habitat as per the SSCOs for the SAC are provided in Table 5-4 below. The table also provides an assessment of whether there is potential for the Proposed Project to undermine each Conservation Objective target in the absence of mitigation.

Table 5-4 Targets and Attributes associated with nominated site-specific conservation objectives for Alkaline fens in the Ballynafagh Lake SAC

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target in the Absence of Mitigation
Habitat area	Area stable or increasing, subject to natural processes	No – The Proposed Project does not have the potential to result in a reduction in the habitat area within the SAC. The Proposed Grid Connection crossing of the Blackwood feeder canal will involve the laying of the underground cables entirely within the existing R403 road bridge. No instream works will be required. Furthermore, this habitat was not recorded at the location of or within 150m of the crossing. Therefore there will be no loss of habitat within the Blackwood feeder canal or elsewhere in the SAC. Therefore the Proposed Project has no potential to undermine this target.
Habitat distribution	No decline, subject to natural process	No – The Proposed Project does not have the potential to result in a reduction in the habitat area within the SAC. The Proposed Grid Connection crossing of the Blackwood feeder canal will involve the laying of the underground cables entirely within the existing R403 road bridge. No instream works will be required. Furthermore, this habitat was not recorded at the location of or within 150m of the crossing. Therefore there will be no loss of habitat within the Blackwood feeder canal or elsewhere in the SAC. Therefore the Proposed Project has no potential to undermine this target.
Ecosystem function: soil nutrients	Maintain soil pH and nutrient status within natural ranges	**Yes** - In the absence of mitigation, deterioration in water quality and resulting habitat degradation arising from of silt-laden run-off, as well as run off and/or percolation of other pollutants to surface and groundwaters during the construction of the Proposed Project, in particular the Proposed Grid Connection underground electrical cabling route, could impact on soil pH, which has the potential to undermine this target.
Ecosystem function: peat formation	Maintain active peat formation, where appropriate	No – The Proposed Project does not have the potential to affect peat formation within the SAC as there will be no drainage of, or changes to hydrological or hydrogeological regimes within the SAC as a result of the Proposed Project. Therefore, the Proposed Project has no potential to undermine this target.
Ecosystem function: hydrology - groundwater levels	Maintain, or where necessary restore, appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat	No – The Proposed Project does not have the potential to result in an alteration of the groundwater regime. As outlined in Chapter 9 Water of the EIAR included as Appendix 5, while dewatering associated with excavation works in the Proposed Wind Farm may cause temporary local changes in groundwater flows and levels, these will be temporary and are unlikely to be significant beyond 50m from any excavation. While some dewatering may be required during the construction of the underground electrical cabling route as part of the Proposed Grid Connection, any temporary changes in groundwater flows

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target in the Absence of Mitigation
		and levels will remain local to the trench sections (see Appendix 5). Therefore, the Proposed Project has no potential to undermine this target.
Ecosystem function: hydrology - surface water flow	Maintain, or where necessary restore, as close as possible to natural or semi-natural, drainage conditions	No – The Proposed Project does not have the potential to result in an alteration of the drainage conditions within the SAC. The Proposed Grid Connection crossing of the Blackwood feeder canal will involve the laying of the underground cables entirely within the existing R403 road bridge. No instream works will be required. Therefore, the Proposed Project has no potential to undermine this target.
Ecosystem function: water quality	Maintain appropriate water quality, particularly pH and nutrient levels, to support the natural structure and functioning of the habitat	**Yes** – In the absence of mitigation, deterioration in water quality and resulting habitat degradation arising from silt-laden run-off, as well as run off and/or percolation of other pollutants to surface and groundwaters during the construction of the Proposed Project, could result in the deterioration of water quality within the Blackwood feeder canal, and therefore to undermine this target.
Vegetation composition: community diversity	Maintain variety of vegetation communities, subject to natural processes	**Yes** – In the absence of mitigation, there is potential for indirect habitat degradation effects that could result in an altered vegetation composition arising from the Proposed Project. As noted above, the Proposed Grid Connection underground electrical cabling route will be located entirely within the existing R403 road corridor, no instream works will be required, and this habitat was not recorded at the location of or within 150m of the crossing. However, in the absence of mitigation, there is potential for deterioration of water quality which could result in habitat degradation including changes to vegetation composition. Therefore, in the absence of mitigation the Proposed Project has the potential to undermine this target.
Vegetation composition: typical brown mosses	Maintain adequate cover of typical brown moss species	**Yes** – In the absence of mitigation, there is potential for indirect habitat degradation effects that could result in an altered vegetation composition arising from the Proposed Project. As noted above, the Proposed Grid Connection underground electrical cabling route at the crossing point with the SAC will be located entirely within the existing R403 road corridor, no instream works will be required, and this habitat was not recorded at the location of or within 150m of the crossing. However, in the absence of mitigation, there is potential for deterioration of water quality which could result in habitat degradation including changes to vegetation composition. Therefore, in the absence of mitigation the Proposed Project has the potential to undermine this target..
Vegetation composition: typical vascular plants	Maintain adequate cover of typical vascular plant species	**Yes** – In the absence of mitigation, there is potential for indirect habitat degradation effects that could result in an altered vegetation composition arising from the Proposed Project. As noted above, the Proposed Grid Connection underground electrical cabling route at the crossing point with the SAC will be located entirely within the existing R403 road corridor, no instream works will be required, and this habitat was not recorded at the location of or within 150m of the crossing. However, in the absence of

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target in the Absence of Mitigation
		mitigation, there is potential for deterioration of water quality which could result in habitat degradation including changes to vegetation composition. Therefore, in the absence of mitigation the Proposed Project has the potential to undermine this target.
Vegetation composition: native negative indicator species	Cover of native negative indicator species at insignificant levels	**Yes -** In the absence of mitigation, there is potential for indirect habitat degradation effects that could result in an altered vegetation composition arising from the Proposed Project. As noted above, the Proposed Grid Connection underground electrical cabling route at the crossing point with the SAC will be located entirely within the existing R403 road corridor, no instream works will be required, and this habitat was not recorded at the location of or within 150m of the crossing. However, in the absence of mitigation, there is potential for deterioration of water quality which could result in habitat degradation including changes to vegetation composition. Therefore, in the absence of mitigation the Proposed Project has the potential to undermine this target.
Vegetation composition: non-native species	Cover of non-native species less than 1%	No – The Proposed Project does not have the potential to result in the introduction of any non-native species to the SAC. No invasive species were recorded within or adjacent to the Proposed Wind Farm infrastructure footprint, or Proposed Grid Connection infrastructure footprint and the Proposed Project will not result in the disturbance or spread of any invasive species. Therefore, the Proposed Project has no potential to undermine this target.
Vegetation composition: native trees and shrubs	Cover of scattered native trees and shrubs less than 10%	No – The Proposed Project does not have the potential to result in an increase in tree or shrub cover within the SAC, as there is no proposed planting of trees or shrubs within or adjacent to the SAC. Therefore, the Proposed Project has no potential to undermine this target.
Vegetation composition: algal cover	Cover of algae less than 2%	**Yes** - On a precautionary basis, spillages of potentially contaminating materials (e.g. hydrocarbons and cementitious materials) during the construction phase of the Proposed Project may cause contamination of ground and surface waters. Such pollution events have the potential to result in eutrophication of watercourses, resulting in increased plant/algal growth. Therefore, in the absence of mitigation the Proposed Project has the potential to undermine this target.
Vegetation structure: vegetation height	At least 50% of the live leaves/flowering shoots are more than either 5cm or 15cm above ground surface depending on community type	No – The Proposed Project does not have the potential to result in a reduction in vegetation height within the SAC. As noted above, the Proposed Grid Connection underground electrical cabling route at the crossing point with the SAC will be located entirely within the existing R403 road corridor, no in-stream works will be required, and this habitat was not recorded at the location of or within 150m of the crossing. As such, there will be no loss of habitat or alteration to vegetation structure within the Blackwood feeder canal. Therefore, the Proposed Project has no potential to undermine this target.

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target in the Absence of Mitigation
Physical structure: disturbed bare ground	Cover of disturbed bare ground not more than 10%	No – The Proposed Project does not have the potential to result in an increase in bare ground within the SAC. As noted above, the Proposed Grid Connection underground electrical cabling route at the crossing point with the SAC will be located entirely within the existing R403 road corridor, no instream works will be required, and this habitat was not recorded at the location of or within 150m of the crossing. As such, there will be no disturbance of any habitat or removal of vegetation within the SAC. Therefore, the Proposed Project has no potential to undermine this target.
Physical structure: tufa formations	Disturbed proportion of vegetation cover where tufa is present is less than 1%	No – The Proposed Project does not have the potential to result in disturbance to vegetation cover where tufa is present within the SAC. As noted above, the Proposed Grid Connection underground electrical cabling route at the crossing point with the SAC will be located entirely within the existing R403 road corridor, no instream works will be required, and this habitat was not recorded at the location of or within 150m of the crossing. As such, there will be no disturbance of any habitat or removal of vegetation within the SAC. Therefore, the Proposed Project has no potential to undermine this target.
Indicators of local distinctiveness	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat; maintain features of local distinctiveness, subject to natural processes	**Yes** – In the absence of mitigation, there is potential for indirect habitat degradation effects that could result in an altered vegetation composition and therefore indicators of local distinctiveness (i.e. populations of rare, threatened or protected species) arising from the Proposed Project. As noted above, the Proposed Grid Connection underground electrical cabling route at the crossing point with the SAC will be located entirely within the existing R403 road corridor, no instream works will be required, and this habitat was not recorded at the location of or within 150m of the crossing. However, in the absence of mitigation, there is potential for deterioration of water quality which could result in habitat degradation including changes to vegetation composition, and therefore indicators of local distinctiveness. Therefore, in the absence of mitigation the Proposed Project has the potential to undermine this target.
Transitional areas between fen and adjacent habitats	Maintain adequate transitional areas to support/protect the alkaline fen habitat and the services it provides	No – The Proposed Project does not have the potential to result in a decline in transitional areas between fen and adjacent habitats within the SAC. As noted above, the Proposed Grid Connection underground electrical cabling route at the crossing point with the SAC will be located entirely within the existing R403 road corridor, no instream works will be required, and this habitat was not recorded at the location of or within 150m of the crossing. There will be no disturbance of any habitat or removal of vegetation within the SAC. Therefore, the Proposed Project has no potential to undermine this target.

5.1.2.3.2 *Desmoulin's Whorl Snail (Vertigo moulinsiana) [1016]*

According to the SSCO document for this SAC, Desmoulin's whorl snail in Ballynafagh Lake SAC occurs around the edge of Ballynafagh Lake, and along the length of the Blackwood feeder. As

described in Table 5-2 above, while surveys carried out by Long and Brophy (2019) within the SAC during the 2013-2018 monitoring period found Desmoulin's whorl snail within Ballynafagh Lake and along the Blackwood feeder canal (Brophy and Long, 2019), subsequent monitoring surveys undertaken during the 2019-2024 period did not find the species within the Blackwood feeder, and the species was only recorded within Ballynafagh Lake and at Bonynge Bridge (Brophy *et al.*, 2025). During the 2013-2018 monitoring period, the Blackwood feeder was dominated by suitable vegetation, however it was found that the canal no longer has suitable soil moisture to support the species (Brophy *et al.*, 2025).

The latest Article 17 Report (NPWS, 2025c[56]) states that this species favours damp or wet habitats, where they live mostly in moss, leaves and decaying vegetation. They feed on bacterial films and decaying vegetation. Desmoulin's whorl snail lives on living and dead stems and leaves of tall wetland plants. It has a requirement for tall, structured vegetation containing tall riparian grasses and sedges, particularly reed sweet-grass (*Glyceria maxima*), common reed (*Phragmites australis*), greater pond-sedge (*Carex riparia*) and great fen-sedge (*Cladium mariscus*). Sites are usually at the upper end of a hydroseral succession and unmanaged, allowing the build-up of litter. As well as the tall vegetation structure of the habitats, Desmoulin's whorl snail requires a stable hydrology, with the water table at, or slightly above, the ground surface for much of the year and very low-amplitude seasonal flooding. It climbs tall vegetation in the summer and autumn, but in drought conditions aestivates on the lower leaves of plants. In winter it descends to the litter level and becomes less active. Populations of Desmoulin's whorl snail are found widely in central and southern Ireland. It is found mainly in calcareous, lowland wetlands, especially swamps, fens and marshes bordering rivers, canals, lakes and ponds. Desmoulin's whorl snail is considered to be under threat in Ireland and Europe and was assessed as Endangered on the Irish Red List. The overall status of this species was assessed as *Inadequate*, with a *deteriorating* trend, unchanged from the 2019 Article 17 reporting assessment. The *Inadequate* status is due to on-going habitat losses mainly associated with natural succession resulting in species composition change and drying out of the habitat, including drying out as a result of drainage.

Targets and Attributes

The conservation objective for this QI is:

> '*To maintain the favourable conservation condition of Desmoulin's Whorl Snail (Vertigo moulinsiana) in Ballynafagh Lake SAC.*

The attributes and targets for this species as per the SSCOs for the SAC are provided in Table 5-5 below. The table also provides an assessment of whether there is potential for the Proposed Project to undermine each Conservation Objective target in the absence of mitigation.

Table 5-5 Targets and Attributes associated with nominated site-specific conservation objectives for Desmoulin's whorl snail in the Ballynafagh Lake SAC

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target in the Absence of Mitigation
Distribution	No decline, subject to natural processes. There is one known site for this species in the SAC within the 1km grid squares N8125, N8025, N7927, N8027, N8028, N8128 and N8129.	**Yes** – The Proposed Project does not have the potential to result in a decline in the populations of this species within the SAC due to direct impacts, as the works within the SAC, i.e. the crossing of the Blackwood feeder canal by the Proposed Grid Connection underground electrical cabling route, will be located entirely within the existing R403 road bridge and corridor. Furthermore, no suitable habitat for this species was recorded within the feeder canal within a 150m radius of this location. As such, there

[56] *NPWS (2025c). The Status of EU Protected Habitats and Species in Ireland. Volume 3: Species Assessments. Unpublished NPWS report. Edited by: Domhnall Finch, Aoife Delany, Fionnuala O'Neill and Deirdre Lynn*

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target in the Absence of Mitigation
		will be no direct loss of suitable habitat for this species. However, in the absence of mitigation, there is potential for deterioration of water quality which could result in indirect habitat degradation impacts including changes to vegetation composition, and therefore a decline in the populations of this species. Therefore, in the absence of mitigation the Proposed Project has the potential to undermine this target.
Occurrence in suitable habitat	No decline, subject to natural processes. A baseline figure of 50% positive samples is set	**Yes** – The Proposed Project does not have the potential to result in a decline in the occurrence of this species within areas of suitable habitat within the SAC due to direct impacts as the works within the SAC, i.e. the crossing of the Blackwood feeder canal by the Proposed Grid Connection underground electrical cabling route, will be located entirely within the existing R403 road bridge and corridor. Furthermore, no suitable habitat for this species was recorded within the feeder canal within a 150m radius of this location. As such, there will be no direct impacts to this species where they occur within suitable habitat. However, in the absence of mitigation, there is potential for deterioration of water quality which could result in indirect habitat degradation impacts, and therefore a decline in the occurrence of this species within suitable habitat. Therefore, in the absence of mitigation the Proposed Project has the potential to undermine this target.
Habitat area	Area of suitable habitat stable or increasing, subject to natural processes; no less than 10ha of at least suboptimal habitat	**Yes** – In the absence of mitigation, deterioration in water quality and resulting habitat degradation as a result of silt-laden run-off, as well as run off and/or percolation of other pollutants to surface and groundwaters during the construction of the Proposed Project, could result in a reduction of suitable habitat within the SAC. Therefore, in the absence of mitigation the Proposed Project has the potential to undermine this target.
Habitat quality: occupied patches in at least suboptimal condition	No decline, subject to natural processes. A baseline of 50% is set	**Yes** – In the absence of mitigation, deterioration in water quality and resulting habitat degradation as a result of silt-laden run-off, as well as run off and/or percolation of other pollutants to surface and groundwaters during the construction of the Proposed Project, could result in a reduction of suitable habitat within the SAC. Therefore, in the absence of mitigation the Proposed Project has the potential to undermine this target.
Habitat quality: soil wetness -	No decline, subject to natural processes	No – The Proposed Project does not have the potential to result in an alteration of the soil wetness. While some dewatering may be required during the excavation works associated with the construction of the Proposed Grid Connection underground electrical cable route, any temporary changes in groundwater flows and levels will remain local to the trench sections (i.e. within 50 metres – see Chapter 9 Water of the EIAR which is included as Appendix 5). Therefore, the Proposed Project has no potential to undermine this target.

5.1.3 Ballynafagh Bog SAC [000391]

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

- The SAC is located approximately 146 metres to the north of the Proposed Grid Connection underground cabling route. There is hydrological connectivity between the Proposed Grid Connection and Ballynafagh Bog SAC via the TEMP_14A46 (an EPA mapped 1st order stream), which is crossed by the Proposed Grid Connection underground electrical cable route. The TEMP_14A146 flows into the Slate River (14S01) approximately 560m downstream of the crossing, which in turn flows along the southern boundary of the SAC at a hydrological distance of 740m from the crossing of the watercourse. In the absence of mitigation, a potential pathway for indirect effects on the SAC due to deterioration of water quality arising from run-off of pollutants, including silts, hydrocarbons and cementitious materials, to the TEMP_14A46 watercourse during the construction works associated with the Proposed Grid Connection underground electrical cable route crossing of the TEMP_A14A46 was identified.

5.1.3.1 Identification of Individual Qualifying Features with the Potential to be Affected

Table 5-6 below lists the qualifying features of this European Site and determines, in the view of their Conservation Objectives, whether there is any complete source-pathway-receptor chain by which adverse effects may occur.

Table 5-6 Assessment of Individual QIs of Ballynafagh Bog SAC with the Potential to be Affected by the Proposed Project

Qualifying feature	Conservation Objective (NPWS, Version 1, 2015[57]),	Rationale	Potential for Adverse Effects Yes/No
Active raised bogs [7110]	To restore the favourable conservation condition of Active raised bogs in Ballynafagh Bog SAC	The Proposed Grid Connection is hydrologically linked to Ballynafagh Bog SAC via the TEMP_14A46 watercourse, which is crossed by the Proposed Grid Connection underground electrical cabling route. No instream works are proposed to facilitate the Proposed Grid Connection underground electrical cabling route crossing in this location, with the crossing to be undertaken using Flatbed Formation Under (Type B) or Flatbed Formation Over (Type C) construction methods within the existing road corridor. The TEMP_14A46 flows into the Slate River (14S01) approximately 560m downstream of the crossing, which in turn	No

[57] *NPWS (2015) Conservation Objectives: Ballynafagh Bog SAC 000391. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.*

Qualifying feature	Conservation Objective (NPWS, Version 1, 2015[57]),	Rationale	Potential for Adverse Effects Yes/No
		flows along the southern boundary of the SAC at a hydrological distance of 740m from the crossing of the watercourse. The areas of uncut raised bog where Active raised bog occurs within the SAC are buffered from the Slate River, where it flows along the southern boundary of the SAC, by grassland, scrub and cutover peat habitats. Additionally, according to the SSCO document for the SAC, drainage runs from the bog towards the Slate River (see Map 4 of the SSCO document). Taking this into account, as well as the ombrotrophic (rain fed) nature of the raised bog habitat, this SAC would not be negatively affected by changes to water quality in the Slate River. As such, following detailed assessment, there is no potential for adverse effects on the integrity of Ballynafagh Bog SAC, in view of the site's Conservation Objectives, as a result of impacts to Active raised bogs. **No further assessment is required.**	
Degraded raised bogs still capable of natural regeneration [7120]	The long-term aim for Degraded raised bogs still capable of natural regeneration is that its peat-forming capability is re-established; therefore, the conservation objective for this habitat is inherently linked to that of Active raised bogs (7110) and a separate conservation objective has not been set in Ballynafagh Bog SAC	According to the Site Synopsis document[58] for this SAC, Degraded raised bog corresponds to those areas within the high (uncut) bog whose hydrology has been adversely affected by peat cutting, drainage and other land use activities, but which are capable of regeneration. The Proposed Grid Connection is hydrologically linked to Ballynafagh Bog SAC via the TEMP_14A46 watercourse, which is crossed by the Proposed Grid Connection underground electrical cable route. No instream works are proposed to facilitate the proposed Grid Connection underground electrical cable route crossing of the Slate River, with the crossing to be undertaken using Flatbed Formation Under (Type B) or Flatbed Formation Over (Type C) construction methods in the existing road corridor. The TEMP_14A46 flows into the Slate River (14S01) approximately 560m downstream of the crossing, which in turn flows along the southern boundary of the SAC at a hydrological distance of 740m from the crossing of the watercourse.	No

[58] *NPWS (2013) Ballynafagh Bog SAC Site Synopsis. Version date: 20.08.2013, 000391_Rev13.Doc.*

Qualifying feature	Conservation Objective (NPWS, Version 1, 2015[57]),	Rationale	Potential for Adverse Effects Yes/No
		The areas of uncut raised bog where Degraded raised bog occurs within the SAC are buffered from the Slate River by grassland, scrub and cutover peat habitats and according to the SSCO document for the SAC, drainage from the bog is to the Slate River (see Map 4 of the SSCO document). Taking this into account as well as the ombrotrophic (rain fed) nature of the raised bog habitat, this SAC would not be negatively affected by changes to water quality in the Slate River. As such, following detailed assessment, there is no potential for adverse effects on the integrity of Ballynafagh Bog SAC, in view of the site's Conservation Objectives, as a result of impacts to Degraded raised bog still capable of natural regeneration. **No further assessment is required.**	
Depressions on peat substrates of the *Rhynchosporion* [7150]	Depressions on peat substrates of the *Rhynchosporion* is an integral part of good quality Active raised bogs (7110) and thus a separate conservation objective has not been set for the habitat in Ballynafagh Bog SAC	According to the Site Synopsis document for this SAC, *Rhynchosporion* habitat occurs in wet depressions, pool edges and erosion channels where the vegetation includes white beak-sedge (*Rhynchospora alba*) and/or brown beak-sedge (*R. fusca*). This habitat is also associated with the high (uncut) bog within the SAC. The Proposed Grid Connection is hydrologically linked to Ballynafagh Bog SAC via the TEMP_14A46 watercourse, which is crossed by the Proposed Grid Connection underground electrical cable route. No instream works are proposed to facilitate the Proposed Grid Connection underground electrical cable route crossing of the Slate River, with the crossing to be undertaken using Flatbed Formation Under (Type B) or Flatbed Formation Over (Type C) construction methods within the existing road corridor. The TEMP_14A46 flows into the Slate River (14S01) approximately 560m downstream of the crossing, which in turn flows along the southern boundary of the SAC at a hydrological distance of 740m from the crossing of the watercourse. The areas of uncut raised bog where *Rhynchosporion* vegetation occurs are buffered from the Slate River by grassland, scrub and cutover peat habitats. Additionally, according to the SSCO document for the SAC, drainage from the bog is to the Slate River (see map 4 of the SSCO document), Taking the above into account as well as the ombrotrophic (rain fed)	No

Qualifying feature	Conservation Objective (NPWS, Version 1, 2015[57]),	Rationale	Potential for Adverse Effects Yes/No
		nature of the raised bog habitat, this SAC would not be negatively affected by changes to water quality in the Slate River. As such, following detailed assessment, there is no potential for adverse effects on the integrity of Ballynafagh Bog SAC, in view of the site's Conservation Objectives, as a result of impacts to Depressions on peat substrates of the *Rhynchosporion*. **No further assessment is required.**	

5.1.4 River Barrow and River Nore SAC [002162]

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

- The SAC is hydrologically connected to the Project Site via the Figile and Slate Rivers. The majority of the Proposed Wind Farm site lies within the Barrow (14) catchment, specifically the Figile sub-catchment. This area is drained by several streams including the Codd Stream, Clonbullogue Stream, Ballygarrett Stream, Cloncant Stream, Ballyhagan Stream and the Slate Stream all of which flow to the Figile River, which then flows into the Barrow River. Streams draining the southern part of the Proposed Wind Farm, as well as those along the Proposed Grid Connection underground electrical cable route flow into the Slate River, which confluences with the Figile River approximately 6.6 km southwest of the Proposed Wind Farm, which lies approximately 15.3km downstream of the Slate. The Figile then in turn converges with the River Barrow approximately 6.4km downstream. The River Barrow forms part of River Barrow and River Nore SAC. In addition, areas of the Project Site are underlain by the same groundwater bodies (Cushina, Kildare and Bagenalstown) as the River Barrow and River Nore SAC and therefore there is also potential hydrological connectivity with the SAC via groundwater pathways. In the absence of mitigation, there is potential for indirect effects on the SAC due to deterioration of water quality arising from run-off of or percolation of pollutants (including silts, hydrocarbons and cementitious materials) to watercourses within and downstream of the Project Site which have connectivity downstream with the SAC, or to groundwater, during the construction, operation and decommissioning of the Proposed Project. Deterioration of water quality has potential to result in degradation of aquatic QI habitats and supporting habitat for the aquatic QI species as well as mortality if QI fish species associated with the SAC.
- While the SAC is located approximately 17km downstream of the Project Site at its nearest point, taking a precautionary approach a potential pathway for indirect effects on the SAC due to ex-situ disturbance or displacement of otter was also identified. Otters can utilise extensive territories, (approximately 7.5 ± 1.5km for females and 13.2 ± 5.3km for males (Ó'Neill, 2008)) and therefore on a highly precautionary basis, otter utilising watercourses within or downstream of the Project Site have potential to be associated with the SAC.

- Due to the downstream hydrological connectivity with this SAC, populations of aquatic QI species occurring within and downstream of the Project Site are considered to comprise part of the SAC populations. Due to the requirement for in-stream works to facilitate the construction of watercourse crossings within the Proposed Wind Farm site, in the absence of mitigation there is potential for direct disturbance and mortality of sensitive aquatic QI species which may reside within these watercourses at these locations.

5.1.4.1 Identification of Individual Qualifying Features with the Potential to be Affected

Table 5-7 below lists the qualifying features of this European Site and determines, in view of their Conservation Objectives, whether there is any complete source-pathway-receptor chain, by which adverse effects may occur.

Table 5-7 Assessment of Individual QIs with the Potential to be Affected by the Proposed Project

Qualifying feature	Conservation Objective (NPWS, Version 2, 2025[59]),	Rationale	Potential for Adverse Effects Yes/No
[1016] Desmoulin's whorl snail (*Vertigo moulinsiana*)	To maintain the favourable conservation condition of Desmoulin's whorl snail in the River Barrow and River Nore SAC.	Desmoulin's whorl snail (*Vertigo moulinsiana*) is a terrestrial species associated with vegetation of wetland habitats often bordering waterbodies such as canals, ditches lakes and rivers (Long and Brophy, 2019). According to the SSCO document for the River Barrow and River Nore SAC, two locations within the SAC are known for the species, one of which lies within a separate catchment to the Proposed Project (i.e. the Nore). The closest downstream record associated with the SAC listed in the SSCO document is located over 70km from the Proposed Wind Farm and at a hydrological distance of 95km. While the Project Site has a weak hydrological connection to this QI species, any changes in water quality as a result of the Proposed Project would not have the potential to undermine any of the conservation objectives for this QI species, given the nature, scale and location of the Proposed Project and the hydrological separation distance of approximately 95km, along with the attenuating properties of the intervening watercourse. As such, following detailed assessment, there is no potential for adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation	No

[59] *NPWS (2025) Conservation Objectives: River Barrow and River Nore SAC 002162. Version 2. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.*

Qualifying feature	Conservation Objective (NPWS, Version 2, 2025[59]),	Rationale	Potential for Adverse Effects Yes/No
		Objectives, as a result of impacts to Desmoulin's whorl snail. **No further assessment is required.**	
[1029] Freshwater pearl mussel (*Margaritifera margaritifera*)	To restore the favourable conservation condition of the Freshwater pearl mussel (*Margaritifera margaritifera*) in the River Barrow and River Nore SAC	According to the site-specific conservation objectives, the conservation objectives for this species apply to the Ballymurphy, Mountain and Nore freshwater pearl mussel populations, which are listed on the European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations 2009 (Statutory Instrument No. 296 of 2009). The conservation objectives include mapped areas of the three relevant catchments (Ballymurphy, Mountain and Nore) as well as suitable habitat and distribution within these systems. These freshwater pearl mussel catchments are not hydrologically connected to the Project Site as they are located along the River Nore and within separate tributaries of the River Barrow and are located over 70km from the Project Site. Given the location of the known populations for which the SAC is designated and the absence of a hydrological link between the Project Site and these populations, no potential pathway for adverse effects the SAC as a result of impacts to this species was identified. As such, following detailed assessment, there is no potential for adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, as a result of impacts to freshwater pearl mussel. **No further assessment is required.**	No
[1092] White-clawed crayfish (*Austropotamobius pallipes*)	To maintain the favourable conservation condition of White-clawed crayfish in the River Barrow and River Nore SAC	According to the SSCO document for the SAC, crayfish is present throughout most of the SAC. While white-clawed crayfish were not recorded during any of the dedicated aquatic surveys undertaken to inform this assessment, as outlined in Section 3.4.5.3 and the Aquatic Baseline Report (see Appendix 2), Triturus data detected white-clawed crayfish from the Figile River at Kilcumber Bridge in 2025 and sampling of the Figile near Bracknagh in 2020 as part of the National Crayfish Plague Surveillance Programme also detected crayfish. Additionally, the latest available NPWS Article 17 mapping (2019) was also consulted and nine records of white-clawed crayfish were identified within the Proposed Wind Farm site, within tributaries of the Figile River as well as further records downstream of the Project Site within both the Slate and Figile Rivers. These records date to between 2009 and 2017.	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 2, 2025[59]),	Rationale	Potential for Adverse Effects Yes/No
		Therefore, it is considered that this species likely resides within the watercourses within and downstream of the Project Site, outside of the SAC boundaries. Such *ex-situ* populations are considered to comprise part of the SAC population. There is potential for adverse effects on populations of this species associated with the SAC where they occur downstream of the Project Site due to deterioration of water quality and potential resulting degradation of supporting habitat. This could occur due to run-off of silts and/or other pollutants including hydrocarbons and cementitious materials to watercourses which have downstream connectivity with the SAC during the construction, operation and decommissioning phases of the Proposed Project. As outlined in Section 2.3.1.11 above, in-stream works will be required at up to 8 no. locations in order to facilitate watercourse crossings associated with the Proposed Wind Farm. Due to the nature of these in-stream works, in the absence of mitigation there is potential for direct disturbance and mortality of this species during these works. **Following detailed assessment, the potential for adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, was identified as a result of impacts to white-clawed crayfish. The potential adverse effects on this species is considered further in this assessment.**	
[1106] Atlantic salmon (*Salmo salar*) (only in fresh water)	To restore the favourable conservation condition of Salmon in the River Barrow and River Nore SAC	The Project Site is hydrologically linked to the River Barrow and River Nore SAC via the Figile and Slate rivers and their tributaries which drain the Project Site. There is potential for adverse effects on populations of this species associated with the SAC where they occur downstream of the Project Site due to deterioration of water quality and potential resulting degradation of supporting habitat. This could occur due to run-off of silts and/or other pollutants including hydrocarbons and cementitious materials to watercourses which have downstream connectivity with the SAC during the construction, operation and decommissioning phases of the Proposed Project. Inland Fisheries Ireland have noted that adult salmon spawn in shallow waters during the winter months and the adult salmon that spawn in systems such as the Figile and Slate will	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 2, 2025[59]),	Rationale	Potential for Adverse Effects Yes/No
		have resided in deeper sections of the Barrow main channel prior to entering the Black River system to spawn. Conversely, the progeny of the salmon that spawn in the Figile and Slate system as they grow older and larger will travel downstream to the deeper waters of the Barrow main channel, before smoltifying and migrating to sea (see Section 1.5.3 above). As such, the populations of salmon in the watercourses which drain the Project Site are an integral component of the salmon populations of the River Barrow and River Nore SAC. Dedicated electrofishing surveys undertaken to inform this assessment identified that Atlantic salmon present at one survey site in 2026 (i.e. within the Figile (A18)), with eDNA sampling results also indicating their presence within the Figile and Slate rivers upstream of the SAC (see Section 3.4.5.2 above and Aquatic Baseline Report, Appendix 2). As outlined in Section 2.3.1.11 above, in-stream works will be required at up to 8 no. locations in order to facilitate watercourse crossings associated with the Proposed Wind Farm. Due to the nature of these in-stream works, in the absence of mitigation there is potential for direct disturbance and mortality of this species during these works. **Following detailed assessment, the potential for adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, was identified as a result of impacts to Atlantic salmon. The potential adverse effects on this species is considered further in this assessment.**	
[1095] Sea lamprey (*Petromyzon marinus*)	To restore the favourable conservation condition of Sea lamprey in the River Barrow and River Nore SAC	The Project Site is hydrologically linked to the River Barrow and River Nore SAC via the Figile and Slate rivers and their tributaries which drain the Project Site. There is potential for adverse effects on populations of this species associated with the SAC where they occur downstream of the Project Site due to deterioration of water quality and potential resulting degradation of supporting habitat. This could occur due to run-off of silts and/or other pollutants including hydrocarbons and cementitious materials to watercourses which have downstream connectivity with the SAC during the construction, operation and decommissioning phases of the Proposed Project. Baseline aquatic surveys undertaken to inform this assessment did not identify evidence of sea lamprey at any of the aquatic survey sites located upstream of this SAC (see Section 3.4.5	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 2, 2025[59]),	Rationale	Potential for Adverse Effects Yes/No
		above and Aquatic Baseline Report, Appendix 2). The quality of lamprey habitat was found to be generally poor across the survey area given widespread hydromorphological and siltation pressures. The latest available NPWS Article 17 mapping (2019) was also consulted which did not show the Project Site to be located within the range of sea lamprey. However, a search of the '*Water Framework Directive Rivers Fish Ecological Status 2008 to recent*[60]' dataset from the Inland Fisheries Ireland open data portal showed records of Lamprey sp. from Station 'Ticknevin_A' on the Figile River in 2015, located approximately 3.9km upstream of the Proposed Wind Farm site, as well as at 'Ballyteige_A' on the Slate River in 2015, located approximately 2.3km downstream of the Proposed Grid Connection underground electrical cabling route. Therefore, on a precautionary basis, it cannot be ruled out that sea lamprey may reside within the watercourses within and downstream of the Project Site, outside of the SAC boundaries. Such *ex-situ* populations, where they occur, are considered to comprise part of the SAC population. As outlined in Section 2.3.1.11 above, in-stream works will be required at up to 8 no. locations in order to facilitate watercourse crossings associated with the Proposed Wind Farm. Due to the nature of these in-stream works, in the absence of mitigation there is potential for direct disturbance and mortality of this species during these works. **Following detailed assessment, the potential for adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, was identified as a result of impacts to sea lamprey. The potential adverse effects on this species is considered further in this assessment.**	
[1096] Brook lamprey (*Lampetra planeri*)	To restore the favourable conservation condition of Brook lamprey in the River Barrow and River Nore SAC	The Project Site is hydrologically linked to the River Barrow and River Nore SAC via the Figile and Slate rivers and their tributaries which drain the Project Site. There is potential for adverse effects on populations of this species associated with the SAC where they occur downstream of the Project Site due to deterioration of water quality and potential resulting degradation of supporting habitat. This could occur due to run-off of silts and/or other	**Yes**

[60] *Inland Fisheries Ireland [online] Available at: https://opendata-ifigeo.hub.arcgis.com/datasets/649f3be078b04317896547bd517bfda0_0/explore [Accessed 18/08/2026]*

Qualifying feature	Conservation Objective (NPWS, Version 2, 2025[59]),	Rationale	Potential for Adverse Effects Yes/No
		pollutants including hydrocarbons and cementitious materials to watercourses which have downstream connectivity with the SAC during the construction, operation and decommissioning phases of the Proposed Project. Baseline aquatic surveys undertaken to inform this assessment recorded *Lampetra* sp. via electrofishing at a single survey site upstream of the SAC, at Quigley's Bridge on the Slate River (survey site G5) (see Section 3.4.5.2 above and Aquatic Baseline Report, Appendix 2). Additionally, *Lampetra* sp. eDNA was detected within both the Figile and Slate Rivers upstream of the SAC. The quality of lamprey habitat was found to be generally poor across the survey area given widespread hydro-morphological and siltation pressures. The latest available NPWS Article 17 mapping (2019) was also consulted which showed the distribution of brook lamprey to encompass hectads N52, N62, N63, N72 and N82 in which the Proposed Project is located. Furthermore, a search of the '*Water Framework Directive Rivers Fish Ecological Status 2008 to recent*[61] dataset from the Inland Fisheries Ireland open data portal showed records of Lamprey sp. from Station 'Ticknevin_A' on the Figile River in 2015, located approximately 3.9km upstream of the Proposed Wind Farm site, as well as at 'Ballyteige_A' on the Slate River in 2015, located approximately 2.3km downstream of the Proposed Grid Connection underground electrical cabling route. Therefore, brook lamprey may reside within the watercourses within and downstream of the Project Site, outside of the SAC boundaries. Such *ex-situ* populations, where they occur, are considered to comprise part of the SAC population. As outlined in Section 2.3.1.11 above, in-stream works will be required at up to 8 no. locations in order to facilitate watercourse crossings associated with the Proposed Wind Farm. Due to the nature of these in-stream works, in the absence of mitigation there is potential for direct disturbance and mortality of this species during these works. **Following detailed assessment, the potential for adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, was identified as**	

[61] *Inland Fisheries Ireland [online] Available at: https://opendata-ifigeo.hub.arcgis.com/datasets/649f3be078b04317896547bd517bfda0_0/explore [Accessed 18/08/2026]*

Qualifying feature	Conservation Objective (NPWS, Version 2, 2025[59]),	Rationale	Potential for Adverse Effects Yes/No
		a result of impacts to brook lamprey. The potential adverse effects on this species is considered further in this assessment.	
[1099] River lamprey (*Lampetra fluviatilis*)	To restore the favourable conservation condition of River lamprey in the River Barrow and River Nore SAC	The Project Site is hydrologically linked to the River Barrow and River Nore SAC via the Figile and Slate rivers and their tributaries which drain the Project Site. There is potential for adverse effects on populations of this species associated with the SAC where they occur downstream of the Project Site due to deterioration of water quality and potential resulting degradation of supporting habitat. This could occur due to run-off of silts and/or other pollutants including hydrocarbons and cementitious materials to watercourses which have downstream connectivity with the SAC during the construction, operation and decommissioning phases of the Proposed Project. Baseline aquatic surveys undertaken to inform this assessment recorded *Lampetra* sp. via electrofishing at a single survey site upstream of the SAC, at Quigley's Bridge on the Slate River (survey site G5) (see Section 3.4.5.2 above and Aquatic Baseline Report, Appendix 2). Additionally, *Lampetra* sp. eDNA was detected within both the Figile and Slate Rivers upstream of the SAC. The quality of lamprey habitat was found to be generally poor across the survey area given widespread hydromorphological and siltation pressures. The latest available NPWS Article 17 mapping (2019) was also consulted which did not show the Project Site to be located within the range of river lamprey. However, a search of the '*Water Framework Directive Rivers Fish Ecological Status 2008 to recent'* dataset from the Inland Fisheries Ireland open data portal showed records of Lamprey sp. from Station 'Ticknevin_A' on the Figile River in 2015, located approximately 3.9km upstream of the Proposed Wind Farm site, as well as at 'Ballyteige_A' on the Slate River in 2015, located approximately 2.3km downstream of the Proposed Grid Connection underground electrical cabling route. Therefore, on a precautionary basis, it cannot be ruled out that river lamprey may reside within the watercourses within and downstream of the Project Site, outside of the SAC boundaries. Such *ex-situ* populations, where they occur, are considered to comprise part of the SAC population. As outlined in Section 2.3.1.11 above, in-stream works will be required at up to 8 no. locations in order to facilitate watercourse crossings associated with the Proposed Wind	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 2, 2025[59]),	Rationale	Potential for Adverse Effects Yes/No
		Farm. Due to the nature of these in-stream works, in the absence of mitigation there is potential for direct disturbance and mortality of this species during these works. **Following detailed assessment, the potential for adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, was identified as a result of impacts to river lamprey. The potential adverse effects on this species is considered further in this assessment.**	
[1103] Twaite shad (*Alosa fallax*)	To restore the favourable conservation condition of Twaite shad in the River Barrow and River Nore SAC	The Proposed Project is hydrologically linked to the River Barrow and River Nore SAC via the Figile and Slate rivers and their tributaries which drain the Project Site. The latest available *National Programme: Habitats and Red Data Book Fish Species Summary Report* (2023)[62] prepared by the IFI was reviewed in order to assess the distribution of this species within the SAC and potential for adverse effects. This report outlines that twaite shad spawning occurs below a weir at St. Mullins, Co. Carlow, which is located at the upper tidal limit of the Barrow, and *"acts as a substantial, if not complete, barrier to upstream migration".* The latest available NPWS Article 17 mapping (2019) was also consulted which also shows this limited range of twaite shad which does not extend further upstream than St. Mullin's Weir. As such, best available desk study data suggest that, within this SAC, this species is present only in transitional waters downstream of St. Mullin's Weir on the River Barrow, over 80km south of the Project Site and over 100km downstream. Therefore, due to the intervening distance between the Project Site and the known distribution of this QI species, along with the attenuating and diluting properties of the intervening watercourse, any changes in water quality as a result of the Proposed Project would not have the potential to have an adverse effect on the integrity of this QI species. Additionally, there is no potential for adverse effects on the integrity of the SAC as a result of disturbance or mortality of this species during proposed in-stream works.	No

[62] https://www.fisheriesireland.ie/sites/default/files/2023-08/habitats-directive-and-red-data-book-species-summary-report-2022.pdf

Qualifying feature	Conservation Objective (NPWS, Version 2, 2025[59]),	Rationale	Potential for Adverse Effects Yes/No
		As such, following detailed assessment, there is no potential for adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, as a result of impacts to twaite shad. **No further assessment is required.**	
[1355] Otter (*Lutra lutra*)	To restore the favourable conservation condition of Otter in the River Barrow and River Nore SAC	The Project Site is hydrologically linked to the River Barrow and River Nore SAC via the Figile and Slate rivers and their tributaries which drain the Project Site. The desk study undertaken to inform this assessment identified that otter is widespread in wider area surrounding the Project Site. Signs of otter were also recorded at a number of locations within and downstream of the Project Site that are hydrologically connected to the SAC and at aquatic survey locations within the Project Site (see Section 3.4.2 above). No active otter resting or breeding sites (including holts and couches) were recorded within 150m of the Proposed Project infrastructure during dedicated otter surveys. While an otter holt was recorded during surveys undertaken in 2021 within a pipe culvert near the Codd River crossing of the local L1001 road, during follow-up surveys in September 2026 it was found to be no longer in use by otter, and no otter signs were recorded in the vicinity. An inactive holt was also identified within the Proposed Wind Farm site during baseline aquatic surveys undertaken in 2026, to the north of Proposed Turbine 36. Both the inactive holt identified in 2026 and the pipe culvert in which a holt was identified in 2021 are located over 150m from the nearest significant infrastructure and are therefore located outside the likely ZoI for adverse effects as a result of disturbance. Any works located within 150m are minor in nature (i.e. proposed scrub planting and a proposed peat and spoil area) and will not involve any significant groundworks. Additionally, both holt locations are situated over 25km upstream of the River Barrow and River Nore SAC and as such are located outside of the range of otter associated with the SAC (approximately 7.5 ± 1.5km for females and 13.2 ± 5.3km for males; Ó'Neill, 2008). As such no resting or breeding sites of otter associated with the River Barrow and River Nore SAC will be disturbed as part of the Proposed Project. Nonetheless, the watercourses within and downstream of the Project Site provide appropriate habitat for foraging and commuting for otter. While the Project Site is located at approximately 17km hydrological distance from the SAC, otter are known to have large territories (Ó'Neill, 2008). Therefore, taking a highly precautionary approach, there is	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 2, 2025[59]),	Rationale	Potential for Adverse Effects Yes/No
		potential for otter utilising the watercourses within the areas of the Project Site in this territory range to be associated with the SAC. As such, there is potential for adverse effects on the integrity the SAC as a result of disturbance and displacement of otter during the construction and decommissioning phases of the Proposed Project. Additionally, there is potential for run-off of silt and other pollutants such as hydrocarbons and cementitious material during the construction, operational and decommissioning phases of the Proposed Project into watercourses within and downstream of the Project Site, which have connectivity with the SAC downstream. This has the potential to result in adverse effects on the integrity of the SAC as a result of habitat degradation which could affect fish biomass and therefore prey resource availability for otter. While a number of watercourse crossings are required both within the Proposed Wind Farm and along the Proposed Grid Connection underground electrical cabling route, and in-stream works will be required at up to 8 no. watercourse crossings to facilitate the Proposed Wind Farm, these works will be temporary in nature and will not result in any permanent habitat loss for otter. As such, there will be no loss of or fragmentation of habitat for otter as a result of the Proposed Project. **Following detailed assessment, the potential for adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, was identified as a result of impacts to otter. The potential adverse effects on this species is considered further in this assessment.**	
[1421] Killarney fern (*Trichomanes speciosum*)	To maintain the favourable conservation condition of Killarney Fern in the River Barrow and River Nore SAC	The Project Site is located outside the SAC as such there is no potential for adverse effects on this QI species as a result of direct impacts (e.g. habitat loss). According to the SSCO document, three locations within the SAC are known, with three colonies of gametophyte and one sporophyte colony, all of which are located over 75km from the Project Site. Therefore, due to the terrestrial nature of this QI species and the intervening distance between their mapped locations within the SAC and the Project Site, there is no potential for adverse effects on the integrity of the SAC as a result of water quality deterioration effects on Killarney fern.	No

Qualifying feature	Conservation Objective (NPWS, Version 2, 2025[59]),	Rationale	Potential for Adverse Effects Yes/No
		As such, following detailed assessment, there is no potential for adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, as a result of impacts to Killarney fern. **No further assessment is required.**	
[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 River Barrow and River Nore SAC	The Project Site is hydrologically linked to the River Barrow and River Nore SAC via the Figile and Slate rivers and their tributaries which drain the Project Site. According to the SSCO document, the full distribution of this habitat and its sub-types within the SAC is currently unknown, and the basis of the selection of the SAC for the habitat is the presence of an excellent example of the vegetation community (nutrient-rich type) associated with extensive tufa deposits on the river bed in the Kings tributary of the Nore. The King's tributary of the River Nore is not hydrologically connected to the Project Site, therefore there is no potential for adverse effects on this mapped area of QI habitat within the SAC. However, given there is hydrological connectivity between the Project Site and the SAC, there is potential for adverse effects on un-mapped areas of this aquatic habitat associated with the SAC where it occurs downstream of the Project Site due to deterioration of water quality and resulting habitat degradation. Deterioration in water quality arising from the construction, operation and decommissioning phases of the Proposed Project has the potential to result in adverse effects on the integrity of the SAC as a result of degradation of this aquatic habitat. **Following detailed assessment, the potential for adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, was identified as a result of impacts to Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. The potential adverse effects on this habitat is considered further in this assessment.**	**Yes**
[1170] Reefs	To maintain the favourable conservation condition of Reefs in the River Barrow and River Nore SAC	This QI habitat is coastal in nature and mapped areas of this habitat (see Map 4 of the SSCO document) are located in the lower estuarine reaches of the River Barrow and River Nore, over 100km downstream of the Project Site. Therefore, due to the intervening distance between the Project Site and this QI habitat, along with the attenuating and diluting properties of the intervening watercourse, any changes in water quality as a result of the	No

Qualifying feature	Conservation Objective (NPWS, Version 2, 2025[59]),	Rationale	Potential for Adverse Effects Yes/No
		Proposed Project would not have the potential to have an adverse effect on the integrity of the SAC as a result of impacts to this QI habitat. As such, following detailed assessment, there is no potential for adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, as a result of impacts to Reefs. **No further assessment is required.**	
[1130] Estuaries	To maintain the favourable conservation condition of Estuaries in the River Barrow and River Nore SAC	This QI habitat is coastal in nature and mapped areas of this habitat (see Map 2 of the SSCO document) are located in the lower estuarine reaches of the River Barrow and River Nore, over 100km downstream of the Project Site. Therefore, due to the intervening distance between the Project Site and this QI habitat, along with the attenuating and diluting properties of the intervening watercourse, any changes in water quality as a result of the Proposed Project would not have the potential to have an adverse effect on the integrity of the SAC as a result of impacts to this QI habitat. As such, following detailed assessment, there is no potential for adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, as a result of impacts to Estuaries. **No further assessment is required.**	No
[1140] Mudflats and sandflats not covered by seawater at low tide	To maintain the favourable conservation condition of the Mudflats and sandflats not covered by seawater at low tide in the River Barrow and River Nore SAC	This QI habitat is coastal in nature and mapped areas of this habitat (see Map 3 of the SSCO document) are located in the lower estuarine reaches of the River Barrow and River Nore, over 100km downstream of the Project Site. Therefore, due to the intervening distance between the Project Site and this QI habitat, along with the attenuating and diluting properties of the intervening watercourse, any changes in water quality as a result of the Proposed Project would not have the potential to have an adverse effect on the integrity of the SAC as a result of impacts to this QI habitat. As such, following detailed assessment, there is no potential for adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, as a result of impacts to Mudflats and sandflats not covered by seawater at low tide. **No further assessment is required.**	No

Qualifying feature	Conservation Objective (NPWS, Version 2, 2025[59]),	Rationale	Potential for Adverse Effects Yes/No
[1310] *Salicornia* and other annuals colonising mud and sand	To maintain the favourable conservation condition of *Salicornia* and other annuals colonizing mud and sand in the River Barrow and River Nore SAC	This QI habitat is coastal in nature and mapped areas of this habitat (see Map 5 of the SSCO document) are located in the lower estuarine reaches of the River Barrow and River Nore, over 100km downstream of the Project Site. Therefore, due to the intervening distance between the Project Site and this QI habitat, along with the attenuating and diluting properties of the intervening watercourse, any changes in water quality as a result of the Proposed Project would not have the potential to have an adverse effect on the integrity of the SAC as a result of impacts to this QI habitat. As such, following detailed assessment, there is no potential for adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, as a result of impacts to *Salicornia* and other annuals colonising mud and sand. **No further assessment is required.**	No
[1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	To restore the favourable conservation condition of Atlantic salt meadows in the River Barrow and River Nore SAC	This QI habitat is coastal in nature and mapped areas of this habitat (see Map 5 of the SSCO document) are located in the lower estuarine reaches of the River Barrow and River Nore, over 100km downstream of the Project Site. Therefore, due to the intervening distance between the Project Site and this QI habitat, along with the attenuating and diluting properties of the intervening watercourse, any changes in water quality as a result of the Proposed Project would not have the potential to have an adverse effect on the integrity of the SAC as a result of impacts to this QI habitat. As such, following detailed assessment, there is no potential for adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, as a result of impacts to Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*). **No further assessment is required.**	No
[1410] Mediterranean salt meadows (*Juncetalia maritimi*)	To restore the favourable conservation condition of Mediterranean salt meadows in the River Barrow and River Nore SAC	This QI habitat is coastal in nature and mapped areas of this habitat (see Map 5 of the SSCO document) are located in the lower estuarine reaches of the River Barrow and River Nore, over 100km downstream of the Project Site. Therefore, due to the intervening distance between the Project Site and this QI habitat, along with the attenuating and diluting properties of the intervening watercourse, any changes in water quality as a result of the	No

Qualifying feature	Conservation Objective (NPWS, Version 2, 2025[59]),	Rationale	Potential for Adverse Effects Yes/No
		Proposed Project would not have the potential to have an adverse effect on the integrity of the SAC as a result of impacts to this QI habitat. As such, following detailed assessment, there is no potential for adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, as a result of impacts to Mediterranean salt meadows (*Juncetalia maritimi*). **No further assessment is required.**	
[4030] European dry heaths	To maintain the favourable conservation condition of European dry heaths in the River Barrow and River Nore SAC	The Project Site is located outside of the SAC and therefore there is no potential for adverse effects on the integrity of the SAC as a result of direct impacts to this terrestrial QI habitat (e.g. habitat loss). According to the SSCOs, the spatial extent of this QI habitat is currently unmapped but indicated as occurring on the steep, free-draining, river valley sides especially the Barrow and tributaries in the foothills of the Blackstairs Mountains. This is a terrestrial habitat, and no hydrological or other functional connectivity exists between the Project Site and this habitat within the SAC. As such, following detailed assessment, there is no potential for adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, as a result of impacts to European dry heaths. **No further assessment is required.**	No
[6430] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	To maintain the favourable conservation condition of Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels in the River Barrow and River Nore SAC	The Project Site is hydrologically linked to the River Barrow and River Nore SAC via the Figile and Slate rivers and their tributaries which drain the Project Site. According to the SSCO document, the distribution of this habitat in this SAC is currently unknown and it is considered to occur in association with some riverside woodlands, unmanaged river islands and in narrow bands along the floodplain of slow-flowing stretches of river. Given there is hydrological connectivity between the Project Site and the SAC, there is potential for adverse effects on the integrity of the SAC due to deterioration of water quality and resulting degradation of this riparian habitat where it occurs downstream of the Project Site. Deterioration in water quality arising from the construction, operation and decommissioning phases of the Proposed Project has the potential to undermine the conservation objectives for this habitat.	**Yes**

Qualifying feature	Conservation Objective (NPWS, Version 2, 2025[59]),	Rationale	Potential for Adverse Effects Yes/No
		Following detailed assessment, the potential for adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, was identified as a result of impacts to Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels. The potential adverse effects on this habitat is considered further in this assessment.	
[7220] * Petrifying springs with tufa formation (*Cratoneurion*)	To maintain the favourable conservation condition of Petrifying springs with tufa formation (*Cratoneurion*) in the River Barrow and River Nore SAC	According to the SSCO document, the extent of this groundwater-dependent habitat within the SAC is currently unknown, with only one area described in woodlands at Dysart along the River Nore. While a hydrological connection exists between the Project Site and the SAC via downstream watercourses, this mapped location is not hydrologically connected to the Project Site, and no groundwater connectivity exists between the Project Site and the location of this habitat where it occurs within the SAC.. As such, following detailed assessment, there is no potential for adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, as a result of impacts to Petrifying springs with tufa formation (*Cratoneurion*). **No further assessment is required.**	No
[91A0] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles	To restore the favourable conservation condition of Old oak woodland with *Ilex* and *Blechnum* in the River Barrow and River Nore SAC	The Project Site is located outside of the SAC and therefore there is no potential for adverse effects on the integrity of the SAC as a result of direct impacts to this terrestrial QI habitat (e.g. habitat loss). According to the SSCOs, the spatial extent of this QI habitat is currently not fully mapped but is indicated as occurring at Graiguenamanagh at its closest location, at a distance of approximately 77km from the Project Site. This is a terrestrial habitat, and no functional connectivity exists between the Project Site and this habitat within the SAC. As such, there is no potential for adverse effects on this QI habitat as a result of the Proposed Project. As such, following detailed assessment, there is no potential for adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, as a result of impacts to Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles. **No further assessment is required.**	No

Qualifying feature	Conservation Objective (NPWS, Version 2, 2025[59]),	Rationale	Potential for Adverse Effects Yes/No
[91E0] * Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)	To restore the favourable conservation condition of Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) in the River Barrow and River Nore SAC	According to the SSCO document, the distribution of this habitat in this SAC is currently not fully mapped but is indicated as occurring at a distance of approximately 36km downstream of the Project Site at its closest mapped location. Given there is hydrological connectivity between the Project Site and the SAC, there is potential for adverse effects on the integrity of this SAC as a result of degradation of this riparian habitat where it occurs downstream of the Project Site. Deterioration in water quality arising from the construction, operation and decommissioning phases of the Proposed Project has the potential to undermine the conservation objectives for this habitat. **Following detailed assessment, the potential for adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, was identified as a result of impacts to Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*). The potential adverse effects on this habitat is considered further in this assessment.**	**Yes**

5.1.4.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form[63] for the River Barrow and River Nore SAC the site-specific threats, pressures and activities with potential to impact on the European Site were reviewed and considered in relation to the Proposed Project. These are provided in Table 5-8 below. In the absence of mitigation, the Proposed Project has the potential to contribute to pressure *H01 - Pollution to surface waters (limnic, terrestrial, marine & brackish)* via the deterioration in water quality arising from the construction, operation and decommissioning phases of the Proposed Project.

Table 5-8 River Barrow and River Nore SAC site-specific threats, pressures and activities

Negative Impacts			
Rank	**Threats and Pressures (* Items in bold are of relevance to the proposed project)**		**Inside/Outside**
High	A02.01	Agricultural intensification	Both
High	H01	Pollution to surface waters (limnic, terrestrial, marine & brackish)	Both
High	J02.05.02	Modifying structures of inland water courses	Inside
High	J02.12.02	Dykes and flooding defence in inland water systems	Inside
High	K01.01	Erosion	Inside
Medium	A04.01.01	Intensive cattle grazing	Inside
Medium	B02	Forest and Plantation management & use	Both
Medium	B05	Use of fertilizers (forestry)	Both
Medium	B07	Forestry activities not referred to above	Both
Medium	C01.03	Peat extraction	Outside
Medium	F02	Fishing and harvesting aquatic resources	Outside
Medium	I01	Invasive non-native species	Inside
Medium	J02	Human induced changes in hydraulic conditions	Both
Medium	J02.02.01	Dredging/ removal of limnic sediments	Inside
Medium	J02.06	Water abstractions from surface waters	Inside
Medium	J03.02.01	Reduction in migration/ migration barriers	Inside
Medium	M01	Changes in abiotic conditions	Inside
Low	A10.01	Removal of hedges and copses or scrub	Inside

[63] https://natura2000.eea.europa.eu/Natura2000/SDF.aspx?site=IE0002162

Negative Impacts			
Rank	Threats and Pressures (* Items in bold are of relevance to the proposed project)		Inside/Outside
Low	C01.01.01	Sand and gravel quarries	Both
Low	D03.01	Port areas	Inside
Low	E02	Industrial or commercial areas	Outside
Low	F01.01	Intensive fish farming, intensification	Inside
Low	F02.01.02	Netting	Inside
Low	F02.03	Leisure fishing	Inside

5.1.4.3 QI-Specific Information

5.1.4.3.1 *White-clawed crayfish (Austropotamobius pallipes) [1092]*

According to the Site-Specific Conservation Objectives (NPWS, 2025), white-clawed crayfish are present almost throughout the SAC, with records extending as far downstream as Thomastown on the Nore and Graiguenamanagh on the Barrow.

The latest Article 17 Report (NPWS, 2025c) states that in most of its range, white-clawed crayfish is found principally in first-order streams, but in Ireland it utilises a much broader spectrum of habitats extending from smallest streams and drains to large rivers and medium-sized lakes wherever there is sufficient lime. The white-clawed crayfish is generally associated with good quality waters, but this is not necessarily the case in Ireland where it can occur in water of lower quality, down to a Q value of around 3 (i.e. it is not particularly pollution-sensitive). It is now generally considered as a keystone species rather than as a bioindicator, because of its traditional importance and its large size, longevity and dominant position in the ecosystem. The Overall Status of this species was assessed as *Bad*, with a *Deteriorating* trend, unchanged from the 2019 Article 17 reporting assessment. The *Bad* status is due to population decline and poor future prospects for the species due to the presence of the Crayfish Plague organism across seventeen catchments.

While white-clawed crayfish were not recorded during any of the surveys undertaken to inform this assessment, as outlined in Section 3.4.5.3 and the Aquatic Baseline Report (see Appendix 2), Triturus data detected white-clawed crayfish from the Figile River at Kilcumber Bridge in 2025 and sampling of the Figile near Bracknagh in 2020 as part of the National Crayfish Plague Surveillance Programme also detected crayfish. Additionally, as described in Table 5-7 above, the latest available NPWS Article 17 mapping (2019) was also consulted and nine records of white-clawed crayfish were identified within the Proposed Wind Farm site, within tributaries of the Figile River as well as further records downstream of the Project Site within both the Slate and Figile Rivers. These records date to between 2009 and 2017.

Targets and Attributes

The conservation objective for this QI is:

> '*To maintain the Favourable conservation condition of White-clawed crayfish in the River Barrow and River Nore SAC.*'

The attributes and targets for this species as per the SSCOs for the SAC are provided in Table 5-9 below. The table also provides an assessment of whether there is potential for the Proposed Project to undermine each Conservation Objective target in the absence of mitigation.

Table 5-9 Targets and attributes associated with nominated site-specific conservation objectives for white-clawed crayfish in River Barrow and River Nore SAC

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Distribution	No reduction from baseline.	**Yes -** In the absence of mitigation, deterioration in water quality and habitat degradation during construction as a result of silt-laden run-off, as well as run off of other pollutants could indirectly affect the distribution of white-clawed crayfish downstream of the Project Site. Additionally, in the absence of mitigation, in-stream works associated up to 8 no. watercourse crossings within the Proposed Wind Farm site have the potential to cause direct disturbance and mortality of *ex-situ* populations of this species. These pathways have the potential to result in a reduction in their overall distribution, which has the potential to undermine this target.
Population structure: recruitment	Juveniles and/or females with eggs in at least 50% of positive samples	**Yes -** In the absence of mitigation, deterioration in water quality during construction and habitat degradation as a result of silt-laden run-off, as well as run off of other pollutants, could indirectly affect the breeding populations of white-clawed crayfish where they occur downstream of the Project Site. Additionally, in the absence of mitigation, in-stream works associated up to 8 no. watercourse crossings within the Proposed Wind Farm site have the potential to cause direct disturbance and mortality of *ex-situ* populations of this species. These pathways have the potential to undermine this target.
Negative indicator species	No alien crayfish species	**Yes** – In the absence of mitigation and proper biosecurity measures during proposed in-stream works, on a precautionary basis the Proposed Project has the potential to result in the introduction of alien crayfish species to watercourses with downstream connectivity to the SAC (via machinery and/or equipment entering the site). Therefore, in the absence of mitigation, the Proposed Project has the potential to undermine this target.
Disease	No instances of disease	**Yes** – In the absence of mitigation and proper biosecurity measures during proposed in-stream works, the Proposed Project has the potential to result in the introduction of water-borne diseases to watercourses with downstream connectivity to the SAC. Therefore, in the absence of mitigation, the Proposed Project has the potential to undermine this target.
Water quality	At least Q3-4 at all sites sampled by EPA	**Yes -** In the absence of mitigation, the Proposed Project has the potential to result in deterioration in water quality and habitat degradation as a result of silt-laden run-off, as well as run off of other pollutants during construction, which has the potential to undermine this target.
Habitat quality: heterogeneity	No decline in heterogeneity or habitat quality	**Yes -** In the absence of mitigation, the Proposed Project has the potential to result in deterioration in water quality

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
		and habitat degradation as a result of silt-laden run-off, as well as run off of other pollutants during construction, which has the potential to undermine this target.

5.1.4.3.2 *Atlantic salmon (Salmo salar) [1106]*

According to the Site Synopsis document for the River Barrow and River Nore SAC (NPWS, 2024), the freshwater stretches of the River Nore main channel is a designated salmonid river. The Barrow/Nore is mainly a grilse fishery though spring salmon fishing is good in the vicinity of Thomastown and Inistioge on the Nore. The upper stretches of the Barrow and Nore, particularly the Owenass River, are very important for spawning.

The latest Article 17 Report (NPWS, 2025c) states that population abundance of salmon in general has decreased since the 2019 Article 17 reporting period, however, the area of occupied habitat by salmon is currently considered sufficient for long-term survival, and the trend in habitat area occupied has not changed since previous reporting periods. The quality of occupied habitat varies enormously between river systems and it is currently unknown whether the habitat quality is sufficient for the long-term survival of salmon in all occupied habitat areas. Trends in habitat quality (barriers, water quality, hydromorphology) have generally remained stable or not improved substantially between reporting periods. Whilst a general decrease in adult returns across all rivers is strongly correlated with changing marine conditions, river populations subject to additional habitat stressors (water quality, degraded habitat, barriers, aquaculture) are further below their conservation limits compared to populations with fewer habitat stressors, indicating that habitat quality does compromise the survival of certain affected stocks. The Overall Status is assessed as *Bad* and *Deteriorating*, a decline from *Inadequate* and *Stable* in the last assessment (NPWS, 2019).

Dedicated electrofishing surveys undertaken to inform this assessment identified that Atlantic salmon present at one survey site in 2026 (i.e. within the Figile (A18)), with eDNA sampling results also indicating their presence within the Figile and Slate rivers upstream of the SAC (see Section 3.4.5.2 above and Aquatic Baseline Report, Appendix 2). As outlined in Table 5-8 above, the latest available NPWS Article 17 mapping (2019) was also consulted which showed the distribution of Atlantic salmon to encompass hectads N42, N52, N62, N63, N72 and N82 in which the Proposed Project is located. Additionally, as outlined in Table 5-8 above, Inland Fisheries Ireland (IFI) have noted that adult salmon spawn in shallow waters during the winter months and the adult salmon that spawn in systems such as the Figile and Slate will have resided in deeper sections of the Barrow main channel prior to entering the Black River system to spawn. Conversely, the progeny of the salmon that spawn in the Figile and Slate system as they grow older and larger will travel downstream to the deeper waters of the Barrow main channel, before smoltifying and migrating to sea (see Section 1.5.3 above). As such, the populations of salmon in the watercourses which drain the Project Site are an integral component of the salmon populations of the River Barrow and River Nore SAC.

Targets and Attributes

The conservation objective for this QI is:

> '*To restore the favourable conservation condition of Salmon in the River Barrow and River Nore SAC.'*

The attributes and targets for this species as per the SSCOs for the SAC are provided in Table 5-10 below. The table also provides an assessment of whether there is potential for the Proposed Project to undermine each Conservation Objective target in the absence of mitigation.

Table 5-10 Targets and attributes associated with nominated site-specific conservation objectives for Atlantic salmon in River Barrow and River Nore 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 does not have the potential to result in a reduction in the accessibility of the watercourses to salmon. As detailed in Section 2.3.1.11 of this AASR and NIS, the base of any new culverts installed on watercourses within the Proposed Wind Farm site will be buried below the invert of the channel in order to avoid the creation of any new barriers to movement. Therefore, the Proposed Project has no potential to undermine this target.
Adult spawning fish	Conservation Limit (CL) for each system consistently exceeded	**Yes -** In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants during the construction phase could indirectly affect the breeding populations of salmon downstream of the Project Site. Additionally, in the absence of mitigation, in-stream works associated up to 8 no. watercourse crossings within the Proposed Wind Farm site have the potential to cause direct disturbance and mortality of *ex-situ* populations of this species. These pathways have the potential to undermine this target
Salmon fry abundance	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 min sampling	**Yes -** In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants during the construction phase could reduce the populations of salmon fry downstream of the Project Site. Additionally, in the absence of mitigation, in-stream works associated up to 8 no. watercourse crossings within the Proposed Wind Farm site have the potential to cause direct disturbance and mortality of *ex-situ* populations of this species. These pathways have the potential to undermine this target.
Out-migrating smolt abundance	No significant decline	**Yes -** In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants during the construction phase could reduce the populations of out-migrating smolts downstream of the Project Site. Additionally, in the absence of mitigation, in-stream works associated up to 8 no. watercourse crossings within the Proposed Wind Farm site have the potential to cause direct disturbance and mortality of *ex-situ* populations of this species. These pathways have the potential to undermine this target.
Number and distribution of redds	No decline in number and distribution of spawning redds due to anthropogenic causes	**Yes -** In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants during the construction phase could reduce the availability of suitable habitat for spawning salmon downstream of the Project Site, which has the potential to undermine this target. However, the Proposed Project does not have the potential to result in direct loss of redds or spawning habitat as a result of the proposed in-stream works as these works will not involve the permanent loss of any in-channel habitats. As detailed in Section 2.3.1.11 of this AASR and NIS, the base of any new culverts installed on watercourses within the Proposed Wind Farm site will be buried below the

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
		invert of the channel in order to maintain suitable spawning habitat within them.
Water quality	At least Q4 at all sites sampled by EPA	**Yes** - In the absence of mitigation, the Proposed Project has the potential to result in deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants during the construction phase, which has the potential to undermine this target.

5.1.4.3.3 *Sea lamprey (Petromyzon marinus) [1095]*

According to the SSCO document for the River Barrow and River Nore SAC (NPWS, 2025), artificial barriers can block or cause difficulties to lampreys' upstream migration, thereby limiting species to lower stretches and restricting access to spawning areas. Juveniles burrow in areas of fine sediment in still water and lampreys spawn in clean gravels.

The latest Article 17 Report (NPWS, 2025c) states there are two optimal habitat requirements for sea lamprey including adult spawning and larval nursery habitat. Spawning activity is found in gravelled areas of main stem SAC rivers with a moderate gradient and water velocity. Larval habitat consists of fine-grained areas of sediment in areas of deposition and of reduced velocity. The sea lamprey is listed in the most recent Irish Red Data Book as Near Threatened. Pressures on sea lamprey include barriers to upstream migration (e.g. weirs), which limit access to spawning beds and juvenile habitat; changes in precipitation due to climate change; and impacts from fishing on prey species availability. The Overall Status of this species is assessed as *Bad*, as in the last two assessments, but there is a change in trend from *Stable* to *Deteriorating*.

Baseline aquatic surveys undertaken to inform this assessment did not identify evidence of sea lamprey at any of the aquatic survey sites located upstream of this SAC (see Section 3.4.5 above and Aquatic Baseline Report, Appendix 2). The quality of lamprey habitat was generally poor across the survey area given widespread hydromorphological and siltation pressures. As outlined in Table 5-8 above, the latest available NPWS Article 17 mapping (2019) was also consulted which did not show the Project Site to be located within the range of sea lamprey. However, a search of the '*Water Framework Directive Rivers Fish Ecological Status 2008 to recent'* dataset from the Inland Fisheries Ireland open data portal showed records of Lamprey sp. from Station 'Ticknevin_A' on the Figile River in 2015, located approximately 3.9km upstream of the Proposed Wind Farm site, as well as at 'Ballyteige_A' on the Slate River in 2015, located approximately 2.3km downstream of the Proposed Grid Connection underground electrical cabling route. Therefore, on a highly precautionary basis, it cannot be ruled out that sea lamprey may reside within the watercourses within and downstream of the Project Site, outside of the SAC boundaries. Such *ex-situ* populations, where they occur, are considered to comprise part of the SAC population.

Targets and Attributes

The conservation objective for this QI is:

> '*To restore the favourable conservation condition of Sea lamprey in the River Barrow and River Nore SAC.'*

The attributes and targets for this species as per the SSCOs for the SAC are provided in Table 5-11 below. The table also provides an assessment of whether there is potential for the Proposed Project to undermine each Conservation Objective target in the absence of mitigation.

Table 5-11 Targets and attributes associated with nominated site-specific conservation objectives for Sea lamprey in River Barrow and River Nore 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 does not have the potential to result in a reduction in the accessibility of main stem rivers to sea lamprey, as there will be no new barriers constructed on the main stem of the Barrow. Therefore, the Proposed Project has no potential to undermine this target.
Population structure of juveniles	At least three age/size groups present	**Yes -** In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off, as well as run off and/or percolation of other pollutants to surface and groundwaters during the construction phase, could indirectly affect the breeding populations of sea lamprey downstream of the Project Site. Additionally, in the absence of mitigation, in in-stream works associated up to 8 no. watercourse crossings within the Proposed Wind Farm site have the potential to cause direct disturbance and mortality of *ex-situ* populations of this species. These pathways the potential to undermine this target.
Juvenile density in fine sediment	Juvenile density at least 1/m²	**Yes -** In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants during the construction phase could indirectly affect the breeding populations of sea lamprey downstream of the Project Site. Additionally, in the absence of mitigation, in- in-stream works associated up to 8 no. watercourse crossings within the Proposed Wind Farm site have the potential to cause direct disturbance and mortality of *ex-situ* populations of this species. These pathways the potential to undermine this target.
Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds	**Yes -** In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants during the construction phase could indirectly affect the extent of suitable spawning habitats downstream of the Project Site, which has the potential to undermine this target. However, the Proposed Project does not have the potential to result in direct loss of spawning habitat as a result of the proposed in-stream works as these works will not involve the permanent loss of any in-channel habitats. As detailed in Section 2.3.1.11 of this AASR and NIS, the base of any new culverts installed on watercourses within the Proposed Wind Farm site will be buried below the invert of the channel in order to maintain suitable spawning habitat within them.
Availability of juvenile habitat	More than 50% of sample sites positive	**Yes -** In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants during the construction phase could indirectly affect the extent of suitable juvenile habitats downstream of the Project Site, which has the potential to undermine this target. However, the Proposed Project does not have the potential to result in direct loss of juvenile habitat for sea lamprey as a result

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
		of the proposed in-stream works as these works will not involve the permanent loss of any in-channel habitats. As detailed in Section 2.3.1.11 of this AASR and NIS, the base of any new culverts installed on watercourses within the Proposed Wind Farm site will be buried below the invert of the channel in order to maintain suitable juvenile habitat within them.

5.1.4.3.4 *Brook lamprey (Lampetra planeri) [1096]*

According to the SSCO document for the River Barrow and River Nore SAC (NPWS, 2025), artificial barriers can block lampreys' upstream migration, thereby limiting species to lower stretches and restricting access to spawning areas. Juveniles burrow in areas of fine sediment in still water and lampreys spawn in clean gravel.

The latest Article 17 Report (NPWS, 2025c) states that adult brook lampreys require well-oxygenated gravelled areas for spawning in the main channels and tributaries of rivers. Rearing habitat in the form of fine sands and silts in slow-flowing depositional areas is required for the larval life stage. The main pressures and threats identified include diffuse and point source pollution, largely resulting from agriculture, forestry and inefficient urban wastewater treatment, hydrological changes and climate change. While lampreys may be resilient to some degree, there are significant unknowns regarding the impacts of eutrophication, oxygen depletion, chemical pollution, etc. on lampreys. Due to the widespread distribution of brook lamprey, while several pressures have been identified, these pressures are often indirect, usually acting in combination, and deemed as having low influence. Their effects are typically restricted to specific catchments and hence act on a minority of the population. The Overall Status of this species was assessed as *Favourable*, with a *stable* trend, as it has been for the last three Article 17 reporting periods.

Baseline aquatic surveys undertaken to inform this assessment recorded *Lampetra* sp. via electrofishing at a single survey site upstream of the SAC, at Quigley's Bridge on the Slate River (survey site G5) (see Section 3.4.5.2 above and Aquatic Baseline Report, Appendix 2). Additionally, *Lampetra* sp. eDNA was detected within both the Figile and Slate Rivers upstream of the SAC. The quality of lamprey habitat was generally poor across the survey area given widespread hydromorphological and siltation pressures. As outlined in Table 5-8 above, the latest available NPWS Article 17 mapping (2019) was also consulted which showed the distribution of brook lamprey to encompass hectads N52, N62, N63, N72 and N82 in which the Proposed Project is located. Furthermore, a search of the '*Water Framework Directive Rivers Fish Ecological Status 2008 to recent'* dataset from the Inland Fisheries Ireland open data portal showed records of Lamprey sp. from Station 'Ticknevin_A' on the Figile River in 2015, located approximately 3.9km upstream of the Proposed Wind Farm site, as well as at 'Ballyteige_A' on the Slate River in 2015, located approximately 2.3km downstream of the Proposed Grid Connection underground electrical cabling route. Therefore, on a precautionary basis, it is considered that brook lamprey may reside within the watercourses within and downstream of the Project Site, outside of the SAC boundaries. Such *ex-situ* populations, where they occur, are considered to comprise part of the SAC population.

Targets and Attributes

The conservation objective for this QI is:

> '*To restore the Favourable conservation condition of Brook lamprey in the River Barrow and River Nore SAC.'*

The attributes and targets for this species as per the SSCOs for the SAC are provided in Table 5-12 below. The table also provides an assessment of whether there is potential for the Proposed Project to undermine each Conservation Objective target in the absence of mitigation.

Table 5-12 Targets and attributes associated with nominated site-specific conservation objectives for brook lamprey in River Barrow and River Nore SAC

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Distribution	Access to all watercourses down to first order streams	No - The Proposed Project does not have the potential to result in a reduction in the accessibility of the watercourses to brook lamprey. As detailed in Section 2.3.1.11 of this AASR and NIS, the base of any new culverts installed on watercourses within the Proposed Wind Farm site will be buried below the invert of the channel in order to avoid the creation of any new barriers to movement. Therefore, the Proposed Project has no potential to undermine this target.
Population structure of juveniles	At least three age/size groups of brook/river lamprey present	**Yes** - In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off, as well as run off and/or percolation of other pollutants to surface and groundwaters during the construction phase, could indirectly affect the breeding populations of brook lamprey downstream of the Project Site. Additionally, in the absence of mitigation, in-stream works associated up to 8 no. watercourse crossings within the Proposed Wind Farm site have the potential to cause direct disturbance and mortality of *ex-situ* populations of this species. These pathways have the potential to undermine this target.
Juvenile density in fine sediment	Mean catchment juvenile density of brook/river lamprey at least 2/m²	**Yes** - In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants during the construction phase could indirectly affect the breeding populations of brook lamprey downstream of the Project Site. Additionally, in the absence of mitigation, in-stream works associated up to 8 no. watercourse crossings within the Proposed Wind Farm site have the potential to cause direct disturbance and mortality of *ex-situ* populations of this species. These pathways have the potential to undermine this target.
Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds	**Yes** - In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants during the construction phase could indirectly affect the extent of suitable spawning habitats downstream of the Project Site, which has the potential to undermine this target. However, the Proposed Project does not have the potential to result in direct loss of spawning habitat as a result of the proposed in-stream works as these works will not involve the permanent loss of any in-channel habitats. As detailed in Section 2.3.1.11 of this AASR and NIS, the base of any new culverts installed on watercourses within the Proposed Wind Farm site will be buried below the invert of the channel in order to maintain suitable spawning habitat within them.

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Availability of juvenile habitat	More than 50% of sample sites positive	**Yes -** In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants during the construction phase could indirectly affect the extent of suitable juvenile habitats downstream of the Project Site, which has the potential to undermine this target. However, the Proposed Project does not have the potential to result in direct loss of juvenile habitat for brook lamprey as a result of the proposed in-stream works as these works will not involve the permanent loss of any in-channel habitats. As detailed in Section 2.3.1.11 of this AASR and NIS, the base of any new culverts installed on watercourses within the Proposed Wind Farm site will be buried below the invert of the channel in order to maintain suitable juvenile habitat within them.

5.1.4.3.5 *River lamprey (Lampetra fluviatilis) [1099]*

According to the SSCO document for the River Barrow and River Nore SAC (NPWS, 2025), artificial barriers can block lampreys' upstream migration, thereby limiting species to lower stretches and restricting access to spawning areas. Juveniles burrow in areas of fine sediment in still water and lampreys spawn in clean gravel.

The latest Article 17 Report (NPWS, 2025c) states river lamprey breed in freshwater rivers and streams. Adults spawn in spring, excavating shallow nests in riverine sections comprising fine gravels and small stones. After hatching, the larvae or 'ammocoetes' drift or swim downstream to areas of riverbed or margins with fine silt deposits. They burrow into this bed material where they live as filter feeders over a period of years before transforming into young adult fish and migrating downriver to estuarine and marine habitats. River and brook lamprey are indistinguishable as larvae. The mature adult forms are, however, clearly distinguishable based on body size. The main pressures and threats identified include barriers to migration, increases in river discharge due to several factors including climate change, nutrient pollution due to anthropogenic activities, and impacts at sea such as commercial fishing that may impact on prey or host species. The overall Conservation Status for this species is assessed as '*Inadequate*', which is a change from the assessment of '*Unknown*' from the 2019 reporting period. The change is due to more accurate data recorded in the more recent reporting period.

Baseline aquatic surveys undertaken to inform this assessment recorded *Lampetra* sp. via electrofishing at a single survey site upstream of the SAC, at Quigley's Bridge on the Slate River (survey site G5) (see Section 3.4.5.2 above and Aquatic Baseline Report, Appendix 2). Additionally, *Lampetra* sp. eDNA was detected within both the Figile and Slate Rivers upstream of the SAC. The quality of lamprey habitat was generally poor across the survey area given widespread hydromorphological and siltation pressures. As outlined in Table 5-8 above, the latest available NPWS Article 17 mapping (2019) was also consulted which did not show the Project Site to be located within the range of river lamprey. However, a search of the '*Water Framework Directive Rivers Fish Ecological Status 2008 to recent*' dataset from the Inland Fisheries Ireland open data portal showed records of Lamprey sp. from Station 'Ticknevin_A' on the Figile River in 2015, located approximately 3.9km upstream of the Proposed Wind Farm site, as well as at 'Ballyteige_A' on the Slate River in 2015, located approximately 2.3km downstream of the Proposed Grid Connection underground electrical cabling route. Therefore, on a precautionary basis, it cannot be ruled out that river lamprey may reside within the watercourses within and downstream of the Project Site, outside of the SAC boundaries.

Targets and Attributes

The conservation objective for this QI is:

> '*To restore the Favourable conservation condition of River lamprey in the River Barrow and River Nore SAC*'

The attributes and targets for this species as per the SSCOs for the SAC are provided in Table 5-13 below. The table also provides an assessment of whether there is potential for the Proposed Project to undermine each Conservation Objective target in the absence of mitigation.

Table 5-13 Targets and attributes associated with nominated site-specific conservation objectives for river lamprey in River Barrow and River Nore SAC

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Distribution: extent of anadromy	Greater than 75% of main stem and major tributaries down to second order accessible from estuary	No - The Proposed Project does not have the potential to result in a reduction in the accessibility of the watercourses to river lamprey. As detailed in Section 2.3.1.11 of this AASR and NIS, the base of any new culverts installed on watercourses within the Proposed Wind Farm site will be buried below the invert of the channel in order to avoid the creation of any new barriers to movement. Therefore, the Proposed Project has no potential to undermine this target.
Population structure of juveniles	At least three age/size groups of brook/river lamprey present	**Yes -** In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off, as well as run off and/or percolation of other pollutants to surface and groundwaters during construction, could indirectly affect the breeding populations of river lamprey downstream of the Project Site. Additionally, in the absence of mitigation, in-stream works associated up to 8 no. watercourse crossings within the Proposed Wind Farm site have the potential to cause direct disturbance and mortality of *ex-situ* populations of this species. These pathways have the potential to undermine this target.
Juvenile density in fine sediment	Mean catchment juvenile density of brook/river lamprey at least 2/m²	**Yes -** In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants during construction could indirectly affect the breeding populations of river lamprey downstream of the Project Site. Additionally, in the absence of mitigation, in-stream works associated up to 8 no. watercourse crossings within the Proposed Wind Farm site have the potential to cause direct disturbance and mortality of *ex-situ* populations of this species. These pathways have the potential to undermine this target.
Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds	**Yes -** In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants during construction could indirectly affect the extent of suitable spawning habitats downstream of the Project Site, which has the potential to undermine this target. However, the Proposed Project does not have the potential to result in direct loss of spawning habitat as a result of the proposed in-stream works as these works will not involve the permanent loss of any in-channel habitats. As detailed in Section 2.3.1.11

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
		of this AASR and NIS, the base of any new culverts installed on watercourses within the Proposed Wind Farm site will be buried below the invert of the channel in order to maintain suitable spawning habitat within them.
Availability of juvenile habitat	More than 50% of sample sites positive	**Yes -** In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants during construction could indirectly affect the extent of suitable juvenile habitats downstream of the Project Site, which has the potential to undermine this target. However, the Proposed Project does not have the potential to result in direct loss of juvenile habitat for river lamprey as a result of the proposed in-stream works as these works will not involve the permanent loss of any in-channel habitats. As detailed in Section 2.3.1.11 of this AASR and NIS, the base of any new culverts installed on watercourses within the Proposed Wind Farm site will be buried below the invert of the channel in order to maintain suitable juvenile habitat within them.

5.1.4.3.6 *Otter (Lutra lutra) [1355]*

According to the SSCO document for the River Barrow and River Nore SAC (NPWS, 2025), otter distribution based on 1980/81 survey findings is 88% in SACs. Current range in south-east estimated at 73% (Bailey and Rochford, 2006 cited in NPWS, 2025).

The latest Article 17 Report (NPWS, 2025c) states that Ireland continues to remain a stronghold for otters. The most recent national survey (2023/24) indicates that the population has stabilised overall and that the species remains widespread. Otters have two basic requirements: aquatic prey and safe refuges where they can rest. In Ireland, otter populations are found along rivers, lakes and coasts, where fish and other prey are abundant, and where the bank-side habitat offers plenty of cover. The otter is an opportunistic predator with a broad and varied diet. In freshwater areas a variety of fish from sticklebacks to salmon and eels will be taken, while crayfish and frogs can be important locally or seasonally. There are some concerns about declining water quality nationally as well as ongoing pressures on riparian habitats through drainage works and riparian scrub/woodland clearance, but it is not clear how these changes might impact on otter. The Overall Status assessment remains *Favourable*, and the trend is taken as *Stable*, a change from the improving trend recorded in the 2019 Article 17 reporting.

Surveys undertaken to inform this assessment recorded signs of otter at a number of locations within and downstream of the Project Site that are hydrologically connected to the SAC (see Section 3.4.2 above for full detail). The desk study undertaken to inform this assessment also identified that otter is widespread in wider area surrounding the Project Site. The latest available NPWS Article 17 mapping (2019) shows several mapped records of otter within tributaries of the Figile River within the Proposed Wind Farm site, as well as downstream of the Project Site within this watercourse. This mapping also shows records of otter at three of the watercourse crossings associated with the Proposed Grid Connection underground electrical cabling route, as well as both up and downstream within the Slate River.

Targets and Attributes

The conservation objective for this QI is:

'*To restore the favourable conservation condition of Otter in the River Barrow and River Nore SAC.'*

The attributes and targets for this species as per the SSCOs for the SAC are provided in Table 5-14 below. The table also provides an assessment of whether there is potential for the Proposed Project to undermine each Conservation Objective target in the absence of mitigation.

Table 5-14 Targets and attributes associated with nominated site-specific conservation objectives for otter in River Barrow and River Nore SAC

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Distribution	No significant decline	**Yes –** In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants during the construction phase of the Proposed Project could indirectly affect prey availability downstream of the Project Site. Therefore, the Proposed Project has the potential to undermine this target (reduced prey availability).
Extent of terrestrial habitat	No significant decline. Area mapped and calculated as 122.8ha above high water mark (HWM); 1136.0ha along river banks / around ponds	No – The construction, operational or decommissioning phases of the Proposed Project will not result in any loss of terrestrial habitat for otter. No works will occur within the SAC. While a number of watercourse crossings are required both within the Proposed Wind Farm and along the Proposed Grid Connection underground electrical cabling route , and in-stream works will be required to facilitate the Proposed Wind Farm, these works will be temporary in nature and will not result in any permanent habitat loss for otter. Therefore, the Proposed Project has no potential to undermine this target.
Extent of marine habitat	No significant decline. Area mapped and calculated as 857.7ha	No - The construction, operational or decommissioning phases of the Proposed Project will not result in any loss of marine habitat for otter. The Project Site is remote (i.e. at a distance of greater than 100km) from any potential marine habitat associated with the SAC. Therefore, the Proposed Project has no potential to undermine this target.
Extent of freshwater (river) habitat	No significant decline. Length mapped and calculated as 616.6km	No - The construction, operational or decommissioning phases of the Proposed Project will not result in any loss of riverine habitat for otter. No works will occur within the SAC. While a number of watercourse crossings are required both within the Proposed Wind Farm and along the Proposed Grid Connection underground electrical cabling route, and in-stream works will be required to facilitate the Proposed Wind Farm, these works will be temporary in nature and will not result in any permanent habitat loss for otter. Therefore, the Proposed Project has no potential to undermine this target.
Extent of freshwater (lake) habitat	No significant decline. Area mapped and calculated as 2.6ha	No - The construction, operational or decommissioning phases of the Proposed Project will not result in any loss of lacustrine habitat for otter. No works will occur within the SAC and there are no lakes present within the Project Site. Therefore, the Proposed Project has no potential to undermine this target.

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Couching sites and holts	No significant decline	No – There will be no decline in otter couching sites or holts. No works will occur within the SAC. While an otter holt was recorded during surveys undertaken in 2021 within a pipe culvert near the Codd River crossing of the local L1001 road, during follow-up surveys in September 2026 it was found to be no longer in use by otter, and no otter signs were recorded in the vicinity. An inactive holt was also identified within the Proposed Wind Farm site during baseline aquatic surveys undertaken in 2026, to the north of Proposed Turbine 36. Both the inactive holt identified in 2026 and the pipe culvert in which a holt was identified in 2021 are located over 150m and 550m from the nearest significant infrastructure, respectively, and are therefore located outside the likely ZoI for adverse effects as a result of disturbance. Any works located within 150m are minor in nature (i.e. proposed scrub planting and a proposed peat and spoil area) and will not involve any significant groundworks. Additionally, both holt locations are situated over 25km upstream of the River Barrow and River Nore SAC and as such are located outside of the range of otter associated with the SAC (per Ó'Neill, 2008). As such no resting or breeding sites of otter associated with the River Barrow and River Nore SAC will be disturbed as part of the Proposed Project. Additionally, while a number of watercourse crossings are required both within the Proposed Wind Farm and along the Proposed Grid Connection underground electrical cabling route, and in-stream works will be required to facilitate the Proposed Wind Farm, these works will be temporary in nature and will not result in any permanent habitat loss for otter. Therefore, the Proposed Project has no potential to undermine this target
Fish biomass available	No significant decline	**Yes** – In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants during the construction phase could reduce the availability of fish biomass downstream of the Project Site, which has the potential to undermine this target.

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

According to the SSCO document for the River Barrow and River Nore SAC (NPWS, 2025), the full distribution of this habitat and its sub-types in this site is currently unknown. The basis of the selection of the SAC for the habitat is the presence of an excellent example of the vegetation community (nutrient-rich type) associated with extensive tufa deposits on the river bed in the Kings tributary of the Nore. Other examples of this or other sub-types may be present within the SAC.

The latest Article 17 Report (NPWS, 2025b) states that this habitat has a broad definition, ranging from upland, flashy, oligotrophic, bryophyte- and algal-dominated rivers, to tidal reaches dominated by higher plants. In Ireland, the highest riverine conservation interest is associated with lowland depositing and tidal rivers and unmodified, fast-flowing, low-nutrient rivers. Many Irish rivers have been heavily modified, particularly through arterial drainage and channelisation. These activities have changed

channel morphology and introduced larger amounts of fine sediment. Such fines provide a rooting medium for plants and, as a result, stream water-crowfoot (*Ranunculus penicillatus*) has increased in abundance. In consequence, the habitat has, erroneously, become synonymous with water-crowfoots in Ireland. Crowfoot-dominated reaches frequently have low diversity and are of low conservation value, and an abundance of the species generally indicates poor condition and damage. The Overall Status assessment remains *Inadequate*, and the trend is taken as *Deteriorating*, which remains the same as the 2019 Article 17 reporting.

Targets and Attributes

The conservation objective for this QI is:

> *'To maintain the Favourable conservation condition of Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation in the River Barrow and River Nore SAC'*

The attributes and targets for this habitat as per the SSCOs for the SAC are provided in Table 5-15 below. The table also provides an assessment of whether there is potential for the Proposed Project to undermine each Conservation Objective target in the absence of mitigation.

Table 5-15 Targets and attributes associated with nominated site-specific conservation objectives for vegetation of flowing waters in River Barrow and River Nore SAC

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Habitat area	Area stable or increasing, subject to natural processes	**Yes –** In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants during the construction phase could indirectly affect the vegetation composition and therefore habitat present downstream of the Project Site, which has the potential to undermine this target.
Habitat distribution	No decline, subject to natural processes	**Yes –** In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants during the construction phase could indirectly affect the vegetation composition and therefore habitat present downstream of the Project Site, which has the potential to undermine this target
Hydrological regime: river flow	Maintain appropriate hydrological regimes	No - The construction, operational or decommissioning phases of the Proposed Project will not result in any changes to hydrological regimes within the SAC. Therefore, the Proposed Project has no potential to undermine this target.
Hydrological regime: groundwater discharge	The groundwater flow to the habitat should be permanent and sufficient to maintain tufa formation	No - The construction, operational or decommissioning phases of the Proposed Project will not result in any changes to hydrological regime, including groundwater flow, within the SAC. Therefore, the Proposed Project has no potential to undermine this target.
Substratum composition: particle size range	The substratum should be dominated by large particles and free from fine sediments	**Yes –** In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants during the construction phase could indirectly affect the substratum through increased sedimentation, which has the potential to undermine this target as a result of the Proposed Project.

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Water chemistry: minerals	The groundwater and surface water should have sufficient concentrations of minerals to allow deposition and persistence of tufa deposits	No - The construction, operational or decommissioning phases of the Proposed Project will not result in any changes to the groundwater and surface water mineral composition within the SAC. Therefore, the Proposed Project has no potential to undermine this target.
Water quality: suspended sediment	The concentration of suspended solids in the water column should be sufficiently low to prevent excessive deposition of fine sediments	**Yes –** In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants during the construction phase could indirectly affect the water quality through increased sedimentation downstream of the Project Site. Therefore, the Proposed Project has the potential to 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 –** In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants during the construction phase could indirectly affect the water quality downstream of the Project Site, which has the potential to undermine this target
Vegetation composition: typical species	Typical species of the relevant habitat sub-type should be present and in good condition	**Yes** - In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants during the construction phase could indirectly affect the vegetation composition and typical species present within this habitat downstream of the Project Site, which has the potential to undermine this target.
Floodplain connectivity	The area of active floodplain at and upstream of the habitat should be maintained	No - The construction, operational or decommissioning phases of the Proposed Project will not result in the loss or alteration of any floodplains at or upstream of this habitat. Therefore, the Proposed Project has no potential to undermine this target.

5.1.4.3.8 *Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]*

According to the SSCO document for the River Barrow and River Nore SAC (NPWS, 2025), the distribution of this habitat on this site is currently unknown. The habitat is considered to occur in association with some riverside woodlands, unmanaged river islands and in narrow bands along the floodplain of slow-flowing stretches of rivers.

The latest Article 17 Report (NPWS, 2025b) states that this habitat is characterised by a high proportion of tall herb species in hydrophilous or nitrophilous conditions. The habitat occurs in two situations - upland, typically on base-rich ledges, and lowland, along the unmanaged margins of slow-moving rivers, lakes and other wetlands. In the lowlands, the typical occurrence is as stands dominated by tall herbs, with a diversity of species present, fringing rivers, lakes and other wetlands, usually as a narrow strip and often seasonally inundated. There should be a diversity of tall herb species present, not a monodominant sward of one species with scattered herbs. Reeds and tall grasses and sedges do not form a significant component of the vegetation. The Overall Status assessment remains *Bad*, and the trend is taken as *Deteriorating*.

Targets and Attributes

The conservation objective for this QI is:

> '*To maintain the favourable conservation condition of Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels in the River Barrow and River Nore SAC.'*

The attributes and targets for this habitat as per the SSCOs for the SAC are provided in Table 5-16 below. The table also provides an assessment of whether there is potential for the Proposed Project to undermine each Conservation Objective target in the absence of mitigation.

Table 5-16 Targets and attributes associated with nominated site-specific conservation objectives for otter in River Barrow and River Nore SAC

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Habitat distribution	No decline, subject to natural processes	**Yes –** In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants during the construction phase could indirectly affect the vegetation composition and therefore habitat distribution downstream of the Project Site, which has the potential to undermine this target.
Habitat area	Area stable or increasing, subject to natural processes	**Yes –** In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants during the construction phase could indirectly affect the vegetation composition and habitat area downstream of the Project Site, which has the potential to undermine this target.
Hydrological regime: flooding depth/height of water table	Maintain appropriate hydrological regimes	No - The Proposed Project will not result in any changes to hydrological regimes within the SAC during the construction, operational or decommissioning phase. Therefore, the Proposed Project has no potential to undermine this target.
Vegetation structure: sward height	30-70% of sward is between 40 and 150cm in height	No - The Proposed Project will not result in any direct impacts to this habitat including vegetation height, as the Project Site is remote from the SAC. There is no potential for indirect effects to result in a change in sward height. Therefore, the Proposed Project has no potential to undermine this target.
Vegetation composition: broadleaf herb: grass ratio	Broadleaf herb component of vegetation between 40 and 90%	**Yes –** In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants during the construction phase could indirectly affect the vegetation composition downstream of the Project Site, which has the potential to undermine this target.
Vegetation composition: typical species	At least 5 positive indicator species present	**Yes –** In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants during the construction phase could indirectly affect the vegetation composition downstream of the Project Site, which has the potential to undermine this target.

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Vegetation composition: negative indicator species	Negative indicator species, particularly non-native invasive species, absent or under control- NB Indian balsam (*Impatiens glandulifera*), monkeyflower (*Mimulus guttatus*), Japanese knotweed (*Fallopia [Reynoutria] japonica*) and giant hogweed (*Heracleum mantegazzianum*)	No - The Proposed Project will not result in the spread of any non-native invasive species during construction, operation or decommissioning phases of the Proposed Project. Therefore, the Proposed Project has no potential to undermine this target.

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

According to the SSCO document for the River Barrow and River Nore SAC (NPWS, 2025), this habitat occurs within a minimum of 16 sites within the SAC, with further unsurveyed areas that may be present within the SAC. The Conservation Objectives Supporting Document for woodland habitats for the River Barrow and River Nore SAC[64] was also consulted. As described in this document, many of the alluvial woodlands within the SAC , especially the gallery woodlands, are relatively narrow stands but there are several sites of more than 10ha and one site, Castle Durrow, covers almost 95ha. Together with the woodlands at Park Hill, Abbeyleix, a few kilometres upstream, these represent some of the most extensive alluvial woodlands in the country. Additionally, 10 no. of the alluvial woodland sites within the SAC are recorded as having been present in part or full on the 1st edition OS maps (1840s) and may therefore be considered as potentially ancient or long-established woodlands.

The latest Article 17 Report (NPWS, 2025b) states that alluvial woodlands occur on heavy soils that are periodically inundated by the rise of water levels. Flooding may occur frequently (annually or more often) or infrequently (at intervals of several years) but the inundation will nonetheless determine the vegetation. The Interpretation Manual (EC, 2013) states that all types of 91E0 are periodically flooded but otherwise well-drained and aerated during low water. However, this is not always the case in the wet climate of Ireland and soils may remain waterlogged for most of the year, particularly where the woodland contains springs and flushes or is crossed by small streams. A functioning stand of alluvial woodland with a good structure is a multi-layered system, with a typical canopy of willows (*Salix* spp.), ash (*Fraxinus excelsior*) and alder (*Alnus glutinosa*). Native tree species should dominate. Invasive alien plant species including Japanese knotweed are included under the main pressures and threats to this habitat, as well as overgrazing by deer, the fungal disease Ash dieback and hydrological pressures such as drainage and modification of hydrological flow. The Overall Status of this habitat was assessed as *Bad*, with a *Deteriorating* trend, unchanged since the 2019 Article 17 report.

Targets and Attributes

The conservation objective for this QI is:

> '*To restore the Favourable conservation condition of Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) in the River Barrow and River Nore SAC.'*

[64] *NPWS (2011) River Barrow and River Nore SAC (site code 2162) Conservation objectives supporting document - woodland habitats. Version 1, May 2011.*

The attributes and targets for this habitat as per the SSCOs for the SAC are provided in Table 5-17 below. The table also provides an assessment of whether there is potential for the Proposed Project to undermine each Conservation Objective target in the absence of mitigation.

Table 5-17 Targets and attributes associated with nominated site-specific conservation objectives for otter in River Barrow and River Nore SAC

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Habitat area	Area stable or increasing, subject to natural processes, at least 181.54ha for sites surveyed: see map 6	No - The Proposed Project does not have the potential to result in a reduction in the area of alluvial forests within the SAC during the construction, operation or decommissioning phases of the Proposed Project, considering the nature of this habitat and the lack of any works within the SAC. Therefore, the Proposed Project has no potential to undermine this target.
Habitat distribution	No decline. Surveyed locations shown on map 6	No - The Proposed Project does not have the potential to result in a reduction in the distribution of alluvial forests within the SAC during the construction, operation or decommissioning phases of the Proposed Project, considering the nature of this habitat and the lack of any works within the SAC. Therefore, the Proposed Project has no potential to undermine this target.
Woodland size	Area stable of increasing. Where topographically possible, "large" woods at least 25ha in size and “small” woods at least 3ha in size	No - The Proposed Project does not have the potential to result in a reduction in the woodland sizes of alluvial forests within the SAC during the construction, operation or decommissioning phases of the Proposed Project, considering the nature of this habitat and the lack of any works within the SAC. Therefore, the Proposed Project has no potential to undermine this target.
Woodland structure: cover and height	Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semimature trees and shrubs; and well-developed herb layer	**Yes** - In the absence of mitigation, there is potential for deterioration of water quality arising from the construction phase of the Proposed Project which could result in habitat degradation including changes to vegetation composition and an altered vegetation community composition within the herb layer. Therefore, in the absence of mitigation the Proposed Project has the potential to undermine this target.
Woodland structure: community diversity and extent	Maintain diversity and extent of community types	**Yes** – In the absence of mitigation, there is potential for deterioration of water quality arising from the construction phase of the Proposed Project which could result in habitat degradation including changes to vegetation composition and an altered vegetation community composition. Therefore, in the absence of mitigation the Proposed Project has the potential to undermine this target
Woodland structure: natural regeneration	Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy	No - The Proposed Project does not have the potential to result in a reduction in regeneration of alluvial forests within the SAC, as the Project Site is located entirely outside of the SAC. Therefore, the Proposed Project has no potential to undermine this target.
Hydrological regime: flooding	Appropriate hydrological regime necessary for	No - The Proposed Project does not have the potential to alter the hydrological regime of alluvial forests within the SAC, as it will not result in an increase in flooding or

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
depth/height of water table	maintenance of alluvial vegetation	alteration of water table height. Therefore, the Proposed Project has no potential to undermine this target.
Woodland structure: dead wood	At least 30m³/ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter (greater than 20cm diameter in the case of alder)	No - The Proposed Project does not have the potential to result in a reduction in dead wood within alluvial forests within the SAC, as the Project Site is located entirely outside of the SAC. Therefore, the Proposed Project has no potential to undermine this target.
Woodland structure: veteran trees	No decline	No - The Proposed Project does not have the potential to result in a reduction in veteran trees within alluvial forests within the SAC, as the Project Site is located entirely outside of the SAC. Therefore, the Proposed Project has no potential to undermine this target.
Woodland structure: indicators of local distinctiveness	No decline	**Yes** – In the absence of mitigation, there is potential for deterioration of water quality arising from the construction phase of the Proposed Project which could result in habitat degradation including changes to vegetation composition and presence of red-listed and other rare or localised species. Therefore, in the absence of mitigation the Proposed Project has the potential to undermine this target
Vegetation composition: native tree cover	No decline. Native tree cover not less than 95%	No - The Proposed Project does not have the potential to result in a reduction in native tree cover of alluvial forests within the SAC during the construction, operation or decommissioning phases of the Proposed Project, considering the nature of this habitat and the lack of any works within the SAC. Therefore, the Proposed Project has no potential to undermine this target.
Vegetation composition: typical species	A variety of typical native species present, depending on woodland type, including ash (*Fraxinus excelsior*) alder (*Alnus glutinosa*), willows (*Salix* spp) and locally, oak (*Quercus robur*)	No - The Proposed Project does not have the potential to result in an alteration of the typical tree species listed, as the Project Site is located entirely outside of the SAC. Therefore, the Proposed Project has no potential to undermine this target
Vegetation composition: negative indicator species	Negative indicator species, particularly non-native invasive species, absent or under control	No - The Proposed Project will not result in the spread of any non-native invasive species during construction, operation or decommissioning phases of the Proposed Project. Therefore, the Proposed Project has no potential to undermine this target.

5.1.5 Poulaphouca Reservoir SPA [004063]

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

- Lesser black-backed gull was recorded within the Core Ornithology Survey Area during the dedicated bird surveys undertaken (refer to Section 3.4.1.3 above, and Appendix 7 for full survey results). This species is listed an SCI for the SPA and given the distance between the Project Site and the SPA there is potential for individuals recorded using the Project Site to be associated, at least in part, with the SPA populations as it is within the foraging range of some of this species. Therefore, on a precautionary basis a potential pathway for *ex-situ* habitat loss and disturbance during the construction phase, and displacement and barrier effects during the operation phase was identified.
- Due to the observations of individuals flying through the Proposed Wind Farm site at potential collision height during vantage point surveys, a potential pathway for impacts on lesser black-backed gull was also identified as a result of collision risk and mortality during the operational phase of the Proposed Project.

In addition to the SCI species for which Poulaphouca Reservoir SPA is designated, consideration has also been given to whether other Annex I or regularly occurring migratory bird species occur within the SPA in a significant manner, that could be relevant to the assessment of potential effects on the European Site. The Site Synopsis document for Poulaphouca SPA[65] was consulted, where it is stated that *"Other waterfowl species occur in relatively low numbers, including Whooper Swan (22), Wigeon (180), Teal (107), Mallard (186), Goldeneye (22), Cormorant (11), Great Crested Grebe (8), Curlew (86) and Mute Swan (11). The site is also used by Grey Heron (6)."* However, these data are mean peaks for the five winters in the period 1995/96 to 1999/2000, therefore more recent data were also consulted from the Irish Wildlife Manual 162 *'The status and distribution of wintering waterbirds in Ireland in 2023: results from the Irish Wetland Bird Survey (I-WeBS)'* (Burke *et al.*, 2025) which presents data from the 2016/17-22/23 winter seasons. Within this document, Poulaphouca Reservoir was not shown to support nationally important populations (i.e.>1% of the national population) of any species. As such, the best available evidence suggests that the SPA does not support any other non-SCI species in a significant manner.

5.1.5.1 Identification of Individual Qualifying Features with the Potential to be Affected

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

[65] *NPWS (2014) Poulaphouca Reservoir SPA Site Synopsis (Site Code 004063). 8.7.2014.*

Table 5-18 Assessment of Individual SCIs of Poulaphouca Reservoir SPA with the Potential to be Affected by the Proposed Project

Qualifying feature	Conservation Objective (NPWS, Version 1, 2024[66]),	Rationale	Potential for Adverse Effects Yes/No
Greylag Goose (*Anser anser*) [A043]	To restore the Favourable conservation condition of Greylag Goose in Poulaphouca Reservoir SPA	Poulaphouca Reservoir SPA is located at a distance of 18.5km from the Proposed Offsite Substation, and at a distance of 26.2km from the Proposed Wind Farm site. Greylag goose has a core foraging range of 15-20km from night roosts during the winter season (SNH, 2016). However, this species was not recorded within the Core Ornithology Survey Area (i.e. the Proposed Wind Farm site, see Section 1.5.2 above) during any of the extensive ornithological surveys undertaken between 2020 and 2026. As such, following detailed assessment, there is no potential for adverse effects on the integrity of Poulaphouca Reservoir SPA, in view of the site's Conservation Objectives, as a result of impacts to greylag geese. **No further assessment is required.**	No
Lesser Black-backed Gull (*Larus fuscus*)	To maintain the Favourable conservation condition of Lesser Black-backed Gull in Poulaphouca Reservoir SPA	Lesser black-backed gull was recorded within the Project Site and flying over the Project Site during the dedicated bird surveys undertaken (refer to Section 3.1.4.1.3 above, and Appendix 7 for raw survey data). Given the distance between the Project Site and the SPA and the overall mean foraging distance of 30.8km recorded for this species in terrestrial environments (Thaxter *et al.*, 2025), there is potential for individuals recorded using and travelling through the Project Site to be associated with the SPA populations. The land lost to the Proposed Project permanent infrastructure footprint is small (i.e. 154ha/2.9% of the Project Site) relative to the total area within the Project Site. This species was not dependent on the Project Site for foraging or roosting, given how infrequently the Core Ornithology Survey Area was utilised by birds during bird surveys undertaken. Furthermore, substantial areas of undisturbed suitable foraging habitats will remain both within the Project Site and the wider surroundings post-construction. Given the abundance of similar suitable habitats (peatlands and improved agricultural grasslands) for this species in the wider area, and that extensive areas of suitable foraging habitat will remain within the	No

[66] *NPWS (2024) Conservation Objectives: Poulaphouca Reservoir SPA 004063. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.*

Qualifying feature	Conservation Objective (NPWS, Version 1, 2024[66]),	Rationale	Potential for Adverse Effects Yes/No
		Project Site post construction, no adverse effects on the integrity the SPA due to direct loss of habitat for this species are anticipated. The majority of observations of lesser black-backed gull were of birds commuting over the Core Ornithology Survey Area, with birds infrequently observed utilising the habitats within the Project Site. Disturbance from construction of the Proposed Wind Farm is unlikely to give rise to adverse effects on this species given the abundance of suitably similar habitats (improved agricultural grassland and peatland habitats) in the wider area surrounding the Proposed Wind Farm. Furthermore, lesser black-backed gull are a wide-ranging species in both the breeding and winter season (Thaxter *et al.*, 2025), and therefore if disturbance were to occur within the Project Site, the avoidance of habitats within the Project Site would not mean the loss of a scarce resource for the SPA population. As such, no adverse effects on the integrity of the SPA due to disturbance of this species during the construction phase of the Proposed Project are anticipated. During the operational phase, displacement of lesser black-backed gull due to the presence of turbines has not been reported in literature. However, lesser black-backed gull are wide-ranging species in the winter season, and therefore if displacement were to occur within the Project Site, the avoidance of habitats within the Project Site would not mean the loss of a scarce resource for the SPA population. Furthermore, the suitable habitats present (peatlands and improved agricultural grasslands) within the Project Site are not unique to the Project Site and are abundant in the wider surroundings. This habitat in the wider area is functionally equivalent to that found within the Core Ornithology Survey Area and is available to support any displaced species. The temporary disturbance of this species is possible throughout the Proposed Wind Farm during the operational phase from disturbance by maintenance vehicles and personnel visits, particularly in the vicinity of the Proposed Turbines, access roads and the Proposed Onsite Substation. However, the volume and frequency of such visits is considered to be very low and is likely to be generally minor in scale and short in duration when it occurs. It is not anticipated that amenity volumes will add to background levels of disturbance currently occurring in the area. Therefore, there is no potential for adverse effects on the integrity of	

Qualifying feature	Conservation Objective (NPWS, Version 1, 2024[66]),	Rationale	Potential for Adverse Effects Yes/No
		Poulaphouca Reservoir SPA as a result of disturbance to lesser black-backed gulls by maintenance crews and amenity foot-traffic along the access roads and other infrastructure (excluding the Proposed Turbines) during the operational phase. There is no evidence to suggest that the Proposed Wind Farm lies on a migratory/ regular commuting route for the species given that flights across the Proposed Wind Farm appear random in nature, therefore barrier effect is not anticipated. Any minor alterations to the flight paths of transiting birds due to the presence of the Proposed Turbines will not result in adverse effects on the integrity of the SPA. Furthermore, as outlined in Section 3.6.1 above, over the lifetime of the Proposed Wind Farm, with the succession to scrub mosaic on shallower peat, the Project Site will likely become increasingly less suitable for open habitat species like lesser black-backed gull. Based on this, no adverse effects on the integrity of the SPA as a result of displacement or barrier effects on lesser black-backed gull are predicted. Lesser black-backed gulls were also recorded flying within the potential collision height during vantage point surveys. A collision risk assessment has been undertaken (full details provided in Appendix 11). The population identified within the Core Ornithology Study Area are likely to be part of two distinct wintering populations, the regional population which occur within the foraging range of the Project Site (30.8km) and the population associated with the Poulaphouca Reservoir SPA. To determine the significance of the collision risk at the site, an assessment of the impact on the regional population and the Poulaphouca Reservoir SPA was undertaken. The proportion of the overall regional population for each population (SPA and non-SPA birds) was calculated. For the purpose of the evaluation, 44% of the population were considered to be within the Poulaphouca Reservoir SPA and the remaining 56% are considered to be non-SPA birds. To apportion collision risk (quantitatively) it was assumed the origin of the observed bird was present in the same ratio, i.e. 44:56, for the SPA and wider regional population respectively. Following this apportioning, 44% of the collisions which occur at the Proposed Wind Farm could potentially impact the Poulaphouca Reservoir SPA population based on these	

Qualifying feature	Conservation Objective (NPWS, Version 1, 2024[66]),	Rationale	Potential for Adverse Effects Yes/No
		assumptions. Annual mortality of adult lesser black-backed gull has been calculated at 9% per year (Wanless *et al.*, 1996). If 0.17 collisions were to occur per year it would mean that the losses at the Proposed Wind Farm would increase the annual mortality of the Poulaphouca Reservoir SPA population by 0.29%. Given this low percentage, no potential for adverse effects on the integrity of the Poulaphouca Reservoir SPA has been identified as a result of collision risk for lesser black-backed gulls. As such, following detailed assessment, and there is no potential for adverse effects on the integrity of Poulaphouca Reservoir SPA, in view of the site's Conservation Objectives, as a result of impacts to lesser black-backed gull. **No further assessment is required.**	

6. ASSESSMENT OF POTENTIAL EFFECTS & ASSOCIATED MITIGATION

This section of this NIS presents the data and information on the Proposed Project and provides an analysis comprising the scientific examinations of the Proposed Project and its implications for the European Sites in view of their Conservation Objectives, and provides an analysis of whether the Proposed Project, in light of best scientific information, individually or in combination with other plans or projects, would adversely affect the integrity of a European Site. Potential adverse effects are assessed in view of best scientific knowledge, based on objective information in relation to the Proposed Project including the proposed avoidance, reduction, and preventive measures.

Potential pathways for adverse effects on the integrity of the following European Sites have been identified in Section 5 of this report:

- Ballynafagh Lake SAC [001387]
- River Barrow and River Nore SAC [002162]

The potential for adverse effects on the integrity of any other European Sites on which a potential pathway for likely significant effects was identified at Stage 1 AA Screening (Table 4-1) has been ruled out in Section 5 of this report. .

The following sections provide a review of the potential impact pathways for each of the European Sites for which potential pathways for adverse effect have been identified. Mitigation measures for the avoidance of impact are then provided, followed by an assessment of residual effects, post-implementation of the mitigation measures.

6.1 Deterioration of Water Quality

There is hydrological connectivity between the Project Site and the River Barrow and River Nore SAC via surface water and groundwater pathways. Potential indirect effects on River Barrow and River Nore SAC arising from deterioration of water quality are confined to aquatic and riparian-associated QIs that may occur downstream of the Project Site, where hydrological connectivity exists. These are:

River Barrow and River Nore SAC [002162]:

- [1092] White-clawed Crayfish (*Austropotamobius pallipes*)
- [1106] Atlantic Salmon (*Salmo salar*)
- [1095] Sea Lamprey (*Petromyzon marinus*)
- [1096] Brook Lamprey (*Lampetra planeri*)
- [1099] River Lamprey (*Lampetra fluviatilis*)
- [1355] Otter (*Lutra lutra*)
- [3260] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation
- [6430] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels
- [91E0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)

The Proposed Grid Connection underground electrical cabling crosses Ballynafagh Lake at the Blackwood feeder canal. The cables will be laid within the existing road bridge with no in-stream works required. Nonetheless there is potential for run-off of pollutants to the SAC during the cable laying works at this location. In addition, there is potential groundwater connectivity between the Proposed Wind Farm and this SAC as both are underlain by the same GWB. Potential indirect effects on

Ballynafagh Lake SAC arising from deterioration of water quality via surface and groundwater pathways have potential to adversely affect the following hydrologically sensitive QIs:

Ballynafagh Lake SAC [001387]:

- [1016] Desmoulin's Whorl Snail (*Vertigo moulinsiana*)
- [7230] Alkaline fens

6.1.1 Construction Phase

The following sections identify the construction phase activities identified as having potential to result in deterioration of water quality (surface and/or ground water) and which therefore have potential to result in adverse effects on the integrity of the River Barrow and River Nore SAC and Ballynafagh Lake SAC.

The environmental management framework to be adhered to during the construction phase of the Proposed Project includes comprehensive detail regarding site set up, pollution prevention and hydrocarbon management and incorporates mitigating measures to ensure that there are no adverse effects on the integrity of any European Sites in view of their Conservation Objectives during the construction, operational or decommissioning phases of the Proposed Project. Measures for the protection of water quality during the project design as well as construction, operational and decommissioning phases of the Proposed Project are set out in the following subsections.

6.1.1.1 Potential Effects from Earthworks Resulting in Suspended Solids Entrainment in Surface Waters

Construction phase activities including internal road construction, turbine base/hardstanding construction, temporary construction compound construction, met mast construction, substation construction, cable route excavations, amenity track construction, peat and spoil management, relay mast, Proposed Grid Connection works (steel masts, gantry structures, crane hardstands and associated hardstands), site entrance / amenity car parks construction, and the works at the Proposed Enhancement Areas will require varying degrees of earthworks resulting in excavation of peat and mineral subsoil where present. It is estimated that construction works will require the excavation of approximately 859,700m^3 of peat and spoil which will be a significant potential source of sediment laden water. Potential sources of sediment-laden water include:

- Drainage and seepage water resulting from excavations;
- Stockpiled excavated material providing a point source of exposed sediment; and,
- Erosion of sediment from emplaced site drainage channels.

These activities can result in the release of suspended solids to surface water and could result in an increase in the suspended sediment load, resulting in increased turbidity which in turn could affect all watercourses, fish stocks of downstream water bodies and hydrologically connected European Sites downstream of the Project Site.

Mitigation Measures

Proposed Mitigation by Avoidance:

The key mitigation measure during the construction phase is the avoidance of sensitive hydrological features where possible, by application of suitable buffer zones (i.e. 50m to main watercourses, and 10m to main drains). The majority of the Proposed Project development areas are located significantly away from the delineated 50m watercourse buffer zones with the exception of new and proposed watercourse crossings, sections of access roads to the south of Proposed Turbine 37 (930m of access road) and in the

south of Lodge Bog (130m access road), crane hardstands associated with Proposed Turbines 36 and 38 and a small drain to the southwest of the Proposed Offsite Substation.

Additional mitigation measures, which are outlined further on in this section, will be implemented at these locations within the hydrological buffer zone.

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 operate effectively. The proposed buffer zone will:

- Avoid physical damage (river/stream banks and river/stream beds) to watercourses and associated release of sediment;
- Avoid excavations within close proximity to surface watercourses;
- 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.

In addition, the drainage systems for the Proposed Wind Farm and Proposed Onsite Substation will connect into the existing bog drainage network. Runoff will be conveyed through the existing field drains and main drains to the existing large IPC licenced settlement ponds, where it will undergo further settlement and attenuation prior to discharge from the bog. The nearest IPC licenced settlement pond is located approximately 160m from the nearest Proposed Turbine. As such, there is significant distance for wind farm related surface water to travel before it actually reaches the edge of the bogs and joins any receiving waters outside of the overall bog boundaries.

Proposed Mitigation by Design:

There is an extensive network of drains already existing at the Proposed Wind Farm site. The existing drainage infrastructure is operating in accordance with IPC licence requirements, with environmental monitoring and silt control measures being implemented. The existing drainage system at the Proposed Wind Farm site will be maintained and expanded locally as required for use within the Proposed Project drainage system. The key elements are the upgrading and improvements to water treatment elements, such as in-line controls and treatment systems, including wind farm related silt traps and settlement ponds.

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

- Interceptor drains will convey clean runoff water around works areas to the existing downstream drainage system (field drains and main drains). Where required, interceptor drains will be installed in advance of any construction works commencing. This will ensure that clean water is kept clean by diverting surface water flow around excavations, construction areas and temporary storage areas. Where possible (depending on orientation), existing field drains can be used as interceptors drains;
- Collector drains will be used to intercept and collect runoff from construction areas (from turbine base/hardstand areas, construction compounds, and the substation). During the construction phase temporary settlement ponds will be used to attenuate and treat runoff from the construction areas (from turbine base/hardstand areas, construction compounds, and the Proposed Onsite Substation) and treated water will then discharge into existing field drains and main drains. Temporary settlement ponds will be removed at the end of the construction phase (end of high risk period), and operating wind farm runoff will discharge into existing field drains and main drains;
- During the construction phase, temporary silt traps (silt fences) will be used as an additional water protection measure around the existing bog drainage network, particularly where works are proposed within 50m of a natural watercourse. The silt fences will be placed in the existing drains downstream of construction works, and the

associated construction area run-off water will be diverted into proposed interceptor drains, or culverted under/across the works area;

- During the construction phase, dewatering silt bags will also be used as required. They can be used downgradient of turbine bases, where temporary pumping is required. Discharge from dewatering silt bags will flow into settlement ponds and treated water from settlement ponds will outfall to existing field drains and main drains;
- With regards to the proposed floating roads, and depending on intermediate topography, a collector drain (dirty water system as described above) may be used during construction phase, or over the edge (OTE) drainage will occur. OTE drainage allows runoff from access tracks to flow into local field drains and be managed via the existing site drainage system. OTE drainage will only occur where topography allows, and it is only proposed in areas of low risk and remote from outfall locations (at least 150m from bog outfall locations. Silt traps and check dams will be installed in field drains downstream of OTE drainage areas, and these will provide attenuation and treatment of dirty water; and,
- Culverts will be required where site roads and proposed hardstands cross the main bog drainage networks. These will be installed with a minimum gradient to reduce the entrainment of suspended solids. All culverts will be inspected regularly and maintained where appropriate. Culverts will remain in-situ during the operational phase of the Proposed Project.

Water Treatment Train:

During the construction phase field testing (visual, supplemented with pH, electrical conductivity, temperature, dissolved oxygen and turbidity monitoring), sampling and laboratory analysis of a range of parameters with relevant regulatory limits and EQSs (Environmental Quality Standards) will be undertaken by the ECoW (Environmental Clerk of Works) for each primary watercourse, and specifically following heavy rainfall events (i.e. weekly, monthly and event-based). If the discharge water from construction areas fails to be of a high quality, 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 the existing drainage network 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. Regular inspection of these structures will be undertaken by the ECoW and regular maintenance will be completed by the contractor during construction phase is critical to their functioning to stated purpose. They will remain in place throughout the entire construction phase.

Silt Bags:

Silt bags will be used where small to medium volumes of water need to be pumped from excavations (e.g. the proposed underpass locations). As water is pumped through the bag, most of the sediment is retained by the geotextile fabric allowing filtered water to pass through.

Pre-emptive Site Drainage Management:

The works programme for the construction phase of the development will also take account of weather forecasts and predicted rainfall in particular. Large excavations and movements of peat/subsoil or peat 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/weekly basis, as required, to allow site staff to direct proposed and planned construction activities:

- General Forecasts: Available on a national, regional and county level from the Met Éireann 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 Éireann 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 Éireann provide a 24-hour telephone consultancy service. The forecaster will provide interpretation of weather data and give the best available forecast for the area of interest.

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

Earthworks will be suspended if forecasting suggests any 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 earthworks being suspended the following control measures will be completed:

- Secure all open peat/spoil 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 Areas:

All excavated peat and overburden will be placed/spread alongside the excavations for the infrastructure elements. Excavated peat and spoil will be transported immediately on excavation to designated peat and spoil areas alongside the hardstands and access roads or used for landscaping. During the initial placement of peat and spoil, silt fences, straw bales and biodegradable geogrids will be used to control surface water runoff from the storage areas as required. Interceptor and collector drains will be used at storage areas. 'Siltbuster' or similar equivalent treatment trains will be employed if previous treatment is not to a high quality.

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.

Proposed Drainage and Water Quality Monitoring:

An inspection and maintenance plan for the on-site drainage system will be prepared in advance of commencement of any works and will be included in the Construction and Environmental Management Plan (CEMP; Appendix 9). 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.

Any excess build-up of silt levels at dams, the settlement ponds, or any other drainage features that may decrease the effectiveness of the drainage feature, will be removed.

During the construction phase field testing (visual, supplemented with pH, electrical conductivity, temperature, dissolved oxygen and turbidity monitoring), sampling and laboratory analysis of a range of parameters[67] with relevant regulatory limits and EQSs will be undertaken for each primary watercourse, and specifically following heavy rainfall events (i.e. weekly, monthly and event-based). The data will be processed and analysed and works will cease if elevated turbidity concentrations are recorded. In this event, all upstream silt traps and drainage routes will be inspected by the ECoW or the Site Manager to identify the cause of the elevated turbidity levels. Works will not recommence until any issues have been resolved and the turbidity concentrations have returned to background concentrations.

Works within the 50m Hydrological Buffer Zones:

The following additional mitigation measures will also be implemented at those locations identified above where works are within the 50m hydrological buffer zone:

- Double or triple silt fences will be placed downgradient of all work locations within the hydrological buffer zones;
- All works will be completed during the dry weather periods and works will be postponed in the event of rainfall; and,
- The hedgerow separating the small drain to the southwest of the Proposed Offsite Substation will be retained. This drain is not shown on the EPA databases but was recorded during site surveys. The drain was described as being heavily vegetated and with a low flow. Retaining the hedgerow will act as an additional protection measure to this drain.

Residual Adverse Effects:

Once the above listed mitigation measures are implemented, there will be no residual adverse effects on the integrity of the River Barrow and River Nore SAC or Ballynafagh Lake SAC, in view of their Conservation Objectives, as a result of the deterioration of water quality due to earthworks resulting in suspended solids entrainment in surface waters associated with the Proposed Project.

6.1.1.2 Potential Effects on Surface Water Quality from Excavation Dewatering

Groundwater seepages will likely occur in turbine base, substation and construction compound excavations, and these will create additional volumes of water to surface water (i.e. rainfall water) to be treated by the drainage management system. Groundwater inflows will likely be small however may be more significant where lenses of sand and gravel are intercepted within the glacial till deposits.

[67] *example suite: pH (field measured), Electrical Conductivity (field measured), temperature (field measured), Dissolved Oxygen (field measured), Turbidity (NTU) (sonde measured), Flow (m/s), Total Suspended Solids (mg/l), Ammonia, Nitrite (NO_2) (mg/l), Ortho-Phosphate (P) (mg/l), Nitrate (NO_3) (mg/l), Phosphorus (unfiltered) (mg/l), Chloride (mg/l), and BOD (mg/l).*

Inflows will likely require management and treatment to reduce suspended sediments. No contaminated land was noted at the Proposed Wind Farm site and therefore pollution issues are not anticipated in this respect. The main potential significant effects relate to increases in turbidity and suspended solids on downstream surface water receptors. In the absence of mitigation, this has the potential to result in adverse effects on the integrity of downstream European Sites as a result of increased turbidity and sediment deposition.

Mitigation Measures:

Management of excavation seepages and subsequent treatment prior to discharge into the drainage network will be undertaken for excavation works across the Project Site, 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 the build-up of groundwater in the excavation;
- The interceptor drainage will be discharged to the existing drainage system or onto natural vegetated bog surfaces within the Project Site and not directly to any natural watercourse;
- 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 "Siltbuster®" unit;
- There will be no direct discharge to the existing drainage network and therefore no risk of hydraulic loading or contamination will occur; and,
- Daily monitoring of excavations and the water treatment system by a suitably qualified person (ECoW) will occur during the construction phase. If high levels of seepage inflow occur, excavation work will immediately be stopped, and a geotechnical assessment will be undertaken.

Residual Adverse Effects:

Once the above listed mitigation measures are implemented, there will be no residual adverse effects on the integrity of the River Barrow and River Nore SAC or Ballynafagh Lake SAC, in view of their Conservation Objectives, as a result of the deterioration of water quality due to excavation dewatering associated with the Proposed Project.

6.1.1.3 Potential Effects Associated with Leaks or Spills of Hydrocarbons

Accidental spillage during refuelling of construction plant with petroleum hydrocarbons can cause significant pollution risk to groundwater, surface water and associated ecosystems, and to terrestrial ecology. In addition, the accumulation of small spills of fuels and lubricants during routine plant use can also be a pollution risk. Hydrocarbons have a high toxicity to humans, and all flora and fauna, including fish, and is persistent in the environment. It is also a nutrient supply for adapted micro-organisms, which can rapidly deplete dissolved oxygen in waters, resulting in death of aquatic organisms. In the absence of mitigation, this has the potential to result in adverse effects on the integrity of downstream European Sites.

Mitigation Measures:

- Refuelling and maintenance of construction vehicles and plant will, where practicable, be undertaken off-site at controlled, designated fuelling facilities. Where refuelling or maintenance is required on-site, it will be undertaken at designated areas in accordance with the CEMP and appropriate pollution prevention procedures;

- On-site re-fuelling will be undertaken using a double skinned bowser or a refuelling truck with spill kits kept onboard;
- Only designated trained operatives will be authorised to refuel plant on-site;
- Taps, nozzles or valves associated with refuelling equipment will be fitted with a lock system;
- All fuel storage areas will be bunded appropriately for the duration of the construction phase. All bunded areas will be fitted with a storm drainage system and an appropriate oil interceptor. Ancillary equipment such as hoses, pipes will be contained within the bunded area;
- Fuel and oil stores including tanks and drums will be regularly inspected by the appointed EnvCoW for leaks and signs of damage;
- The Proposed Onsite Substation and the Proposed Offsite Substation will be bunded appropriately to the volume of oils likely to be stored and to prevent leakage of any associated chemicals to groundwater or surface water. The bunded area will be 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 response plan for the construction phase to deal with accidental spillages is contained within the CEMP (which is contained in Appendix 9).

Residual Adverse Effects:

Once the above listed mitigation measures are implemented, there will be no residual adverse effects on the integrity of the River Barrow and River Nore SAC or Ballynafagh Lake SAC, in view of their Conservation Objectives, as a result of the deterioration of water quality due to hydrocarbons associated with the Proposed Project.

6.1.1.4 Potential Effects Associated with the Release of Cement-Based Products

Concrete and other cement-based products are highly alkaline and corrosive and can have significant negative impacts on water quality. They generate very fine, highly alkaline silt (pH 11.5) that can physically damage fish by burning their skin and blocking their gills. A pH range of $\geq 6 \leq 9$ is set in S.I. No. 293 of 1988: European Communities (Quality of Salmonid Waters) Regulations, with artificial variations not in excess of ± 0.5 of a pH unit. Entry of cement-based products into the site drainage system, into surface water runoff, and hence to surface watercourses or directly into watercourses represents a risk to water quality and, in the absence of mitigation, has the potential to result in adverse effects on the integrity of downstream European Sites.

Peat ecosystems are dependent on low pH hydrochemistry. They are extremely sensitive to introduction of high pH alkaline waters into the system. Batching of wet concrete on-site and washing out of transport and placement machinery are the activities most likely to generate a risk of cement-based pollution.

Mitigation Measures:

- No batching of wet-cement products will occur on site. Ready-mixed concrete will be delivered to site and, where possible, pre-cast elements will be used;
- Where possible pre-cast elements for culverts and concrete works will be used;
- No washing out of any plant used in concrete transport or concreting operations will be allowed on-site;
- Where concrete is delivered on site, only the chute will be cleaned, using the smallest volume of water possible. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse

will be allowed. Chute cleaning water will be isolated in temporary lined wash-out pits located near proposed site compounds. These temporary lined wash-out pits will be removed from the site at the end of the construction phase;
- Any washing out of concrete pumping plant will also be into the temporary lined wash-out pits;
- Will use weather forecasting to plan dry days for pouring concrete; and,
- Will ensure pour site is free of standing water and plastic covers will be ready in case of sudden rainfall event.

No specific mitigation measures are required for potential groundwater impacts as the proposed mitigation measures will ensure minimal release of cement-based products to enter the ground and subsequently affect groundwater. Furthermore, the potential groundwater effects are imperceptible at the outset.

Residual Adverse Effects:

Once the above listed mitigation measures are implemented, there will be no residual adverse effects on the integrity of the River Barrow and River Nore SAC or Ballynafagh Lake SAC, in view of their Conservation Objectives, as a result of the deterioration of water quality due to cement-based products associated with the Proposed Project.

6.1.1.5 Potential Effects from Wastewater Disposal

Release of effluent from on-site temporary wastewater treatment systems has the potential to impact on groundwater and surface water quality if site conditions are not suitable for an on-site percolation unit. Impacts on surface water quality could affect fish stocks and aquatic habitats downstream of the Project Site, which has the potential to result in adverse effects on the integrity of downstream European Sites.

Mitigation Measures:

- There are a total of 10 no. proposed construction compounds associated with the Proposed Project (the locations are detailed in Table 2-2 of this AASR and NIS);
- During the construction phase, a self-contained port-a-loo with an integrated waste holding tank will be used at each of the site compounds, maintained by the providing contractor, and removed from site on completion of the construction works;
- Water supply for the site office and other sanitation will be brought to the Project Site and removed after use from the site to be discharged at a suitable off-site treatment location; and,
- No water or wastewater will be sourced on the Project Site, nor discharged to the Project Site.

Residual Adverse Effects:

Once the above listed mitigation measures are implemented, there will be no residual adverse effects on the integrity of the River Barrow and River Nore SAC or Ballynafagh Lake SAC, in view of their Conservation Objectives, as a result of the deterioration of water quality due to wastewater disposal associated with the Proposed Project.

6.1.1.6 Potential Effects Associated with Piled Foundations

Due to the depth of peat at the Proposed Turbines locations, piled foundations with a configuration of up to 20 no. 900 to 1200mm cylindrical bored piles are proposed. These piles could extend to a depth of between 5 to approximately 18 metres below ground level.

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

- Creation of preferential pathways, through a low permeability subsurface layer (an aquitard such as lacustrine clay), to allow downward flow into the underlying aquifer;
- Creation of preferential pathways, through a low permeability subsurface layer (an aquitard such as lacustrine clay), to allow upward migration alkaline groundwater to the acidic bog surface, thus potentially altering local hydrochemistry and therefore vegetation at the bog surface; and,
- Creation of a blockage to regional groundwater flow within the underlying aquifer due to placement of pile clusters.

In the absence of mitigation there is potential for effects on groundwater quality/hydrochemistry in the underlying GWBs (Cushina, Bagenalstown Upper, Trim and Kildare GWBs).

Mitigation Measures:

The proposed mitigation measures designed for the protection of downstream surface water quality and groundwater quality will be implemented at all construction work areas, including piling works associated with the foundations.

- Mitigation measures for sediment control are detailed in Section 6.1.1.1, and 6.1.1.2
- Mitigation measures for the control of hydrocarbons during construction works are detailed in Section 6.1.1.3
- Mitigation measures for the control of cement-based products during construction works are detailed in Section 6.1.1.4
- Mitigation measures in relation to wastewater are detailed in Section 6.1.1.5

Proposed mitigation measures relative to piling works will comprise:

- Where driven piles are used, they will have a cross section without re-entrant angles;
- Strict QA/QC procedures for piling works will be followed;
- Piles will be kept vertical during piling works; and,
- Where required, a bentonite seal will be used to prevent upward/downward movement of surface water/groundwater.

Residual Adverse Effects:

Once the above listed mitigation measures are implemented, there will be no residual adverse effects on the integrity of the River Barrow and River Nore SAC or Ballynafagh Lake SAC, in view of their Conservation Objectives, as a result of the deterioration of water quality due to piling works associated with the Proposed Project.

6.1.1.7 Potential Effects on Water Quality during the Crossing of Watercourses at the Proposed Wind Farm

Within the Proposed Wind Farm, there are a total of 15 no. watercourse crossing locations over natural watercourses (EPA mapped rivers and streams) (refer to Sections 2.3.1.11 and 3.1.6.1 above). There are two proposed crossing locations over the Figile River, and both will be constructed as clear span crossings. Existing bridges are currently in place at these locations; these will be dismantled and replaced as part of the Proposed Wind Farm following the methodology outlined in Section 2.3.1.11. In-stream works will be required in these locations to facilitate demolition of the existing bridges. Depending on the detailed design at the construction phase, there may be additional in-stream works at 6 no. additional crossings within the Proposed Wind Farm site, therefore on a precautionary basis it is

assumed that in-stream works will occur at up to 8 no watercourse crossings associated with the Proposed Wind Farm.

In addition to these EPA mapped natural watercourses, there are manmade peat drains within the Proposed Wind Farm site. Where these drains intersect the Proposed Wind Farm infrastructure, they will be integrated into the proposed drainage design or, where necessary, will be rerouted around the proposed infrastructure.

In the absence of mitigation there is potential for deterioration of water quality within the local surface water network (i.e. the Figile River, Lullybeg Stream, Lullymore East Stream, Ballykilleen Stream and the Clonbrown Stream), which has potential to result in adverse effects on the integrity of downstream aquatic receptors associated with the River Barrow and River Nore SAC. There is no potential for adverse effects on the integrity of Ballynafagh Lake SAC as a result of these works as it is not located downstream of the Proposed Wind Farm.

Mitigation Measures:

The Proposed Wind Farm design has been optimised to utilise the existing infrastructure and existing watercourse crossings where practicable. Of the 15 no. watercourse crossing locations, a number are existing crossings which reduces the nature of the works required. The crossings comprise of proposed new crossings, upgrade to existing crossing and the replacement of existing crossings. The proposed crossing types include clear-span bridges, bottomless culverts and appropriately sized culverts as outlined in Section 2.3.1.11.1. Mitigation measures for the proposed watercourse crossings are detailed below:

- Clear-span bridge crossings will be designed to span the watercourse without disturbance to the watercourse bed and with abutments located outside the channel where practicable. No in-stream excavation works will be required for the clear-span crossings;
- Where bottomless culverts are proposed, the natural watercourse bed will be retained through the crossing where practicable. Construction will be undertaken from outside the watercourse channel and appropriate measures will be implemented to prevent the mobilisation of sediment into the watercourse;
- Where box culverts or pipes are proposed, the crossing will be suitably sized for the expected peak flows and designed to maintain hydraulic conveyance. Any works required within or immediately adjacent to the watercourse will be undertaken in accordance with the relevant OPW and IFI requirements and appropriate sediment and pollution control measures will be implemented. Works at these locations will be undertaken in the dry;
- Existing crossings requiring upgrading or replacement will be constructed in a manner that minimises disturbance to the existing watercourse and its banks. Where existing structures are to be removed, works will be undertaken in accordance with the approved construction methodology and appropriate measures will be implemented to prevent sediment mobilisation;
- All proposed new and upgraded crossings will be designed to maintain existing watercourse flow conveyance and to avoid creating a restriction to flow or increasing flood risk upstream or downstream of the crossing;
- All guidance / mitigation measures required by the OPW and/or the Inland Fisheries Ireland (IFI)[68] is incorporated into the design of the proposed crossings;
- All drainage measures will be installed in advance of the works;
- Plant and equipment will not be permitted to track across the watercourse;
- Access to the opposite side of the watercourse for excavation and foundation installation will require the installation of a temporary pre-cast concrete or metal bridge;

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

- As a further precaution, near stream construction work, will only be carried out during the period permitted by IFI for in-stream works according to the IFI (2016) guidance document "Guidelines on protection of fisheries during construction works in and adjacent to waters", i.e., July 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);
- Where works are necessary inside the 50m buffer of watercourses double row silt fences will be emplaced immediately down-gradient of the construction area for the duration of the construction phase;
- All new river/stream crossings will be designed in accordance with OPW guidelines/requirements on applying for a Section 50 consent;

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.

All new proposed culverts and proposed culvert upgrades at field drain crossings required for the Proposed Wind Farm will be suitably sized for the expected peak flows in the watercourse. All culverts will be inspected regularly by the ECoW, Site Manager and/or contractor to ensure they are not blocked by debris, vegetation or any other material that may impede conveyance.

Residual Adverse Effects:

Once the above listed mitigation measures are implemented, there will be no residual adverse effects on the integrity of the River Barrow and River Nore SAC as a result of the deterioration of water quality associated with the Proposed Wind Farm watercourse crossings, in light of the site's Conservation Objectives.

6.1.1.8 Potential Effects on Water Quality during the Crossing of Watercourses along the Proposed Grid Connection

This assessment considers potential morphological effects associated with the crossing of mapped and non-mapped natural watercourses by the Proposed Grid Connection. Other underground cable trenching, including the section connecting the Proposed Onsite Substation at Lodge Bog to the public road, has been considered separately under the relevant assessments of excavation works, drainage and water quality in the preceding sections.

The Proposed Grid Connection underground cabling route includes a total of 11 no. crossings over watercourses (7 no. crossings over EPA mapped watercourses, 1 no. crossing under the Grand Canal and an additional 3 no. crossings over non-EPA mapped watercourses). These crossings are detailed in Sections 2.3.2.8 and 3.1.7.4 above and comprise predominantly of existing bridge/culvert crossings along the public road network. The Proposed Grid Connection underground electrical cabling route crosses the Ballynafagh Lake SAC at the location of the Blackwood feeder canal. As described in Section 3.4.5.1 above and within the Aquatic Baseline Report (Appendix 2), during baseline aquatic surveys the feeder canal was dry with no aquatic habitats present, was heavily scrubbed over and encroached by terrestrial vegetation. The Proposed Grid Connection underground electrical cabling route also includes crossings of watercourses which have hydrological connectivity to the River Barrow

and River Nore SAC. There is 1 no. new proposed crossing to the west of Shee Bridge under the Grand Canal.

In the absence of mitigation there is potential for deterioration of water quality within the local surface water network (i.e. the Figile River, Lullybeg Stream, Lullymore East Stream, Ballykilleen Stream and the Clonbrown Stream), which has potential to affect downstream aquatic receptors, including those associated with the River Barrow and River Nore SAC and the Ballynafagh Lake SAC.

Mitigation Measures:

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

- A double silt fence perimeter will be placed along the road verge on the down-slope side of works areas that are located inside the watercourse 50m buffer zone;
- The following mitigation measures are proposed for the Proposed Grid Connection crossing works:
  - No stockpiling 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 or will occur;
  - Any excess construction material will be immediately removed from the area and sent to a licenced waste facility;
  - Spill kits will be available in each item of plant required to complete the works; and,
  - Silt fencing will be erected on ground sloping towards watercourses at the stream crossings if required.

Residual Adverse Effects:

Once the above listed mitigation measures are implemented, there will be no potential for residual adverse effects on the integrity of the River Barrow and River Nore SAC or Ballnyafagh Lake SAC, in view of their Conservation Objectives, as a result of the deterioration of water quality associated with the Proposed Grid Connection works.

6.1.1.9 Potential Effects from Use of Siltbuster

Siltbuster® systems are regularly used to remove suspended sediments on construction sites by means of chemical dosing and sedimentation (i.e. use of coagulants and flocculants to accelerate the settlement process). The benefits of using enhanced settlement systems on downstream surface water quality are widely known and provide a positive effect. However, potential overdosing with chemical agents means there is a perceived risk of chemical carryover in post treatment water which could result in negative effects on downstream water quality.

Wind farm construction water (i.e. surface water runoff or pumped groundwater) has sometimes very fine particles, particularly clays and peat, with slow settling velocities which do not settle out efficiently, even in a lamella clarifier at normal flow rates. In these cases, chemical dosing can be used to aggregate the particles (i.e. force them to combine and become heavier), increasing the particle settling rate and cleaning the water via gravity separation techniques. Agents commonly used include poly aluminium chloride (PAC), aluminium sulphate, ferric iron and ferrous iron. These agents are commonly used in

drinking water treatment plants. Their use is widespread, and there is significant scientific knowledge around their use and control.

The benefits of using a siltbuster system in emergency scenarios where all other water treatment systems have proven ineffective are considerable. An example of treatment capability of siltbuster systems from northwest Mayo is provided in Plate 6-1. This is a duration curve of downstream water quality data post siltbuster treatment. The system was setup so that any water not meeting discharge criteria was recycled back to the settlement ponds. The graph shows all data, and only 24 data points out of 1194 records were above 20 mg/L (i.e. recycling, and repeat treatment occurred at these times to ensure compliance at the discharge location).

The Siltbuster system will not be used under normal conditions during the construction phase. The mitigation proposed to protect water quality is already outlined above in Section 6.1.1.1 to Section 6.1.1.8.

The use of Siltbuster is only proposed as an emergency back up in the event of failure of all other proposed water treatment mitigation measures, e.g. in the event of landslide failure. The Siltbuster system is a proven and effective method of water quality treatment during these events. Given the flat topography of the Proposed Wind Farm site, the risk of a landslide is considered to be low. Therefore, it is extremely unlikely that the Siltbuster system will be utilised.

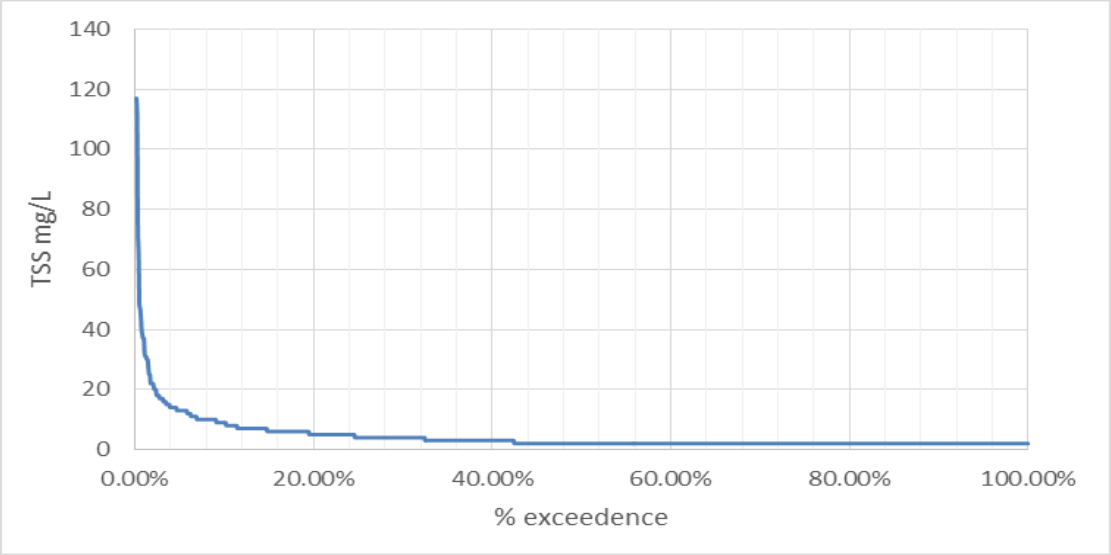


Plate 6-1. TSS treatment data using Siltbuster systems (with chemical dosing)

Mitigation Measures:

Measures 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, suitably qualified 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 will be recycled and retreated, which has a secondary positive effect of reducing carryover; and,
- The use of biodegradable chemical agents will be implemented at very sensitive sites (i.e. adjacent to SACs).

Residual Adverse Effects:

Once the above listed mitigation measures are implemented, there will be no residual adverse effects on the integrity of the River Barrow and River Nore SAC or Ballynafagh Lake SAC, in view of their Conservation Objectives, as a result of the deterioration of water quality associated with the use of siltbuster systems

6.1.1.10 Potential Effects from Tree Felling and Vegetation Removal

Tree felling and vegetation removal will be required within and around the Proposed Project footprint to allow for the construction of the turbine bases, access roads, the Proposed Onsite Substation, underground cabling, and other ancillary infrastructure and for the Proposed Enhancement Areas. As outlined in Section 2.3.1.8, a total of 60.7 hectares of forestry will be permanently clear felled.

Felling of trees plantations 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 and the Forestry Regulations 2017 (SI 191/2017) and as per the Forest Service's policy on granting felling licenses for wind farm developments.

In addition, a total of 176ha of vegetation (bog woodland and scrub) will be removed as part of the Proposed Project. All scrub and bog woodland removed will be replanted within the Project Site as part of the Proposed Enhancement Areas.

Potential effects on downstream watercourses during tree felling occur mainly from:

- Exposure of soil and subsoils due to vehicle tracking, and skidding or forwarding extraction methods resulting in a source of suspended sediment which can become entrained in surface water runoff and enter surface watercourses;
- Entrainment of suspended sediment in watercourses due to vehicle tracking through watercourses;
- Damage to roads resulting in a source of suspended sediment which can become entrained in surface water runoff and enter surface watercourses;
- Release of sediment attached to timber in stacking areas; and,
- Nutrient release.

These effects have the potential to affect the water quality and fish stocks of downstream water bodies. This could result in adverse effects on the integrity of the River Barrow and River Nore SAC, located downstream of the Proposed Wind Farm, if not mitigated. There is no potential for adverse effects on the integrity of Ballynafagh Lake SAC as a result of tree felling and vegetation removal as there will be no vegetation removal associated with the Proposed Grid Connection underground electrical cabling route in proximity to the SAC or watercourses with connectivity to the SAC.

Mitigation Measures:

Tree 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)
- Forestry and the Landscape Guidelines (Forest Service, 2000c)

- Forests and Water, Achieving Objectives under Ireland's River Basin Management Plan 2018-2021 (DAFM, 2018)
- Coillte Planting Guideline SOP
- 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.

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

- Avoid physical damage (river/stream banks and river/stream beds) to watercourses and the associated release of sediment;
- Avoid soil disturbance and compaction within close proximity to surface watercourses;
- Avoid the entry of suspended sediment from works into watercourses; and,
- Avoid the entry of suspended sediment from the 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.

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

In addition to the application of buffer/setback zones, the following supplementary mitigation measures will be employed during felling works:

Mitigation by Design:

Mitigation measures which will 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 vehicle 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 Project Site along specified off-road routes (referred to as racks);
- The location of racks will be chosen to avoid wet and potentially sensitive areas;
- Brash mats will be placed on the racks to support the vehicles on soft ground, reducing mineral soil disturbance and erosion and avoiding the formation of rutted areas, in which surface water ponding can occur. Brash mat renewal should take place when mats become heavily used and worn. Provision should 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;
- Silt fences will be installed at the outfalls of existing drains downstream of felling areas. No direct discharge of such drains to watercourses will occur. Sediment traps and silt fences will be installed in advance of any felling works and will provide surface water settlement for runoff from work areas and will prevent sediment from entering downstream watercourses. Accumulated sediment will be carefully disposed of at pre-selected peat and spoil areas. Where possible, all new silt traps will be constructed on even ground and not on sloping ground;
- In areas particularly sensitive to erosion it will be necessary to install double or triple sediment traps and increase buffer zone width. These measures will be reviewed on Site during construction;
- Double silt fencing will also be put down slope of felling areas which are located in close proximity to streams and/or relevant watercourses;
- 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;
- Timber will be stacked in dry areas, and outside watercourse buffer zones. Check dams and silt traps 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 runoff;
- Refuelling or maintenance of machinery will not occur within 50m of an aquatic zone or within 20m of any other hydrological feature. Mobile bowser, drip kits, qualified personnel will be used where refuelling is required; and,
- 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.

Silt Traps:

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

Timing of Proposed Project Felling Works:

Felling will only be carried out during periods of no or 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.

Drain Inspection and Maintenance:

The following items will 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 will be identified. Ideally the pre-felling inspection will be carried out during rainfall;
- Following tree felling all main drains will be inspected to ensure that they are functioning;
- Extraction tracks within 10m of 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 exiting Project Site, if impeded by silt or debris, 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 by the appointed ECoW. 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).

Criteria for the selection of water sampling points include the following:

- 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;
- 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.

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

Residual Adverse Effects:

Once the above listed mitigation measures are implemented, there will be no residual adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, as a result of the deterioration of water quality associated with the tree felling and vegetation removal works.

6.1.1.11 Potential Effects on Surface Water Quality During Fluvial Flooding

Some areas of the Proposed Wind Farm site, including approximately 3.29ha of the Proposed Wind Farm footprint (Proposed Turbine 46 Hardstand, Turning Head and Access Road, Proposed Turbine 42 Hardstand and Access Road and Proposed Turbine 45 Hardstand, Proposed Turbine 38 Hardstand and Access Road, Proposed Turbine 10 Hardstand, Access Roads and Turning Head, Proposed Turbine 22 Hardstand, Upgrade of Existing Site Access Roads at Site Entrance 1A and several watercourse crossings) are mapped in NIFM fluvial flood zones. The footprint of the Proposed Wind Farm within the NIFM flood zones equates to ~0.06% of the Proposed Wind Farm site (5,157ha).

Should a flood event coincide with the construction phase when excavations and earthworks are being undertaking within the floodplains, there is the potential for surface water quality effects on receiving waterbodies. This has the potential to result in adverse effects on the integrity of the River Barrow and River Nore SAC, located downstream of the Proposed Wind Farm.

However, during such a flood event, surface water quality in the general area would be significantly compromised due to natural river erosion due to the large flow volumes. During flooding, floodwaters are generally highly turbid with a large suspended solid concentration due to the sheer volume and flow of water.

The Proposed Onsite Substation and the Proposed Offsite Substation are mapped within Flood Zone C and are considered to be at low risk of flooding. Some fluvial flood zones are mapped along the Proposed Grid Connection underground cabling route. However, these occur at existing watercourse crossings along the R403. The Proposed Grid Connection underground electrical cable route will have no effect on flooding or mapped flood zones as no instream works are proposed at the crossing locations.

Mitigation Measures:

Despite the low likelihood of a fluvial flood event occurring during the construction of the Proposed Wind Farm, weather/rainfall events of those magnitudes likely to generate significant rainfall which would in turn cause fluvial flooding would be forecastable.

An emergency response system has been developed for the construction phase of the Proposed Project to respond to high rainfall events which may result in fluvial flooding.

A potential high intensity rainfall event would likely to be identified 3-5 days in advance, with more accurate forecasts of severity within 24-48 hours of occurrence. Preparations for a flood event would begin from the initial indications that there may be a high rainfall event. This would allow time for the preparation and the implementation of additional emergency mitigation measures as outlined below.

As above, the first point of mitigation is ongoing monitoring of weather forecasts and weather warning. The project EM (Environmental Manager) or the site ECoW will be responsible for monitoring weather forecasts during the construction phase. There will be a 24-hour advance meteorological forecasting (Met Eireann download) linked to a trigger-response system. When a pre-determined rainfall trigger levels is exceeded (e.g., sustained rainfall (any foreseen rainfall event longer than 4 hour duration) and/or any yellow or greater rainfall warning (>25mm/hour) issued by Met Eireann), planned responses will be undertaken.

Cessation of all construction works until the storm event, including the storm runoff has passed. All construction works will cease during storm events such as yellow warning rainfall events. Following heavy rainfall events, and before construction works recommence, the Project Site will be inspected and corrective measures implemented to ensure safe working conditions e.g. dewatering of standing water in open excavations, etc.

Exposed soils/peat (exposed temporary stockpiles) will be covered with plastic sheeting during all relatively heavy rainfall events and during periods where works have temporarily ceased before completion at a particular area (e.g., overnight and weekends).

With regards to the fluvial flood zones at the Proposed Wind Farm site, a managed retreat from the fluvial flood zones will be implemented in the event of a high intensity rainfall event and/or weather warning related to rainfall. This will include the following:

- Any areas where soil/subsoil is exposed at the surface will be compacted firmly with a digger bucket of a suitably sized excavator.
- Open trenches will be backfilled and compacted.
- Existing sediment control measures will be removed, as these may be washed away and deposited elsewhere by the floodwaters.
- Site access tracks will be scraps and any excess soft material will be removed from the flood zones.
- All plant, machinery and equipment will be removed from the flood zones.

With regards to the flood zones mapped along the Proposed Grid Connection underground cabling route, works in the vicinity of these watercourse crossings will be postponed in the event of flood or high flows in the river.

Residual Adverse Effects:

Once the above listed mitigation measures are implemented, there will be no residual adverse effects on the integrity of the River Barrow and River Nore SAC as a result of the deterioration of water quality associated with potential fluvial flooding events, in light of the site's Conservation Objectives.

6.1.2 Operational Phase

6.1.2.1 Potential Effects from the Progressive Replacement of Natural Surface with Lower Permeability Surfaces

Progressive replacement of the peat or vegetated surface with lower permeability surfaces will likely result in an increase in surface water runoff rates in the surface water drainage network. This could potentially increase discharge rates from the Project Site and increase flood risk downstream of the Proposed Project. In reality, the internal roads at the bogs comprising the Proposed Wind Farm and the Proposed Onsite Substation will have a higher permeability than the existing peat. However, in the baseline scenario runoff rates are high as a result of the prevailing peat soils (96% runoff). In order to assess the potential change as a result of proposed internal access road and hardstand footprints we have increased the runoff rate to the maximum, i.e., 100% (4% higher than normal). The assessed footprint comprises Proposed Turbine foundations and hardstandings, internal roads, amenity tracks and carparks, site entrances, Proposed Onsite Substation, 2 no. met mast footprint and the relay mast footprint. During storm rainfall events, additional runoff coupled with the increased velocity of flow could increase hydraulic loading, resulting in erosion of watercourses and impact on water quality. This has the potential to result in adverse effects on the integrity of the River Barrow and River Nore SAC as it is located downstream of the Proposed Wind Farm site, in which these hardstandings are located.

The assessment presented herein relates to the Proposed Wind Farm footprint and the Proposed Onsite Substation (25,615m^2) located within the Proposed Wind Farm site. The Proposed Offsite Substation and Proposed Grid Connection underground cabling route are not considered further in this assessment. The Proposed Offsite Substation is located within agricultural land and has a small footprint (9,307m^2) in comparison to the wider agricultural area within which it is located, while the Proposed Grid Connection underground cabling route is located predominantly within the footprint of existing roads. Consequently, these elements of the Proposed Project will not result in a significant increase in impermeable or lower permeability surface area or a significant change in existing surface water runoff rates. As such, there is no potential for adverse effects on the integrity of Ballynafagh Lake SAC as a result of lower permeability surfaces.

The emplacement of the proposed permanent development footprint (assuming emplacement of impermeable materials as a worst-case scenario) could result in an average total site increase in surface water runoff of approximately 5,192m^3/month (Table 6-2). This represents a potential increase of approximately 0.12% in the average daily/monthly volume of runoff from the Project Wind Farm and the Proposed Onsite Substation in comparison to the baseline pre-development site runoff conditions. This is a very small increase in average runoff and results from the naturally high surface water runoff rates and the relatively small area of the Project Site being developed, the proposed total permanent development footprint being approximately 154ha, representing approximately 3% of the total study area (5,157ha).

Table 6-2 Baseline Site Runoff V Development Runoff

Development Type	Site Baseline Runoff/month (m^3)	Baseline Runoff/day (m^3)	Permanent Hardstanding Area (m^2)	Hardstanding Area 100% Runoff (m^3)	Hardstanding Area 96% Runoff (m^3)	Net Increase/month (m^3)	Net Increase/day (m3)	% Increase from Baseline Conditions (m^3)
Wind Farm	4,213,517	135,908	1,520,000	129,808	124,615	5,192	167	0.12%

The additional volume is low due to the fact that the runoff potential from the Proposed Wind Farm site is naturally high (96%). Also, the calculation assumes that all hardstanding areas will be impermeable which will not be the case as internal roads and amenity tracks will be constructed of permeable stone aggregate. The increase in runoff from the bogs will, therefore, be negligible. This is even before mitigation measures will be put in place. Therefore, there will be no risk of exacerbated flooding downstream of the Proposed Wind Farm or the Proposed Onsite Substation.

Similarly, there will be no significant increase in runoff from the Proposed Offsite Substation due to its small footprint and the local hydrogeological regime which is characterised by high rates of surface water runoff and low rates of groundwater recharge.

Mitigation Measures:

Mitigation by Design:

As the 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 include the following:

- Interceptor drains (for collecting and redistributing clean water) will be installed up-gradient of all proposed infrastructure to intercept clean surface runoff and minimise the volume of runoff entering construction areas where suspended sediment could become entrained. Intercepted clean water will be directed around the works and redistributed to downstream field drains. Where practicable, existing field drains will be utilised for this purpose; otherwise, new interceptor drains will be installed
- Collectors drains will be installed downstream of works areas to collect runoff from access roads, turbine hardstands and other construction areas where suspended sediment may become entrained. This runoff will be conveyed to local settlement ponds for treatment and settlement of suspended sediment prior to discharge to the nearest downstream field drain or main drain;
- On steeper sections of access road, transverse drains ('grips') will be installed, where appropriate, within the road surface layer of the road to intercept runoff and divert it to adjacent roadside collector drains;
- Check dams will be used along sections of access road collector drains, where appropriate, to reduce flow velocities and promote the settlement of suspended sediment. Check dams will be constructed using 4/40mm non-friable crushed rock and will be installed at 25m or 50m intervals, depending on the local gradient;
- Settlement ponds, emplaced downstream of access road sections and at Proposed Turbine locations, will buffer volumes of runoff discharging from the existing drainage system during periods of high rainfall, by retaining water until the storm

hydrograph has receded, thus reducing the hydraulic loading to existing downstream field/main drains; and

- All surface water runoff from the Proposed Project will have to pass through the existing IPC licence settlement ponds at the existing bog outfall locations prior to onward flow to surrounding streams and rivers.

Residual Adverse Effects:

Once the above listed mitigation measures are implemented, there will be no residual adverse effects on the integrity of the River Barrow and River Nore SAC as a result of the deterioration of water quality due to the progressive replacement of natural surfaces associated with the Proposed Project, in light of the site's Conservation Objectives.

6.1.2.2 Potential Effects from Suspended Solids Entrainment in Surface Waters

During the operational phase, the potential for silt-laden runoff is much reduced compared to the construction phase. In addition, all permanent drainage controls will be in place and the disturbance of ground and excavation works will be complete. Some minor maintenance works may be completed, such as maintenance of site entrances, internal roads, hardstand areas and amenity pathways. These works would be of a very minor scale and would be very infrequent. Potential sources of sediment laden water would only arise from surface water runoff from small areas where new material is added during maintenance works.

These minor activities could, however, result in the release of suspended solids to surface water and could result in an increase in the suspended sediment load, resulting in increased turbidity which in turn could affect the water quality and fish stocks of downstream water bodies. This could result in adverse effects on the integrity of the European Sites, located downstream of the Proposed Wind Farm, if not mitigated against.

During such maintenance works there is a small risk associated with release of hydrocarbons from site vehicles, although it is not envisaged that any significant refuelling works will be undertaken on-site during the operational phase.

Mitigation Measures:

Mitigation measures for sediment control are the same as those outlined in Section 6.1.1.1 above. Mitigation measures for control of hydrocarbons during maintenance works are similar to those outlined in Section 6.1.1.3.

Residual Adverse Effects:

Once the above listed mitigation measures are implemented, there will be no residual adverse effects on the integrity of the River Barrow and River Nore SAC or Ballynafagh Lake SAC as a result of the deterioration of water quality due to suspended solids entrainment in surface waters associated with the Proposed Project, in light of their site-specific Conservation Objectives.

6.1.2.3 Potential Effects from the Release of Wastewater

During the operational phase the wind farm control buildings, and the Proposed Onsite Substation and the Proposed Offsite Substation, will include staff welfare facilities. The release of untreated wastewater can have a negative effect on water quality and can also negatively affect groundwater quality. This has the potential to result in adverse effects on the integrity of the River Barrow and River Nore SAC,

located downstream of the Proposed Project, and the groundwater-dependent QIs associated with Ballynafagh Lake SAC.

Mitigation Measures:

It is proposed to install sealed underground holding tanks for effluent (wastewater) at the control buildings. The tanks will be routinely emptied by a licensed contractor. A level sensor will be installed in the tanks which will be linked to the on-site SCADA system. If the level of the tank contents rise to a predetermined 'high' level a warning will appear on the overall SCADA system for the site and automatic notification will be sent to the facility manager. A formal service agreement will be entered into with a suitably permitted waste contractor, in relation to the servicing and de-sludging of the wastewater holding tank on-site. There will be no discharge of wastewater to ground at the Project Site, and therefore there is no potential to impact groundwater or surface water quality.

Residual Adverse Effects:

Once the above listed mitigation measures are implemented, there will be no potential for residual adverse effects on the integrity of the River Barrow and River Nore SAC or Ballynafagh Lake SAC, in view of their Conservation Objectives, as a result of the deterioration of water quality associated with the Proposed Project during the operational phase.

6.1.3 Decommissioning Phase

The potential effects associated with decommissioning of the Proposed Project will be similar to those associated with the construction phase but of a reduced magnitude, due to the smaller scale of the proposed decommissioning works. A decommissioning plan will be agreed with both Offaly County Council and Kildare County Council prior to decommissioning of the Proposed Project (see Appendix 12).

During decommissioning, it may be possible to reverse or at least reduce some of the potential impacts caused during construction by rehabilitating construction areas such as turbine bases, hard standing areas and peat and spoil areas. This will be done by covering with peatland vegetation/scraw or poorly humified peat to encourage vegetation growth and reduce run-off and sedimentation. Other impacts such as possible soil compaction and contamination by fuel leaks will remain but will be of reduced magnitude. However, as noted in the Scottish Natural Heritage report (SNH) Research and Guidance on Restoration and Decommissioning of Onshore Wind Farms (SNH, 2013) reinstatement proposals for a wind farm are made approximately 30 years in advance, so within the lifespan of the wind farm, technological advances and preferred approaches to reinstatement are likely to change. According to the SNH guidance, it is, therefore:

> *"best practice not to limit options too far in advance of actual decommissioning but to maintain informed flexibility until close to the end-of-life of the wind farm".*

Some of the effects will be avoided by leaving elements of the proposed development in place where appropriate. All above-ground turbine components would be separated and removed from the Project Site for recycling. Turbine foundations would remain in place underground. The Project Site internal access roads could be in use for purposes other than the operation of the Proposed Project by the time the decommissioning of the Proposed Wind Farm is to be considered, and therefore it may be more appropriate to leave the Project Site internal access roads in situ for future use. It is envisaged that the roads will be widely utilised for amenity purposes by the local community. Upon decommissioning of the wind farm, the Proposed Grid Connection including all the associated transmission infrastructure i.e. underground cables, overhead line cabling, steel masts, etc, Proposed Onsite Substation and Proposed Offsite Substation will form part of the national grid infrastructure and operate in perpetuity as part of Transmission System and TAO assets and will remain in-situ.

Mitigation Measures

Mitigation measures will be implemented as per the construction phase mitigation measures outlined in Section 6.1.1.

Residual Adverse Effects:

No residual adverse effects on the integrity of the River Barrow and River Nore SAC or Ballynafagh Lake SAC, in view of their Conservation Objectives, due to hydrological or hydrogeological impacts are envisaged during the decommissioning phase of the Proposed Project.

6.2 Disturbance to Otter

As outlined in Section 5 above, on a precautionary basis a potential pathway for indirect effects on the River Barrow and River Nore SAC due to *ex-situ* disturbance and displacement of following QI species has also been identified:

River Barrow and River Nore SAC [002162]:

- [1355] Otter (*Lutra lutra*)

Taking a precautionary approach, there is potential for otter utilising the watercourses within the Project Site to be associated with the SAC. As such, a potential pathway for adverse effects on the integrity of River Barrow and River Nore SAC due to *ex-situ* disturbance and displacement of otter during the construction and decommissioning phases of the Proposed Project was identified. This pathway is described further in the subsections below and measures for the minimisation of disturbance are set out where required.

The potential for disturbance to otter associated with the River Barrow and River Nore SAC during the operational phase of the Proposed Project has also been considered. The proposed amenity tracks will result in an increase in footfall within the Project Site, comprising several waymarked trails of different lengths along the proposed internal roads and proposed dedicated amenity track, ranging in distance, which will accommodate walkers and other amenity users; a dedicated equestrian track will also be supplied as part of the Proposed Wind Farm. As outlined in Section 2.3.1.9 above, the amenity tracks have been designed to be looped and tie in with proposed internal site access road network to minimise disturbance to wildlife and the peatland. Additionally, the NPWS (2009) Threat Response Plan for Otter acknowledges that "*Little evidence has come to light in recent studies to suggest that disturbance by recreation is a significant pressure*". As such, there is no potential for adverse effects on the integrity of the River Barrow and River Nore SAC as a result of disturbance during the operational phase of the Proposed Project.

6.2.1 Construction Phase

While the SAC is located approximately 17km hydrological distance from the Project Site, given the large territories of otter (approximately 7.5 ± 1.5km for females and 13.2 ± 5.3km for males (Ó'Neill, 2008)), there is potential for otter utilising the watercourses within and in proximity to the Project Site (which have connectivity with the River Barrow and River Nore SAC downstream) to be associated with the SAC population.

An otter holt was recorded during surveys undertaken in 2021 within a pipe culvert near the Codd River crossing of the local L1001 road, however during follow-up surveys in September 2026 it was found to be no longer in use by otter, and no otter signs were recorded in the vicinity. An inactive holt was also identified within the Proposed Wind Farm site during baseline aquatic surveys undertaken in 2026, to the north of Proposed Turbine 36. Both the inactive holt identified in 2026 and the pipe culvert in which a holt was identified in 2021 are located over 150m from the nearest significant infrastructure

and are therefore located outside the likely ZoI for significant disturbance effects. Any works located within 150m are minor in nature (i.e. proposed scrub planting and a proposed peat and spoil area) and will not involve any significant groundworks. Additionally, both holt locations are situated over 25km upstream of the River Barrow and River Nore SAC and as such are located outside of the range of otter associated with the SAC (Ó'Neill, 2008). As such no resting or breeding sites of otter associated with the River Barrow and River Nore SAC will be disturbed as part of the Proposed Project. Nonetheless there is potential for disturbance of commuting and foraging otter during the construction phase of the Proposed Project.

Otter are predominantly crepuscular in nature (prefer dim light and tend to be active during dawn/dusk) and are unlikely to be adversely affected by the proposed construction works. Construction activity will be confined to daytime hours, thus minimising potential disturbance related impacts to the species. Additionally, as outlined above, the NPWS (2009) Threat Response Plan for Otter 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.

Chanin (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). No adverse effects on the otter population associated with the River Barrow and River Nore SAC during the construction phase of the Proposed Project are anticipated.

Based on the above review of scientific literature, and the absence of any active holts or resting sites within 150m of the Proposed Project footprint, the potential for adverse effects on the integrity of the River Barrow and River Nore SAC as a result of the of disturbance during the construction phase of the Proposed Project can be excluded.

Mitigation Measures:

While no adverse effects on the integrity of the River Barrow and River Nore SAC as a result of disturbance to otter are anticipated, taking a highly precautionary approach, prior to the commencement of construction works associated with the installation of watercourse crossings within the Project Site, a pre-commencement otter survey will be undertaken to ensure that no otter holts/breeding sites have been established since the original surveys were undertaken (TII, 2008a). This will be undertaken by a suitably qualified ecologist in accordance with standard best practice guidance.

In the unlikely event that an otter holt is identified within 150m of the proposed works during the pre-construction surveys, consultation will be undertaken with the NPWS and a derogation licence applied for, in line with TII (2008b) *Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes*.

- All conditions of a derogation licence will be implemented in full.
- 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 not take place within 15m of such holts, except under licence
- All of the above works will be undertaken or supervised by an appropriately qualified ecologist.

Residual Adverse Effects:

Once the above listed mitigation measures are implemented, there will be no potential for residual adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, as a result of disturbance to otter during the construction phase.

6.2.2 Decommissioning Phase

The same mitigation to prevent adverse effects on otter as a result of disturbance during construction will be implemented during the decommissioning phase.

Residual Adverse Effects:

It can be concluded that following the implementation of preventative mitigation as outlined above in relation to the construction phase, there is no potential for the decommissioning of the Proposed Project to result in adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, as a result of disturbance to otter during the decommissioning phase.

6.3 Disturbance to Aquatic Fauna

As outlined in Section 2.3.1.11 above, existing bridges will be demolished and reconstructed in two locations along the Figile River within the Proposed Wind Farm i.e. between Codd 1 and Codd 2 Bogs, and between Glashabaun North and Glashabaun South Bogs. Temporary flow management systems will be implemented in order to isolate the works areas from the flow and allow demolition and construction, which will involve temporary damming of the areas and the over-pumping of water flow through the channel. Depending on the detailed design at the construction phase, there may be additional in-stream works at 6 no. additional crossings within the Proposed Wind Farm site, therefore on a precautionary basis it is assumed that in-stream works will occur at up to 8 no watercourse crossings associated with the Proposed Wind Farm. Due to the nature of these in-stream works, in the absence of mitigation there is potential for direct disturbance and mortality of the following QI species during these works:

River Barrow and River Nore SAC [002162]:

- [1092] White-clawed Crayfish (*Austropotamobius pallipes*)
- [1106] Atlantic Salmon (*Salmo salar*)
- [1095] Sea Lamprey (*Petromyzon marinus*)
- [1096] Brook Lamprey (*Lampetra planeri*)
- [1099] River Lamprey (*Lampetra fluviatilis*)

As outlined in Section 5, there is potential for populations of these species associated with the River Barrow and River Nore SAC to be utilising the watercourses within the Project Site, where in-stream works are proposed. Measures for the protection of these species during the construction phase of the Proposed Project are set out in the following subsection.

No potential for adverse effects on aquatic fauna as a result of disturbance has been identified during the operational phase of the Proposed Project as no further in-stream works will be required during this phase.

6.3.1 Construction Phase

Mitigation Measures

In addition to the measures outlined in Section 6.1.1 above relating to protection of water quality, the following mitigation measures will be strictly adhered to during proposed in-stream works:

- All in-stream works will be undertaken in line with IFI (2016) *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters* and OPW (2019) *Environmental Guidance: Drainage Maintenance and Construction*[69].
- All guidance / mitigation measures required by the OPW and/or the IFI is incorporated into the design of the proposed crossings;
- All in-stream works will be supervised by an ECoW, who will have the power to halt works if non-compliance is observed;
- All drainage measures will be installed in advance of the works;
- All operatives will be trained in how to address the environmental risks and best practice measures;
- In accordance with OPW (2019), in order to accommodate lamprey spawning and berried white-clawed crayfish (i.e. carrying eggs), no works may be carried out from end March to mid-July;
- In order to minimise causing direct physical damage and mortality of species living in the riverbed, the temporary dam will be constructed using sand bags and these will be placed at an extremely slow pace, such that any animals within the vicinity of the footprint will have a chance to leave for alternative suitable areas before potentially harmful effects;
- Prior to the commencement of works, Section 14 Authorisation from the Inland Fisheries Division of the Department of Environment, Climate and Communications will be obtained. Prior to the pumping out of water from the enclosure, electrofishing will be carried out within the dammed area and any recovered aquatic individuals will be relocated by the ECoW to suitable similar river habitat downstream of the works location, under licence;
- Only after electrofishing is complete and any fish species are removed, if present, may the water from within the dammed area begin to be pumped out from within this temporary works area;
- Machinery, construction equipment and construction materials will not enter the water; the works will only occur after the dry working area is created;
- Access to the opposite side of the watercourse for excavation and foundation installation will require the installation of a temporary pre-cast concrete or metal bridge;
- Once the foundations have been completed at both sides of the watercourse, the pre-cast concrete box culvert will be installed using a crane and there will be no contact with the watercourse;
- Where the box culvert is installed in sections, the joint will be sealed to prevent granular material entering the watercourse;
- All machinery, PPE and equipment used within the watercourse will be thoroughly cleaned prior to entering the watercourse. All machinery will be visually inspected by the ECoW and any vegetation or debris removed. All machinery, PPE and equipment will then be disinfected using a broad-spectrum cleaner (e.g. 1% solution of Virkon Aquatic or another proprietary disinfection product) prior to entering the watercourse and after removal from the watercourse to ensure biosecurity is upheld and limit the spread of invasive species and infectious waterborne diseases. This will

69 Brew, T., Gilligan, N., 2019, Environmental Guidance: Drainage Maintenance and Construction. Series of Ecological Assessments on Arterial Drainage Maintenance No 13. Environment Section, Office of Public Works, Trim, Co. Meath, Ireland.

occur within a designated wash-down area, which will be underlain by a washable membrane or hard surface;

- As a further precaution, near stream construction work, will only be carried out during the period permitted by IFI for in-stream works according to the IFI (2016) guidance document '*Guidelines on protection of fisheries during construction works in and adjacent to waters*[70]', i.e., July 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).

Residual Adverse Effects

Following the implementation of the mitigation prescribed above, there will be no adverse effects on the River Barrow and River Nore SAC as a result of direct disturbance or mortality of QI species during the construction phase of the Proposed Project.

6.3.2 Decommissioning Phase

As outlined in Section 6.1.3 in relation to deterioration of water quality, the potential impacts associated with decommissioning of the Proposed Project will be similar to those associated with construction but of a reduced magnitude, due to the reduced scale of the proposed decommissioning works in comparison to construction phase works.

It is considered that Project Site roadways could be in use for purposes other than the operation of the Proposed Project by the time the decommissioning of the Proposed Wind Farm is to be considered, and therefore it may be more appropriate to leave the Project Site roads in-situ for future use. It is envisaged that the roads will be widely utilised for amenity purposes by the local community.

Mitigation Measures

Should it be necessary to remove the Project Site roads and associated watercourse crossings within the Proposed Wind Farm site at the decommissioning phase, the same mitigation to prevent adverse effects on aquatic fauna as a result of disturbance during construction will be implemented during the decommissioning phase.

Residual Adverse Effect

Following the implementation of the mitigation prescribed above in relation to the construction phase, there will be no adverse effects on the River Barrow and River Nore SAC as a result of direct disturbance or mortality of QI species during the decommissioning phase of the Proposed Project.

7. ASSESSMENT OF RESIDUAL ADVERSE EFFECTS

The potential for residual adverse effects on the integrity of European Sites, in view of their Conservation Objectives and following the implementation of mitigation, is assessed in this section of the report.

[70] *IFI (2016) Guidelines on the Protection of Fisheries During Construction Works and Adjacent to Waters. Inland Fisheries Ireland.*

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 integrity of 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 Proposed Project design.

Taking cognisance of measures to avoid impacts and best practice/mitigation measures incorporated into the Proposed Project design which are considered in the preceding section, the Proposed Project will not have an adverse effect on the integrity of any European Site.

The Proposed Project will not prevent the QIs/SCIs of European Sites from achieving/maintaining favourable conservation status in the future as defined in Article 1 of the EU Habitats Directive.

The definition of Favourable Conservation Status for habitats per Article 1(e) of the EU Habitats Directive is as follows:

> *"Conservation status of a natural habitat means the sum of the influences acting on a natural habitat and its typical species that may affect its long-term natural distribution, structure and functions as well as the long-term survival of its typical species within the territory referred to in Article 2. The conservation status of a natural habitat will be taken as 'favourable' when:*
>
> - *Its natural range and areas it covers within that range are stable or increasing, and*
> - *The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and*
> - *the conservation status of its typical species is favourable as defined in (i)"*

The definition of Favourable Conservation Status for species per Article 1(i) of the EU Habitats Directive is as follows:

> *"Conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within the territory referred to in Article 2; The conservation status will be taken as 'favourable' when:*
>
> - *Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and*
> - *The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and*
> - *There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis."*

Based on the above, it can be concluded in view of best scientific knowledge, on the basis of objective information that the Proposed Project will not adversely affect the integrity of any European Site.

8. ASSESSMENT OF CUMULATIVE EFFECTS

A search and review in relation to plans and projects that may have the potential to result in cumulative impacts on European Sites was conducted. This assessment focuses on the potential for cumulative in-combination effects on the European Sites where potential for adverse effects was identified in Section 5 of this report. In line with EC (2021) *Assessment of plans and projects in relation to Natura 2000 sites – Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*, this included a review of online Planning Registers, Development Plans and other available information and served to identify other plans or projects that have been already completed, approved but not yet completed, or submitted for consent, their activities and their predicted environmental effects.

8.1 Assessment of Plans

The following development and biodiversity action plans have been reviewed and taken into consideration as part of this assessment:

- Kildare County Development Plan 2023-2029
- Offaly County Development Plan 2021-2027
- Regional Spatial and Economic Strategy, Eastern and Midland Regional Assembly 2019-2031.
- Ireland's 4th National Biodiversity Action Plan 2023-2030

The review focused on policies and objectives that relate to European Sites. Policies and objectives relating to the conservation of peatlands and sustainable land use were also reviewed, particularly where the policies relate to the preservation of surface water quality. An overview of the search results with regard to plans is provided in Table 8-1. No potential for cumulative effects when the Plans were considered in-combination with the Proposed Project has been identified, and the Proposed Project is in compliance with the relevant objectives of the Plans. The Offaly Biodiversity Action Plan 2025-2030 and the Kildare Biodiversity Action Plan 2026-2031 were also reviewed, however no policies, objectives or actions specific to Appropriate Assessment, European Sites or the Natura 2000 Network were identified. Objectives relating to biodiversity in general are fully considered in Section 6.5.2 of the Chapter 6 Biodiversity of the EIAR which accompanies this planning application.

In addition, the Natura Impact Reports prepared for these Plans have been reviewed. Relevant available reports for these plans, where available, can be found at the following links:

- Kildare County Development Plan 2023-2029 Natura Impact Report: https://consult.kildarecoco.ie/en/system/files/materials/4060/FINAL%20Stage%202%20AA%20NIR.pdf
- Offaly County Development Plan 2021-2027 Natura Impact Report: https://www.offaly.ie/app/uploads/Council/Council_Services_A-Z/Planning_Building/Consolidated-AA-NIR.pdf
- Regional Spatial and Economic Strategy, Eastern and Midland Regional Assembly 2019-2031 Natura Impact Report: https://www.emra.ie/rses-download/EMRA-RSES-Natura-Impact-Report.pdf

The Appropriate Assessments carried out for these plans have concluded that there is no potential for residual adverse effects as a result of implementation of those Plans.

Table 8-1 Assessment of Plans

Plans	Key Policies and Objectives directly related to Biodiversity and European Sites in the Zone of Influence	Assessment of Compliance with Policy
Kildare County Development Plan 2023-2029	**Biodiversity and Green Infrastructure Policies and Objectives:** National Policy Context **BI P1** Integrate in the development management process the protection and enhancement of biodiversity and landscape features by applying the mitigation hierarchy to potential adverse impacts on important ecological features (whether designated or not), i.e. avoiding impacts where possible, minimising adverse impacts, and if significant effects are unavoidable by including mitigation and/or compensation measures, as appropriate. Opportunities for biodiversity net gain are encouraged. **BI O6** Apply the precautionary principle in relation to proposed developments in environmentally sensitive areas to ensure that all potential adverse impacts on a designated NHA or Natura 2000 Site arising from any proposed development or land use activity are avoided, remedied, or mitigated. Designated sites for nature conservation **BI P2** Seek to contribute to maintaining or restoring the conservation status of all sites designated for nature conservation or proposed for designation in accordance with European and national legislation and agreements. These include Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Natural Heritage Areas (NHAs), Ramsar Sites and Statutory Nature Reserves. **BI O8** Support the implementation of the National Raised Bog Special Areas of Conservation Management Plan 2017-2022. **BI O9** Avoid development that would adversely affect the integrity of any Natura 2000 site and promote favourable conservation status of habitats and protected species including those listed under the Birds Directive, the Wildlife Acts and the Habitats Directive, to support the conservation and enhancement of Natura 2000 Sites including any additional sites that may be proposed for designation during the period of this Plan and protect the Natura 2000 network from any plans and projects that are likely to have a significant effect on the coherence or integrity of a Natura 2000 Site.	The Kildare County Development Plan (KCDP) was comprehensively reviewed, with particular reference to Policies and Objectives that relate to European Sites. There will be no residual adverse effects on the integrity of any European Sites as a result of the Proposed Project. The Proposed Project has been designed, and a range of mitigation measures have been prescribed, to ensure that there will be no adverse effects on any European Sites as a result of impacts to QI habitats or species. The Proposed Project is not considered to be in contravention of the policies and objectives within the KCDP. No potential for cumulative adverse effects on the integrity of European Sites were identified, in view of their Conservation Objectives.

Plans	Key Policies and Objectives directly related to Biodiversity and European Sites in the Zone of Influence	Assessment of Compliance with Policy
	BI O10 Ensure an Appropriate Assessment Screening, in accordance with Article 6(3) and Article 6(4) of the Habitats Directive, Section 177A of the Planning and Development Act (2001-2022) or any superseding legislation and with DEHLG guidance (2009), is carried out in respect of any plan or project not directly connected with or necessary to the management of a Natura 2000 site to determine the likelihood of the plan or project having a significant effect on a Natura 2000 site, either individually or in combination with other plans or projects and to ensure that projects which may give rise to significant cumulative, direct, indirect or secondary impacts on Natura 2000 sites will not be permitted (either individually or in combination with other plans or projects) unless for reasons of overriding public interest. **BI O11** Support the establishment of conservation measures and the preparation and implementation of management plans for the conservation of Natura 2000 sites by NPWS, as required by Article 6(1) of the Habitats Directive. Protected Habitats and Species **BI P4** Ensure that any new development proposal does not have a significant adverse impact, incapable of satisfactory mitigation on plant, animal or bird species which are protected by law **BI O22** Identify and protect areas of high nature conservation value (including but not limited to SAC/SPA/pNHA) and support the landscape features which act as ecological corridors/networks and stepping-stones, such as river corridors, hedgerows, and road verges so as to minimise the loss of habitats and features of the wider countryside which are of major importance for wild fauna and flora in accordance with Article 10 of the Habitats Directive. Invasive Species and Noxious Weeds **BI P9** Implement and support measures for the prevention and/or eradication of invasive species within the county and the control of noxious weeds **BI O58** Require all development proposals to address the presence or absence of invasive alien species on proposed development sites and (if necessary) require applicants to prepare and submit an Invasive Species	

Plans	Key Policies and Objectives directly related to Biodiversity and European Sites in the Zone of Influence	Assessment of Compliance with Policy
	Management Plan where such species exist, in order to comply with the provisions of the European Communities (Birds and Natural Habitats) Regulations 2011-2015. Green Infrastructure within Public Open Spaces and Parks **BI P14** Protect and enhance the Green Infrastructure network throughout the county **BI O74** Strengthen ecological networks between urban areas to create greater linkages to Natura 2000 sites, proposed Natural Heritage Areas, parks and open spaces and the wider regional Green Infrastructure network. **Infrastructure and Environmental Services Policies and Objectives:** Water Services **IN P2** Ensure the protection and enhancement of water quality throughout Kildare in accordance with the EU WFD and facilitate the implementation of the associated programme of measures in the River Basin Management Plan 2018-2021 (and subsequent updates). **IN O5** Manage, protect, and enhance surface water and groundwater quality to meet the requirements of the EU Water Framework Directive. **IN O6** Require an undisturbed edge or buffer zone to be maintained, where appropriate, having regard to the riparian buffer zones to maintain the natural function of existing ecosystems associated with water courses and their riparian zones, and to enable sustainable public access. The width of the edge or buffer zone shall be determined during the appropriate environmental assessment such as EcIA or AA. Pollution Control – Water, Air, Noise and Light **IN P7** Support the implementation of the Water Framework Directive, the River Basin Management Plan, and the Local Authority Waters Programme in achieving and maintaining at least good ecological status for all water bodies in the county.	

Plans	Key Policies and Objectives directly related to Biodiversity and European Sites in the Zone of Influence	Assessment of Compliance with Policy
	IN P8 Implement the provisions of EU and National legislation on air, noise, and light pollution and other relevant legislative requirements, as appropriate **IN O57** Assess applications for developments, having regard to the impact on the quality of surface waters and any targets and measures set out in the River Basin Management Plan and any subsequent local or regional plans. Where developments have the potential to impact the water qualify of surface waters and/or any of the targets and measures set out in the RBMP, such a project should be subject to AA screening and where applicable, Stage 2 AA.	
Offaly County Development Plan 2021-2027	**Biodiversity and Landscape Policies** Designated and Non-Designated Sites **BLP-02** It is Council policy to conserve and protect habitats and species listed in the Annexes of the EU Habitats Directive (92/43/EEC) (as amended) and the Birds Directive (2009/147/EC), the Wildlife Acts 1976 (as amended) and the Flora Protection Orders. **BLP-03** It is Council policy to support and co-operate with statutory authorities and others in support of measures taken to manage proposed or designated sites in order to achieve their conservation objectives. **BLP-05** It is Council policy to ensure that development does not have a significant adverse impact, incapable of satisfactory avoidance or mitigation, on plant, animal or bird species protected by law. **BLP-06** It is Council policy to consult with the National Parks and Wildlife Service, and take account of any licensing requirements, when undertaking, approving or authorising development which is likely to affect plant, animal or bird species protected by law. Peatlands **BLP-14** It is Council policy to protect the county's designated peatland areas and landscapes, including any historical walkways through bogs and to conserve their ecological, archaeological and cultural heritage and to develop educational heritage.	The Offaly County Development Plan (OCDP) was comprehensively reviewed, with particular reference to Policies and Objectives that relate to European Sites. There will be no residual adverse effects on the integrity of any European Sites as a result of the Proposed Project. The Proposed Project has been designed and a range of mitigation measures have been prescribed to ensure that there will be no adverse effects on any European Sites as a result of impacts to QI habitats or species. The Proposed Project is not considered to be in contravention of the policies and objectives within the OCDP.

Plans	Key Policies and Objectives directly related to Biodiversity and European Sites in the Zone of Influence	Assessment of Compliance with Policy
	BLP-17 It is Council policy to support the National Parks and Wildlife Service in carrying out an EU LIFE fund supported raised bog restoration project in restoring the following Special Areas of Conservation sites in the county to favourable conservation status: › Clara Bog; › Ferbane Bog; › Mongan Bog; › Moyclare Bog; › Raheenmore Bog; and › Sharavogue Bog. **Biodiversity and Landscape Objectives** <u>Designated and Non-Designated Sites</u> **BLO-02** It is an objective of the Council that no plans, programmes or projects giving rise to significant cumulative, direct, indirect or secondary impacts on European sites arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall be permitted on the basis of this Plan (either individually or in combination with other plans, programmes, etc., or projects). **BLO-03** It is an objective of the Council that all projects and plans arising from this Plan will be screened for the need to undertake Appropriate Assessment under Article 6 of the Habitats Directive. A plan or project will only be authorised after the competent authority has ascertained, based on scientific evidence, Screening for Appropriate Assessment, and subsequent Appropriate Assessment where necessary, that: 1. The plan or project will not give rise to significant adverse direct, indirect or secondary effects on the integrity of any European site (either individually or in combination with other plans or projects); or 2. The plan or project will have significant adverse effects on the integrity of any European site (that does not host a priority natural habitat type/and or a priority species) but there are no alternative solutions and the plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature. In this case, it will be a requirement to follow procedures set out in legislation and	No potential for cumulative adverse effects on the integrity of European Sites were identified, in view of their Conservation Objectives.

Plans	Key Policies and Objectives directly related to Biodiversity and European Sites in the Zone of Influence	Assessment of Compliance with Policy
	agree and undertake all compensatory measures necessary to ensure the protection of the overall coherence of Natura 2000; or 3. The plan or project will have a significant adverse effect on the integrity of any European site (that hosts a natural habitat type and/or a priority species) but there are no alternative solutions and the plan or project must nevertheless be carried out for imperative reasons for overriding public interest, restricted to reasons of human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest. In this case, it will be a requirement to follow procedures set out in legislation and agree and undertake all compensatory measures necessary to ensure the protection of the overall coherence of Natura 2000. **BLO-04** It is an objective of the Council to ensure that the impact of development within or adjacent to national designated sites, Natural Heritage Areas, proposed Natural Heritage Areas, Ramsar Sites and Nature Reserves likely to result in significant adverse effects on the designated site is assessed by requiring the submission of an Ecological Impact Assessment prepared by a suitably qualified professional, which should accompany planning applications. **BLO-05** It is an objective of the Council in accordance with Article 4(4) of the Birds Directive and Regulation 27(4) of the European Communities (Birds and Habitats) Regulations 2011-2015 to strive to avoid pollution or deterioration of bird habitats outside Special Protection Areas. **BLO-06** It is an objective of the Council to take account of the objective and management practices proposed in any management or related plans for European Sites (SACs and SPAs) in and adjacent to the county published by the Department including the National Raised Bog Special Areas of Conservation (SACs) Management Plan 2017-2022 and any subsequent editions. Trees, Forestry and Hedgerows **BLO-17** It is an objective of the Council to encourage pursuant to Article 10 of the Habitats Directive, the management of features of the landscape, such as traditional field boundaries, important for the ecological coherence of the Natura 2000 network and essential for the migration, dispersal and genetic exchange of wild species.	

Plans	Key Policies and Objectives directly related to Biodiversity and European Sites in the Zone of Influence	Assessment of Compliance with Policy
	Invasive Species **BLO-20** It is an objective of the Council to require, as part of the planning application process, the appropriate eradication/control of invasive species when identified on site or in the vicinity of a site, in accordance with Regulation 49 of the European Communities (Birds and Natural Habitats) Regulations 2011 to 2015. **Water Service and Environment Policies** General **WSP-07** It is Council policy to ensure the delivery and phasing of services in the county is subject to the required appraisal, planning and environmental assessment processes and shall avoid adverse impacts on the integrity of the Natura 2000 network. Water Supply **WSP-16** It is Council policy to liaise with Irish Water to ensure the compliance of wastewater treatment systems with existing licences, EU Water Framework Directive, River Basin Management Plan, the Urban Waste Water Treatment Directive and the EU Habitats Directive.	
Regional Spatial and Economic Strategy, Eastern and Midland Regional Assembly 2019-2031	**Growth Strategy Policies** Environmental Assessment and Assessment of Greenhouse Gas (GHG) Emissions **RPO 3.4:** Ensure that all plans, projects and activities requiring consent arising from the Regional Spatial and Economic Strategy are subject to the relevant environmental assessment requirements including SEA, EIA and AA as appropriate. In addition the future strategic development of settlements throughout the Region will have full cognisance of the legal requirements pertaining to sites of International Nature Conservation Interest. **Environment and Climate Policies** Water Quality	The Regional Spatial and Economic Strategy was comprehensively reviewed, with particular reference to Policies and Objectives that relate to European Sites. There will be no residual adverse effects on the integrity of any European Sites as a result of the Proposed Project. The Proposed Project has been designed, and a range of mitigation measures have been prescribed, to ensure that

Plans	Key Policies and Objectives directly related to Biodiversity and European Sites in the Zone of Influence	Assessment of Compliance with Policy
	RPO 7.10: Support the implementation of the Water Framework Directive in achieving and maintaining at least good environmental status for all water bodies in the Region and to ensure alignment between the core objectives of the Water Framework Directive and other relevant Directives, River Basin Management plans and local authority land use plans. **RPO 7.11:** For water bodies with 'high ecological status' objectives in the Region, local authorities shall incorporate measures for both their continued protection and to restore those water bodies that have fallen below high ecological status and areas 'At Risk' into the development of local planning policy and decision making any measures for the continued protection of areas with high ecological status in the Region and for mitigation of threats to waterbodies identified as 'At Risk' as part of a catchment based approach in consultation with the relevant agencies. This shall include recognition of the need to deliver efficient wastewater facilities with sufficient capacity and thus contribute to improved water quality in the Region. Biodiversity and Natural Heritage **RPO 7.16:** Support the implementation of the Habitats Directives in achieving an improvement in the conservation status of protected species and habitats in the Region and to ensure alignment between the core objectives of the EU Birds and Habitats Directives and local authority development plans **RPO 7.17:** Facilitate cross boundary co-ordination between local authorities and the relevant agencies in the Region to provide clear governance arrangements and coordination mechanisms to support the development of ecological networks and enhanced connectivity between protected sites whilst also addressing the need for management of alien invasive species and the conservation of native species. Green Infrastructure **RPO 7.22:** Local authority development plan and local area plans, shall identify, protect, enhance, provide and manage Green Infrastructure in an integrated and coherent manner and should also have regard to the required targets in relation to the conservation of European sites, other nature conservation sites, ecological networks, and protected species. **Infrastructure Policies**	there will be no adverse effects on any European Sites as a result of impacts to QI habitats or species. The Proposed Project is not considered to be in contravention of the policies and objectives within the Regional Spatial and Economic Strategy. No potential for cumulative adverse effects on the integrity of European Sites were identified, in view of their Conservation Objectives.

Plans	Key Policies and Objectives directly related to Biodiversity and European Sites in the Zone of Influence	Assessment of Compliance with Policy
	Water Supply **RPO 10.6:** Delivery and phasing of services shall be subject to the required appraisal, planning and environmental assessment processes and shall avoid adverse impacts on the integrity of the Natura 2000 network. **RPO 10.7:** Local authority core strategies shall demonstrate compliance with DHPLG Water Services Guidelines for local authorities and demonstrate phased infrastructure – led growth that is commensurate with the carrying capacity of water services and prevent adverse impacts on the integrity of water dependent habitats and species within the Natura 2000 network	
Ireland's 4th National Biodiversity Action Plan 2023-2030	The purpose of the 4th National Biodiversity Action Plan is to set out the approach to governance and conservation of biodiversity through a series of targeted actions within the Plan. This is underpinned by five strategic objectives aimed at ensuring that Ireland's biodiversity and ecosystems are conserved and restored, delivering benefits essential for all sectors of society and ensuring that Ireland contributes to efforts to halt the loss of biodiversity and the degradation of ecosystems in the EU and globally. The strategic objectives are: › **Objective 1:** Adopt a Whole-of Government, Whole of-Society Approach to Biodiversity › **Objective 2:** Meet Urgent Conservation and Restoration Needs › **Objective 3:** Secure Nature's Contribution to People › **Objective 4:** Enhance the Evidence Base for Action on Biodiversity › **Objective 5:** Strengthen Ireland's Contribution to International Biodiversity Initiatives	The National Biodiversity Action Plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to European Sites. There will be no adverse effects on the integrity of any European Sites as a result of the Proposed Project. The Proposed Project has been designed, and a range of mitigation measures have been prescribed, to ensure that there will be no adverse effects on any European Sites as a result of impacts to QI habitats or species. The Proposed Project is not considered to be in contravention of the policies and objectives within

Plans	Key Policies and Objectives directly related to Biodiversity and European Sites in the Zone of Influence	Assessment of Compliance with Policy
		the National Biodiversity Action Plan. No potential for cumulative adverse effects on the integrity of European Sites were identified, in view of their Conservation Objectives.

8.2 Assessment of Projects

Assessment material for this in combination impact assessment was compiled on the relevant developments within the vicinity of the Project Site. These include planning applications in the vicinity of the Project Site, within the ZoI of all habitats and species considered in this chapter, and other wind energy applications within the wider area. The cumulative study areas considered within this AASR and NIS are outlined in Table 1-1 of this report. The study areas are considered sufficiently large for assessing the potential for in combination effects on European Sites.

8.2.1 Other Wind Farm Projects

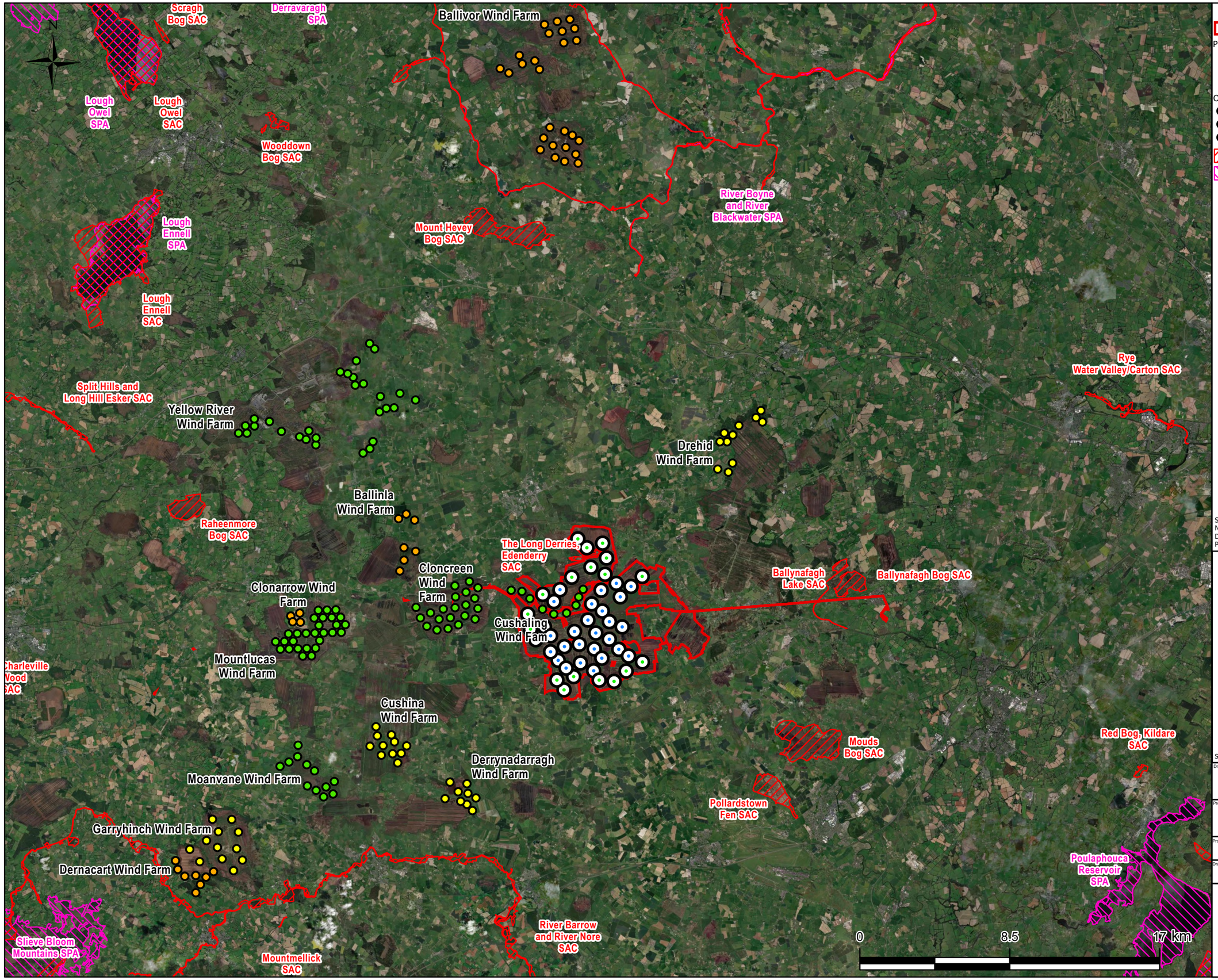
On a precautionary basis a 25km ZoI was used to identify wind farm developments in the wider area. In total, 14 no. applications relating to wind energy were identified within 25km of the Project Site. Their locations are shown in Figure 8-1 and each identified wind energy project is considered in further detail in the sections below.

Table 8-2 Wind farm projects within 25km of the Proposed Turbines

Wind Farm	Status	Planning Reference	No. of Turbines	Separation Distance of Nearest Turbines	Location
Cushaling	Existing	306924 (ACP)	9	0.7km	Co. Kildare & Co. Offaly
Cloncreen	Existing	PA0047 (ACP)	21	2.9km	Co. Offaly
Ballinla	Permitted	323579 (ACP)	7	7.3km	Co. Offaly
Drehid	Proposed	322845 (ACP)	11	7.4km	Co. Kildare
Derrynadarragh	Proposed	324055 (ACP)	9	7.7km	Co. Kildare, Co. Laois & Co. Offaly
Cushina	Proposed	323296 (ACP); Pre-application Consultation	11	9.3 km	Co. Offaly
Mountlucas	Existing	09453 (Offaly County Council)	28	10.4km	Co. Offaly
Yellow River	Existing	PA0032 (ACP)	29	12.1km	Co. Offaly
Clonarrow	Permitted	2560189 (Offaly County Council)	4	12.9km	Co. Offaly
Moanvane	Existing	301619 (ACP)	12	13.9km	Co. Offaly
Kilberry	Proposed	Public Domain	Unknown	19.8km from the Development Study Area Boundary[71]	Co. Kildare

[71] https://www.kilberrywindfarm.ie/

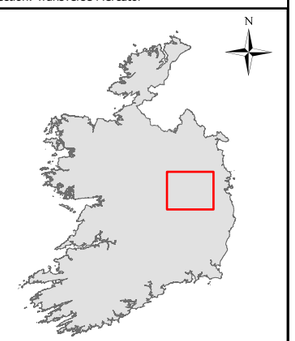
Wind Farm	Status	Planning Reference	No. of Turbines	Separation Distance of Nearest Turbines	Location
Garryhinch	Proposed	315157 (ACP) Pre-application Consultation	12	20km	Co. Laois & Co. Offaly
Ballivor	Permitted	316212 (ACP)	26	21.3km	Co. Meath & Co. Westmeath
Dernacart	Permitted	310312 (ACP)	8	22.3km	Co. Laois



Map Legend

- Project Site
- Proposed Turbine Layout
  - 220
  - 200
- Other Wind Farm Projects
  - Proposed
  - Permitted
  - Existing
- Special Area of Conservation (SAC)
- Special Protection Areas (SPA)

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



SITE LOCATION - NOT TO SCALE

Drawing Title
Other Wind Farm Projects within the Cumulative Study Area

Project Title
Ballydermot Wind Farm
Co. Offaly & Co. Kildare

Project No.	Drawing No.	Scale
250708	8-1	1:200,000
Drawn By	Checked By	Date
MNR	KB	27/10/2026

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

8.2.1.1 Cushaling Wind Farm

Cushaling Wind Farm is an existing wind farm consisting of 9 no. turbines and is located 0.7km from the nearest Proposed Turbine. The planning files[72] were reviewed on the ACP website and the AASR and NIS were reviewed. The potential for the Proposed Project to result in cumulative or in-combination adverse effects on the integrity of European Sites when assessed alongside Cushaling Wind Farm was considered.

The site of the existing Cushaling Wind Farm and that of the Proposed Project are both hydrologically linked to the River Barrow and River Nore SAC. The AASR for the Cushaling Wind Farm project identified potential for likely significant effects on the River Barrow and River Nore SAC (reduction in water quality from release of suspended solids and/or other pollutants into the surface water system, disturbance and displacement impacts on QI species). As such the potential for in-combination effects with the Proposed Project specifically in relation to the River Barrow and River Nore SAC were initially identified (construction related impacts on water quality, and disturbance impacts to species). However, following the implementation of prescribed mitigation measures, the NIS prepared for Cushaling Wind Farm did not identify any potential for residual adverse effects on the SAC, and no potential for adverse cumulative effects was identified. Similarly, with the implementation of mitigation measures outlined within this NIS for the Proposed Project, no potential for residual adverse effects were identified. Furthermore, as Cushaling Wind Farm is an existing wind farm, the construction phase of the Proposed Project will be temporally separated from that of Cushaling Wind Farm and as such there is no potential for the identified construction phase water quality or disturbance impacts to act cumulatively. Therefore, there is no potential for the Proposed Project to result in cumulative adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, when considered in combination with Cushaling Wind Farm.

Ornithology surveys were conducted at the Cushaling Wind Farm between April 2018 and March 2020. However, no key ornithological receptors were identified as SCI populations linked to European Sites within the Cushaling Wind Farm AASR. The nearest turbine within Cushaling Wind Farm is located approximately 33.8km from Poulaphouca Reservoir SPA and is therefore outside the foraging range of lesser black-backed gulls associated with the SPA (30.8km; Thaxter *et al.,* 2025). There is therefore no potential for the Proposed Project to result in cumulative adverse effects on the integrity of any SPAs, in view of their Conservation Objectives, when considered in combination with Cushaling Wind Farm.

The Inspector's Report for the Cushaling Wind Farm concludes that:

> "*the proposed development, individually or in combination with other plans and projects would not adversely affect the integrity of the River Barrow and River Nore SAC (Site Code 002162) or any other European site, in view of the site's Conservation Objectives.*"

In granting permission to the development, ACP accepted and adopted the Appropriate Assessment carried out in the Inspector's report in respect of the potential effects of the proposed development on the River Barrow and River Nore SAC, and was satisfied that Cushaling Wind Farm, by itself or in combination with other plans or projects, would not adversely affect the integrity of the European Sites, in view of their Conservation Objectives.

8.2.1.2 Cloncreen Wind Farm

Cloncreen Wind Farm is an existing wind farm consisting of 21 no. turbines and is located 2.9km from the nearest Proposed Turbine. The planning files[73] were reviewed on the ACP website and the AASR and NIS were reviewed. The potential for the Proposed Project to result in cumulative or in-

[72] https://www.pleanala.ie/en-ie/case/306924
[73] http://pleanala.ie/en-ie/case/PA0047

combination adverse in effects on the integrity of European Sites when assessed alongside Cloncreen Wind Farm was considered.

The site of the existing Cloncreen Wind Farm and that of the Proposed Project are both hydrologically linked to the River Barrow and River Nore SAC. The AA Screening for the Cloncreen Wind Farm project identified potential for likely significant effects on the River Barrow and River Nore SAC (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 River Barrow and River Nore SAC were initially identified (construction and decommissioning related impacts on water quality). However, following the implementation of prescribed mitigation measures, the NIS prepared for Cloncreen Wind Farm did not identify any potential for residual adverse effects on the SAC, and no potential for adverse cumulative effects was identified. Similarly, with the implementation of mitigation measures outlined within this NIS for the Proposed Project, no potential for residual adverse effects were identified. Furthermore, as Cloncreen Wind Farm is an existing wind farm, the construction phase of the Proposed Project will be temporally separated from that of Cloncreen Wind Farm and as such there is no potential for the identified construction phase water quality impacts to act cumulatively. Therefore, there is no potential for the Proposed Project to result in cumulative adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, when considered in combination with Cloncreen Wind Farm.

Ornithology surveys were conducted at the Cloncreen Wind Farm between October 2012 and August 2016. No key ornithological receptors were identified as SCI populations linked to European Sites within the Cloncreen Wind Farm NIS. The nearest turbine within Cloncreen Wind Farm is located approximately 38.7km from Poulaphouca Reservoir SPA and is therefore outside the foraging range of lesser black-backed gulls associated with the SPA (30.8km; Thaxter *et al.,* 2025). Therefore, there is no potential for the Proposed Project to result in cumulative adverse effects on the integrity of any SPAs, in view of their Conservation Objectives, when considered in combination with Cloncreen Wind Farm.

The Inspector's Report for the Cloncreen Wind Farm concludes that:

> "*the proposed development, individually or in combination with other plans or projects would not adversely affect the integrity of European Site No. 002162, or any other European site, in view of the site's Conservation Objectives.*"

In granting permission to the development, ACP considered the nature, scale and location of the proposed development, the submitted Natura impact statement, including the mitigation measures proposed, the submitted environmental impact statement, including mitigation measures proposed, the Inspector's report and the submissions on file, the ACP concluded that Cloncreen Wind Farm, by itself or in combination with other plans or projects, including other existing and permitted windfarms and the grid connection options, would not be likely to adversely affect the integrity of the European Site, in view of the site's Conservation Objectives.

8.2.1.3 Ballinla Wind Farm

Ballinla Wind Farm is a permitted wind farm consisting of 7 no. turbines and is located 7.3km from the nearest Proposed Turbine. The planning files[74] were reviewed on the ACP website and the AASR and NIS were reviewed. The potential for the Proposed Project to result in significant cumulative or in combination adverse effects on the integrity of European Sites when assessed alongside the permitted Ballinla Wind Farm was considered.

The AASR for Ballinla Wind Farm identified the potential for likely significant effects on the River Barrow and River Nore SAC, the River Boyne and River Blackwater SPA and the River Boyne and

[74] https://www.pleanala.ie/en-ie/case/323579

River Blackwater SAC. As outlined in Section 4.1.1, there is no surface water outfall from the Proposed Wind Farm to the River Boyne or its tributaries, and therefore no potential for likely significant effects on the downstream River Boyne and River Blackwater SAC or SPA were identified during the AA Screening (presented in Section 4 above) as a result of water quality deterioration. Furthermore, the potential for likely significant effects on otter associated with the River Boyne and River Blackwater SAC was ruled out due to the intervening hydrological distance and the known foraging range of otter (see Table 4-1 above for full details). Furthermore, any records of kingfisher from within the Project Site are not considered to be associated with the SCI population of that of the River Boyne and River Blackwater SPA (see Section 3.4.1.2). Therefore, due to the lack of any pathways for effect on the River Boyne and River Blackwater SAC or SPA, there is no potential for the Proposed Project to result in any cumulative adverse effects on the integrity of these European Sites, in view of their Conservation Objectives, when considered in combination with Ballinla Wind Farm.

However, the potential for in-combination effects with the Proposed Project specifically in relation to the River Barrow and River Nore SAC was initially identified (construction and decommissioning related impacts on water quality, disturbance and displacement of QI species). However, following the implementation of prescribed mitigation measures, the NIS prepared for Ballinla Wind Farm did not identify any potential for residual adverse effects on the SAC, and no potential for adverse cumulative effects was identified. Similarly, with the implementation of mitigation measures outlined within this NIS for the Proposed Project, no potential for residual adverse effects were identified. Furthermore, as Ballinla Wind Farm is an existing wind farm, the construction phase of the Proposed Project will be temporally separated from that of Ballinla Wind Farm and as such there is no potential for the identified construction phase water quality or disturbance impacts to act cumulatively. Therefore, there is no potential for the Proposed Project to result in cumulative adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, when considered in combination with Ballinla Wind Farm.

Ornithology surveys were conducted at the Ballinla Wind Farm between April 2021 and March 2025. Lesser black-backed gull was identified as a key ornithological receptor and assessed for impacts within the Ballinla Wind Farm EIAR, within which no significant effects were identified for this species. However, this species was not considered to be associated with an SCI population of any SPAs, including Poulaphouca Reservoir SPA, which was not considered to lie within the likely ZoI for Ballinla Wind Farm. The nearest turbine within Ballinla Wind Farm is located approximately 43.4km from Poulaphouca Reservoir SPA and is therefore outside the foraging range of lesser black-backed gulls associated with the SPA (30.8km; Thaxter *et al.,* 2025). As the lesser black-backed gull population identified in Ballinla Wind Farm was not considered to be associated with the SCI population of any SPAs, there is no potential for the Proposed Project to result in in-combination or cumulative adverse effects on the integrity of any SPAs in view of their Conservation Objectives.

The Ballinla Wind Farm NIS concluded that:

> *"On the basis of objective information and beyond reasonable scientific doubt, with the implementation of all mitigation measures, it is concluded that the Proposed Development, either alone or in combination with other plans or projects, will not result in adverse effects on the integrity of the River Barrow and River Nore SAC, the River Boyne and River Blackwater SAC or the River Boyne and River Blackwater SPA, in view of their conservation objectives."*

Therefore, there is no potential for the Proposed Project to result in cumulative adverse effects on the integrity of any European Sites, in view of their Conservation Objectives, when considered in combination with Ballinla Wind Farm.

8.2.1.4 Drehid Wind Farm

Drehid Wind Farm is a proposed wind farm consisting of 11 turbines and is located 7.4km from the nearest Proposed Turbine. The planning files[75] were reviewed on the ACP website and the AASR and NIS were reviewed. The potential for the Proposed Project to result in cumulative or in-combination adverse effects on the integrity of European Sites when assessed alongside the proposed Drehid Wind Farm was considered.

The AASR for the Drehid Wind Farm project identified potential for likely significant effects on the River Boyne and River Blackwater SAC and the River Boyne and River Blackwater SPA. However, this AASR has not identified any potential for likely significant effects on these European Sites. As outlined in Section 4.1.1, there is no surface water outfall from the Proposed Wind Farm to the River Boyne or its tributaries, and therefore no potential for likely significant effects on the downstream River Boyne and River Blackwater SAC or SPA were identified during the AA Screening (presented in Section 4 above) as a result of water quality deterioration. Furthermore, the potential for likely significant effects on otter associated with the River Boyne and River Blackwater SAC was ruled out due to the intervening hydrological distance and the known foraging range of otter (see Table 4-1 above for full details). Furthermore, any records of kingfisher from within the Project Site are not considered to be associated with the SCI population of that of the River Boyne and River Blackwater SPA (see Section 3.4.1.2). Therefore, due to the lack of any pathways for effect on the River Boyne and River Blackwater SAC or SPA, there is no potential for the Proposed Project to result in any cumulative adverse effects on the integrity of these European Sites, in view of their Conservation Objectives, when considered in combination with Drehid Wind Farm.

Ornithology surveys were conducted at the Drehid Wind Farm between April 2021 and September 2023. Lesser black-backed gull was identified as a key ornithological receptor and assessed for impacts within the EIAR. However, this species was not considered to be associated with an SCI population of any SPAs, including Poulaphouca Reservoir SPA. However, the nearest proposed turbine associated with Drehid Wind Farm is located 30.8km from Poulaphouca Reservoir SPA, therefore taking an extremely precautionary approach, due to the separation distance there is a possibility that a very small minority of the lesser black-backed gulls recorded at Drehid Wind Farm could be associated with the SPA (foraging range 30.8km; Thaxter *et al.,* 2025). Potential turbine collision, potential overhead line collision, possible loss or deterioration of habitats and disturbance or displacement of lesser black-backed gulls were assessed within the EIAR for Drehid Wind Farm. Habitat loss, construction phase disturbance and operational phase disturbance/displacement were considered to be of a low effect significance. Collision risk was also assessed to be a low effect significance for lesser black-backed gull (0.49 collisions per year for all birds observed within the site). As the lesser black-backed gull population identified in Drehid Wind Farm was not considered to be associated with the SCI population of Poulaphouca Reservoir SPA within the Drehid Wind Farm AASR and NIS, and only a single turbine is located within foraging range of lesser black-backed gulls associated with Poulaphouca Reservoir SPA, there is no potential for the Proposed Project to result in in-combination or cumulative adverse effects on the integrity of any SPAs in view of their Conservation Objectives.

The Drehid Wind Farm NIS concluded that:

> *"Taking cognisance of measures incorporated into the project design and mitigation measures to avoid effects that are considered in the preceding section, the proposed development works will not adversely affect the integrity of the River Boyne and River Blackwater SAC and River Boyne and River Blackwater SPA."*

Therefore, there is no potential for the Proposed Project to result in cumulative adverse effects on the integrity of any European Sites, in view of their Conservation Objectives, when considered in combination with Drehid Wind Farm.

[75] https://www.pleanala.ie/en-ie/case/322845

8.2.1.5 Derrynadarragh Wind Farm

Derrynadarragh Wind Farm is a proposed wind farm consisting of 9 no. turbines and is located 7.7km from the nearest Proposed Turbine. The planning files[76] were reviewed on the ACP website and the AASR and NIS were reviewed. The potential for the Proposed Project to result in cumulative or in-combination adverse effects on the integrity of European Sites when assessed alongside Derrynadarragh Wind Farm was considered.

The site of the Derrynadarragh Wind Farm and that of the Project Site are both hydrologically linked to the River Barrow and River Nore SAC. The AA Screening for the Derrynadarragh Wind Farm project identified potential for likely significant effects on the River Barrow and River Nore SAC (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 River Barrow and River Nore SAC were initially identified (construction and decommissioning related impacts on water quality). However, following the implementation of prescribed mitigation measures, the NIS prepared for Derrynadarragh Wind Farm did not identify any potential for residual adverse effects on the SAC, and no potential for adverse cumulative effects was identified. Similarly, with the implementation of mitigation measures outlined within this NIS for the Proposed Project, no potential for residual adverse effects were identified. Therefore, there is no potential for the Proposed Project to result in cumulative adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, when considered in combination with Derrynadarragh Wind Farm.

Ornithology surveys were conducted at the Derrynadarragh Wind Farm between April 2017 and March 2019, and between October 2021 and September 2023. No key ornithological receptors were identified as SCI populations linked to European Sites within the Derrynadarragh Wind Farm NIS. The nearest turbine within Derrynadarragh Wind Farm is located approximately 35.4km from Poulaphouca Reservoir SPA and is therefore outside the foraging range of lesser black-backed gulls associated with the SPA (30.8km; Thaxter *et al.,* 2025). Therefore, there is no potential for the Proposed Project to result in cumulative adverse effects on the integrity of any SPAs, in view of their Conservation Objectives, when considered in combination with Derrynadarragh Wind Farm.

The Derrynadarragh Wind Farm NIS concluded that:

> *"Taking into account all matters discussed, including the implementation of the mitigation measures and recommendations fully, it has been objectively concluded that the proposed Wind Farm at Derrynadarragh will not adversely affect (either directly or indirectly) the integrity and conservation status of the River Barrow and River Nore SAC [002162] or any other European Site in view of the conservation objectives for this site either alone or in combination with other plans or projects".*

Therefore, there is no potential for the Proposed Project to result in cumulative adverse effects on the integrity of any European Sites, in view of their Conservation Objectives, when considered in combination with Derrynadarragh Wind Farm.

8.2.1.6 Cushina Wind Farm

The potential for the Proposed Project to result in cumulative or in combination adverse effects on the integrity of European Sites, when assessed alongside the proposed Cushina Wind Farm, which is located 9.3 km from the nearest Proposed Turbine, was considered. The planning files[77] were reviewed on the An Coimisiún Pleanála website, however this project is at the preplanning stage and therefore no planning application has been lodged, and no impact assessment has been completed.

[76] https://www.pleanala.ie/en-ie/case/324055
[77] https://www.pleanala.ie/en-ie/case/323296

Based on a desk study and aerial imagery, Cushina Wind Farm is located within open farmland, cutover bog and commercial forestry. Based on catchment mapping, Cushina Wind Farm appears to be hydrologically connected to the River Barrow and River Nore SAC, therefore on a precautionary basis the potential for in-combination effects with the Proposed Project specifically in relation to the River Barrow and River Nore SAC were initially identified (construction related impacts on water quality, and disturbance impacts to species). However, with the implementation of mitigation measures outlined within this NIS and having regard to the protective policies contained within the relevant county development plan, there is no potential for the Proposed Project to result in in-combination or cumulative adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, when considered in combination with Cushina Wind Farm.

The indicative turbine locations for Cushina Wind Farm are all located over 40km from Poulaphouca Reservoir SPA at their nearest point, and as such are located outside the overall mean foraging distance for lesser black-backed gulls recorded for terrestrial environments (30.8km; Thaxter *et al.*, 2025). Therefore, there is no potential for any lesser black-backed gulls, should they be recorded at Cushina Wind Farm during pre-planning surveys, to be associated with Poulaphouca Reservoir SPA. On a precautionary basis the potential for cumulative adverse effects on other SPAs is also considered, however no other species were recorded within the Core Ornithological Survey Area which could be associated with any other SPAs, as described in Section 3.4.1 and Table 4-1 of this AASR. This NIS has not identified potential for adverse effects on the integrity of any SPAs, in view of their Conservation Objectives. Therefore, there is no potential for the Proposed Project to result in cumulative adverse effects on the integrity of any SPAs, in view of their Conservation Objectives, when considered in combination with Cushina Wind Farm.

Therefore, based on the current information available, there is no potential for the Proposed Project to result in cumulative adverse effects on the integrity of any European Sites, in view of their Conservation Objectives, when considered in combination with Cushina Wind Farm.

8.2.1.7 Mountlucas Wind Farm

Mountlucas Wind Farm is an existing wind farm consisting of 28 no. turbines and is located 10.4km from the nearest Proposed Turbine. The planning files[78] were reviewed on the Offaly County Council Planning Register and the EIS was reviewed.

No separate AASR or NIS was submitted as part of this application. Within the EIS, designated sites were considered and no potential for likely significant effects on any European Sites were identified as a result of the development. However, Mountlucas Wind Farm is drained through a series of drains to the Philipstown River, which is a tributary of the River Barrow. Therefore, both the site of the Mountlucas Wind Farm and the Project Site are hydrologically linked to the River Barrow and River Nore SAC. As such the potential for in-combination effects with the Proposed Project specifically in relation to the River Barrow and River Nore SAC were initially identified in this in combination assessment (construction and decommissioning related impacts on water quality). With the implementation of mitigation measures outlined within this NIS for the protection of water quality during construction and decommissioning, no potential for residual adverse effects were identified. Furthermore, as Mountlucas Wind Farm is an existing wind farm, the construction phase of the Proposed Project will be temporally separated from that of Mountlucas Wind Farm and as such there is no potential for the identified construction phase water quality impacts to act cumulatively. Therefore, there is no potential for the Proposed Project to result in cumulative adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, when considered in combination with Mountlucas Wind Farm.

Ornithology surveys were conducted at the Mountlucas Wind Farm on three dates between 2006 and 2008. No potential cumulative effects on any SPAs were anticipated. The nearest turbine within

[78] https://www.eplanning.ie/OffalyCC/AppFileRefDetails/09453/0

Mountlucas Wind Farm is located approximately 45.3km from Poulaphouca Reservoir SPA and is therefore outside the foraging range of lesser black-backed gulls associated with the SPA (30.8km; Thaxter *et al.,* 2025). Therefore, there is no potential for the Proposed Project to result in cumulative adverse effects on the integrity of any SPAs, in view of their Conservation Objectives, when considered in combination with Mountlucas Wind Farm.

The Mountlucas Wind Farm EIS concluded that:

> *"The successful application of mitigating measures will ensure that the residual impacts post construction will be negligible."*

Therefore, there is no potential for the Proposed Project to result in cumulative adverse effects on the integrity of any European Sites, in view of their Conservation Objectives, when considered in combination with Mountlucas Wind Farm.

8.2.1.8 Yellow River Wind Farm

Yellow River Wind Farm is an existing wind farm consisting of 29 no. turbines and is located 12.1km from the nearest Proposed Turbine. The planning files[79] were reviewed on the ACP website and the AASR was reviewed. The potential for the Proposed Project to result in cumulative or in-combination adverse effects on the integrity of European Sites when assessed alongside Yellow River Wind Farm was considered.

Within the AASR for Yellow River Wind Farm, no potential for likely significant effects on any European Sites was identified as a result of Yellow River Wind Farm. Based on catchment mapping, hydrological connectivity was identified between Yellow River Wind Farm and the River Boyne and Blackwater SAC and the River Boyne and Blackwater SPA, therefore on a precautionary basis the potential for cumulative adverse effects on these European Sites is considered. However, as outlined in Section 4.1.1, there is no surface water outfall from the Proposed Wind Farm to the River Boyne or its tributaries, and therefore no potential for likely significant effects on the downstream River Boyne and River Blackwater SAC or SPA were identified during the AA Screening (presented in Section 4 above) as a result of water quality deterioration. Furthermore, the potential for likely significant effects on otter associated with the River Boyne and River Blackwater SAC was ruled out due to the intervening hydrological distance and the known foraging range of otter (see Table 4-1 above for full details). Furthermore, any records of kingfisher from within the Project Site are not considered to be associated with the SCI population of that of the River Boyne and River Blackwater SPA (see Section 3.4.1.2). Therefore, due to the lack of any pathways for effect on the River Boyne and River Blackwater SAC or SPA, there is no potential for the Proposed Project to result in cumulative adverse effects on the integrity of these European Sites, in view of their Conservation Objectives, when considered in combination with Yellow River Wind Farm.

Ornithology surveys were conducted at the Yellow River Wind Farm between April and June 2010, July 2012, and between January and May 2013. No key ornithological receptors were identified as SCI populations linked to European Sites within the Yellow River Farm AASR. The nearest turbine within Yellow River Wind Farm is located approximately 47.4km from Poulaphouca Reservoir SPA and is therefore outside the foraging range of lesser black-backed gulls associated with the SPA (30.8km; Thaxter *et al.,* 2025). Therefore, there is no potential for the Proposed Project to result in cumulative adverse effects on the integrity of any SPAs, in view of their Conservation Objectives, when considered in combination with Yellow River Wind Farm.

The Inspector's Report concluded the following:

[79] https://archive.pleanala.ie/en-ie/case/PA0032

> *"In considering 'in-combination' effects, the Mount Lucas wind farm 10km to south (currently under construction) was examined. The separation distance was considered sufficient to preclude any in-combination effects. The in-combination effects with other projects planned in the area will not result in any significant impact on European sites. Having regard to the above, I am satisfied that the proposed wind farm development will not have any significant impact on any European site.*"

Therefore, there is no potential for the Proposed Project to result in cumulative adverse effects on the integrity of any European Sites, in view of their Conservation Objectives, when considered in combination with Yellow River Wind Farm.

8.2.1.9 Clonarrow Wind Farm

Clonarrow Wind Farm is a permitted wind farm consisting of 4 no. turbines and is located 12.9km from the nearest Proposed Turbine. The planning files[80] were reviewed on the Offaly County Council website and the AASR and NIS were reviewed. The potential for the Proposed Project to result in cumulative or in-combination adverse effects on the integrity of European Sites when assessed alongside Clonarrow Wind Farm was considered.

The site of the proposed Clonarrow Wind Farm and that of the Project Site are both hydrologically linked to the River Barrow and River Nore SAC. The AASR for the Clonarrow Wind Farm project identified potential for likely significant effects on the River Barrow and River Nore SAC (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 River Barrow and River Nore SAC were initially identified (construction and decommissioning related impacts on water quality). However, following the implementation of prescribed mitigation measures, the NIS prepared for Clonarrow Wind Farm did not identify any potential for residual adverse effects on the SAC, and no potential for adverse cumulative effects was identified. Similarly, with the implementation of mitigation measures outlined within this NIS for the Proposed Project, no potential for residual adverse effects were identified. Therefore, there is no potential for the Proposed Project to result in cumulative adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, when considered in combination with Clonarrow Wind Farm.

Ornithology surveys were conducted at the Clonarrow Wind Farm between April 2023 and September 2024. Lesser black-backed gull was identified as a key ornithological receptor and assessed for impacts within the Clonarrow Wind Farm EIAR. However, this species was not considered to be associated with an SCI population of any SPAs, including Poulaphouca Reservoir SPA, which was not considered to lie within the likely ZoI for Clonarrow Wind Farm. The nearest turbine within Clonarrow Wind Farm is located approximately 47.7km from Poulaphouca Reservoir SPA and is therefore outside the foraging range of lesser black-backed gulls associated with the SPA (30.8km; Thaxter *et al.,* 2025). No other key ornithological receptors were identified as SCI populations linked to European sites within the Clonarrow Wind Farm NIS. As the lesser black-backed gull population identified in Clonarrow Wind Farm was not considered to be associated with the SCI population of any SPAs, there is no potential for the Proposed Project to result in in-combination or cumulative adverse effects on the integrity of any SPAs in view of their Conservation Objectives.

The Clonarrow Wind Farm NIS concluded that:

> *"it is considered that the Development will not have an adverse effect on the integrity of any European site, either alone or in combination with any other plans or projects."*

[80] https://www.eplanning.ie/OffalyCC/AppFileRefDetails/2560189/0

Therefore, there is no potential for the Proposed Project to result in cumulative adverse effects on the integrity of any European Sites, in view of their Conservation Objectives, when considered in combination with Clonarrow Wind Farm.

8.2.1.10 Moanvane Wind Farm

Moanvane Wind Farm is an existing wind farm consisting of 12 no. turbines and is located 13.9km from the nearest Proposed Turbine. The planning files[81] were reviewed on the ACP website and the AASR and NIS were reviewed. The potential for the Proposed Project to result in cumulative or in-combination adverse effects on the integrity of European Sites when assessed alongside Moanvane Wind Farm was considered.

The site of Moanvane Wind Farm and that of the Project Site are both hydrologically linked to the River Barrow and River Nore SAC. The AASR for the Moanvane Wind Farm project identified potential for likely significant effects on the River Barrow and River Nore SAC (reduction in water quality from release of suspended solids and/or other pollutants into the surface water system, disturbance and displacement impacts on QI species). As such the potential for in-combination effects with the Proposed Project specifically in relation to the River Barrow and River Nore SAC was initially identified (construction related impacts on water quality, and disturbance impacts to species). However, following the implementation of prescribed mitigation measures, the NIS prepared for Moanvane Wind Farm did not identify any potential for residual adverse effects on the SAC, and no potential for adverse cumulative effects was identified. Similarly, with the implementation of mitigation measures outlined within this NIS for the Proposed Project, no potential for residual adverse effects were identified. Furthermore, as Moanvane Wind Farm is an existing wind farm, the construction phase of the Proposed Project will be temporally separated from that of Moanvane Wind Farm and as such there is no potential for the identified construction phase water quality or disturbance impacts to act cumulatively. Therefore, there is no potential for the Proposed Project to result in cumulative adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, when considered in combination with Moanvane Wind Farm.

Ornithology surveys were conducted at the Moanvane Wind Farm between December 2012 and February 2016, and between February 2016 and August 2017. Hen harrier were identified as SCI populations linked to the Slieve Bloom Mountains SPA within the Moanvane Wind Farm NIS. However, it was concluded due to the separation distance and low numbers of birds observed on site that there was no potential for likely significant effects. As outlined in this AASR and Table 4-1 above, no potential for likely significant effects on the Slieve Bloom Mountains SPA was identified as a result of the Proposed Project, as it is located outside the maximum foraging ranges of hen harrier during the breeding season (10km; SNH, 2016). Therefore, there is no pathway for cumulative or in-combination adverse effects on the integrity of the Slieve Bloom Mountains SPA as a result of the Proposed Project. In addition, Poulaphouca Reservoir SPA was not identified as being within the likely ZoI for Moanvane Wind Farm. The nearest turbine within Moanvane Wind Farm is located approximately 43.4km from Poulaphouca Reservoir SPA and is therefore outside the foraging range of lesser black-backed gulls associated with the SPA (30.8km; Thaxter *et al.,* 2025). Therefore, there is no potential for the Proposed Project to result in cumulative adverse effects on the integrity of any SPAs, in view of their Conservation Objectives, when considered in combination with Moanvane Wind Farm.

The Inspector's Report for the Moanvane Wind Farm concludes that:

> "*the proposed development, individually or in combination with other plans and projects would not adversely affect the integrity of the River Barrow and River Nore SAC (Site Code 002162) or the Slieve Bloom Mountains SPA (Site Code 004160), or any other European site, in view of the site's Conservation Objectives.*"

[81] https://www.pleanala.ie/en-ie/case/301619

In granting permission to the development, ACP accepted and adopted the Appropriate Assessment carried out in the Inspector's report and concluded that Moanvane Wind Farm, by itself or in combination with other plans or projects, would not adversely affect the integrity of the European Sites, in view of their Conservation Objectives.

8.2.1.11 Kilberry Wind Farm

The potential for the Proposed Project to result in cumulative or in-combination adverse effects on the integrity of European Sites when assessed alongside Kilberry Wind Farm was considered. It is proposed to develop Kilberry Wind Farm on Kilberry Bog located in County Kildare. As the project is at a very early stage, the proposed number, location and height of turbines have not yet been determined. The Development Study Area was accessed through the Kilberry Wind Farm website[82] is located at approximately 19.8km from the nearest Proposed Turbine. As the Kilberry Wind Farm project is in its early stages, no planning application has been lodged, and no impact assessment has been completed.

Based on a desk study and aerial imagery, Kilberry Wind Farm appears to be located within cutover bog. Based on catchment mapping, Kilberry Wind Farm appears to be hydrologically connected to the River Barrow and River Nore SAC therefore on a precautionary basis the potential for in-combination effects with the Proposed Project specifically in relation to the River Barrow and River Nore SAC were initially identified (construction related impacts on water quality, and disturbance impacts to species). However, as Kilberry Wind Farm is located further than 10km from the Project Site, it is therefore outside the cumulative study area for terrestrial habitats and species as outlined in Table 1-1 above. Furthermore, with the implementation of mitigation measures outlined within this NIS and having regard to the protective policies contained within the relevant county development plan, there is no potential for the Proposed Project to result in in-combination or cumulative adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, when considered in combination with Kilberry Wind Farn.

Kilberry Wind Farm is located approximately 25km from Poulaphouca Reservoir SPA at its nearest point, and as such is located within the overall mean foraging distance for lesser black-backed gulls recorded for terrestrial environments (30.8km; Thaxter *et al.*, 2025). Therefore, there is potential for lesser black-backed gulls, should they be recorded at Kilberry Wind Farm during pre-planning surveys, to be associated with Poulaphouca Reservoir SPA. Neither survey information nor details on the proposed Kilberry Wind Farm are currently available, however as outlined within this NIS, no potential for adverse effects on the integrity of Poulaphouca SPA, in view of the site's Conservation Objectives, was identified as a result of the Proposed Project. On a precautionary basis the potential for cumulative adverse effects on other SPAs is also considered, however no other species were recorded within the Core Ornithological Survey Area which could be associated with any other SPAs, as described in Section 3.4.1 and Table 4-1 of this AASR. This NIS has not identified potential for adverse effects on the integrity of any SPAs, in view of their Conservation Objectives. Therefore, based on the current information available, there is no potential for the Proposed Project to result in cumulative adverse effects on the integrity of any SPAs, in view of their Conservation Objectives, when considered in combination with Kilberry Wind Farm.

Therefore, based on the current information available, there is no potential for the Proposed Project to result in cumulative adverse effects on the integrity of any European Sites, in view of their Conservation Objectives, when considered in combination with Kilberry Wind Farm.

8.2.1.12 Garryhinch Wind Farm

The potential for the Proposed Project to result in cumulative or in combination adverse effects on the integrity of European Sites when assessed alongside the proposed Garryhinch Wind Farm, which is

[82] https://www.kilberrywindfarm.ie/

located 20km from the nearest Proposed Turbine, was considered. The planning files[83] were reviewed on the ACP website, however this project is at the preplanning stage and therefore no planning application has been lodged, and no impact assessment has been completed.

Based on a desk study and aerial imagery, Garryhinch Wind Farm appears to be located within cutover bog and scrub. Based on catchment mapping, Garryhinch Wind Farm appears to be hydrologically connected to the River Barrow and River Nore SAC therefore on a precautionary basis the potential for in-combination effects with the Proposed Project specifically in relation to the River Barrow and River Nore SAC were initially identified (construction related impacts on water quality, and disturbance impacts to species). However, as Garryhinch Wind Farm is located further than 10km from the Project Site, it is therefore outside the cumulative study area for terrestrial habitats and species as outlined in Table 1-1 above. Furthermore, with the implementation of mitigation measures outlined within this NIS and having regard to the protective policies contained within the relevant county development plan, there is no potential for the Proposed Project to result in in-combination or cumulative adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, when considered in combination with Garryhinch Wind Farm.

The indicative turbine locations for Garryhinch Wind Farm are all located over 48km from Poulaphouca Reservoir SPA at their nearest point, and as such are located outside the overall mean foraging distance for lesser black-backed gulls recorded for terrestrial environments (30.8km; Thaxter *et al.*, 2025). Therefore, there is no potential for any lesser black-backed gulls, should they be recorded at Garryhinch Wind Farm during pre-planning surveys, to be associated with Poulaphouca Reservoir SPA. On a precautionary basis the potential for cumulative adverse effectt on other SPAs is also considered, however no other species were recorded within the Core Ornithological Survey Area which could be associated with any other SPAs, as described in Section 3.4.1 and Table 4-1 of this AASR. This NIS has not identified potential for adverse effects on the integrity of any SPAs, in view of their Conservation Objectives. Therefore, there is no potential for the Proposed Project to result in cumulative adverse effects on the integrity of any SPAs, in view of their Conservation Objectives, when considered in combination with Cushina Wind Farm.

Therefore, based on the current information available, there is no potential for the Proposed Project to result in cumulative adverse effects on the integrity of any European Sites, in view of their Conservation Objectives, when considered in combination with Garryhinch Wind Farm.

8.2.1.13 Ballivor Wind Farm

Ballivor Wind Farm is a permitted wind farm consisting of 26 no. turbines and is located 21.3km from the nearest Proposed Turbine. The planning files[84] were reviewed on the ACP website and the AASR and NIS were reviewed. The potential for the Proposed Project to result in cumulative or in-combination adverse effects on the integrity of European Sites when assessed alongside Ballivor Wind Farm was considered.

The AASR for the Ballivor Wind Farm project identified potential for likely significant effects on the River Boyne and River Blackwater SAC and River Boyne and River Blackwater SPA. As outlined in Section 4.1.1, there is no surface water outfall from the Proposed Wind Farm to the River Boyne or its tributaries, and therefore no potential for likely significant effects on the downstream River Boyne and River Blackwater SAC or SPA were identified during the AA Screening (presented in Section 4 above) as a result of water quality deterioration. Furthermore, the potential for likely significant effects on otter associated with the River Boyne and River Blackwater SAC was ruled out due to the intervening hydrological distance and the known foraging range of otter (see Table 4-1 above for full details). Furthermore, any records of kingfisher from within the Project Site are not considered to be associated with the SCI population of that of the River Boyne and River Blackwater SPA (see Section 3.4.1.2).

[83] https://www.pleanala.ie/en-ie/case/315157
[84] https://www.pleanala.ie/en-ie/case/316212

Therefore, due to the lack of any pathways for effect on the River Boyne and River Blackwater SAC or SPA, there is no potential for the Proposed Project to result in cumulative adverse effects on the integrity of these European Sites, in view of their Conservation Objectives, when considered in combination with Ballivor Wind Farm.

Ornithology surveys were conducted at the Ballivor Wind Farm between April 2020 and September 2022. However, no key ornithological receptors were identified as SCI populations linked to European Sites within the Ballivor Wind Farm AASR. The nearest turbine within Ballivor Wind Farm is located approximately 49.5km from Poulaphouca Reservoir SPA and is therefore outside the foraging range of lesser black-backed gulls associated with the SPA (30.8km; Thaxter *et al.,* 2025). Therefore, there is no potential for the Proposed Project to result in cumulative adverse effects on the integrity of any SPAs, in view of their Conservation Objectives, when considered in combination with Ballivor Wind Farm.

The Ballivor Wind Farm NIS concluded that:

> *"on the basis of objective information, having taken into account the relevant mitigation measures, it can be concluded that the Proposed Development will not have an adverse impact on any European Sites, either alone or in combination with other plans or projects."*

Therefore, there is no potential for the Proposed Project to result in cumulative adverse effects on the integrity of any European Sites, in view of their Conservation Objectives, when considered in combination with Ballivor Wind Farm.

8.2.1.14 Dernacart Wind Farm

Dernacart Wind Farm is a permitted wind farm consisting of 8 no. turbines and is located 22.3km from the nearest Proposed Turbine. The planning files[85] were reviewed on the ACP website and the AASR and NIS were reviewed. The potential for the Proposed Project to result in cumulative or in-combination adverse effects on the integrity of European Sites when assessed alongside Dernacart Wind Farm was considered.

The site of the Dernacart Wind Farm and that of the Project Site are both hydrologically linked to the River Barrow and River Nore SAC. The AASR for the Dernacart Wind Farm project identified potential for likely significant effects on the River Barrow and River Nore SAC (reduction in water quality from release of suspended solids and/or other pollutants into the surface water system, disturbance and displacement impacts on QI species). As such the potential for in-combination effects with the Proposed Project specifically in relation to the River Barrow and River Nore SAC were initially identified (construction related impacts on water quality, and disturbance impacts to species). However, following the implementation of prescribed mitigation measures, the NIS prepared for Dernacart Wind Farm did not identify any potential for residual adverse effects on the SAC. Similarly, with the implementation of mitigation measures outlined within this NIS for the Proposed Project, no potential for residual adverse effects were identified. Therefore, there is no potential for the Proposed Project to result in cumulative adverse effects on the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives, when considered in combination with Dernacart Wind Farm.

Ornithology surveys were conducted at the Dernacart Wind Farm in summer 2018, winter 2018/19 and summer 2019. Lesser black-backed gull were identified as a key ornithological receptor and assessed for impacts for Dernacart Wind Farm within the EIAR, with no significant effects identified for this species. Lesser black-backed gulls within Dernacart Wind Farm were not considered to be associated with an SCI population of any SPAs, including Poulaphouca Reservoir SPA, which was not considered to lie within the likely ZoI for Dernacart Wind Farm. The nearest turbine within Dernacart Wind Farm is located approximately 49.6km from Poulaphouca Reservoir SPA and is therefore outside the foraging range of lesser black-backed gulls associated with the SPA (30.8km; Thaxter *et al.,* 2025). As the lesser

[85] https://www.pleanala.ie/en-ie/case/310312

black-backed gull population identified in Dernacart Wind Farm is not considered to be associated with the SCI population of any SPAs, there is no potential for the Proposed Project to result in in-combination or cumulative adverse effects on the integrity of any SPAs in view of their Conservation Objectives.

The Inspector's Report for the Dernacart Wind Farm concludes that:

> "*the potential for adverse impacts has been adequately mitigated for and no significant residual impacts remain.*"

In granting permission to the development, ACP accepted and adopted the Appropriate Assessment carried out in the Inspector's report and concluded that the proposed development, by itself or in combination with other plans or projects would not adversely affect the integrity of the European Sites, in view of the sites' Conservation Objectives.

8.2.2 Other EIA or Large-scale Projects

A number of other large-scale projects (excluding wind farms) were identified which have been subject to the EIA process were identified within 10km of the Proposed Wind Farm, 200m of the Proposed Grid Connection and/or within the hydrological cumulative area as outlined in Table 1-1 above.

The proposed Water Supply Project for the Eastern and Midlands Region, the proposed Edenderry Gas Pipeline and the Substitute Consent Application for Extraction on Ballydermot and surrounding bogs are also discussed in more detail in the following subsections as these large-scale projects have been identified as overlapping with the Project Site.

The full list of projects considered within this cumulative assessment is included in Appendix 8. The AASRs and/or NISs for large-scale and EIA projects were reviewed. The NISs, where submitted, for these projects all contain mitigations to prevent identified impacts to European Sites. No additional pathways for cumulative effects were identified in conjunction with the Proposed Project. With the implementation of mitigation measures proposed as part of both the projects listed in Appendix 8 and the Proposed Project, it is concluded that the Proposed Project, in combination with other EIA or large-scale projects, will not adversely affect the integrity of any European Sites, in view of their Conservation Objectives.

Eastern and Midlands Region Water Supply Project – ACP Case Ref: PA92.323980

An application for the Eastern and Midlands Region Water Supply Project was submitted to An Coimisiún Pleanála (Case Ref: PA92.323980) on the 19th December 2025. The Water Supply Project includes a water pipeline from a new water treatment plant near Birdhill, Co. Tipperary to a termination point reservoir at Peamount, Co. Dublin. The Water Supply Project pipeline traverses the Project Site in an east- west direction across Codd 2, Glashabaun North, Glashabaun South and Derrybrennan bogs and will include a proposed abstraction from the Figile River (during the testing and commissioning phase). An overlap of the construction periods associated with the Proposed Project and the Water Supply Project could result in cumulative effects on the local water environment. Without appropriate management, concurrent construction works could result in cumulative pressures on the local water environment, including increased sediment generation and disturbance. The Water Supply Project has been considered in the design of the Proposed Project. To minimise the potential for cumulative effects, the respective project teams will maintain ongoing liaison during the construction phases, as required. This will facilitate the exchange of programme information and coordination of construction activities where appropriate.

The Eastern and Midlands Region Water Supply Project and that of the Project Site are both hydrologically linked to the River Barrow and River Nore SAC. The AA Screening for the Eastern and Midlands Region Water Supply Project and the Proposed Project identified potential for likely

significant effects on aquatic habitats and species of the River Barrow and River Nore SAC due to hydrological impacts. As such the potential for in-combination effects with the Proposed Project specifically in relation to the River Barrow and River Nore SAC were initially identified (construction related impacts on water quality, and disturbance impacts to species). However, the NIS prepared for Eastern and Midlands Region Water Supply Project did not identify any potential for residual adverse effects on the SAC following the implementation of mitigation measures prescribed in that NIS, and no potential for adverse cumulative effects was identified. With the implementation of mitigation measures outlined within this NIS for the Proposed Project, it is concluded that the Proposed Project, in combination with the Eastern and Midlands Water Supply Project, will not adversely affect the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives.

Gas to Bord na Móna Edenderry – ACP Case Ref: GA19.324280

An application for the Edenderry Gas Pipeline Project was submitted to An Coimisiún Pleanála (Case Ref: PA92.323980) on the 12th of May 2026. The Edenderry Gas Pipeline Project includes for the proposed development of a new downstream underground high pressure gas pipeline, the provision of an offtake installation compound, and an above ground installation (AGI) compound and associated development, including associated access arrangements, landscaping and ancillary works. The proposed underground gas pipeline connection (approximately 23.65km in length) is between the existing Edenderry Power Station and the Dublin to Galway high pressure gas pipeline. The Edenderry Gas Pipeline overlaps with a small area of the Proposed Wind Farm in the vicinity of Edenderry Power Station and includes 2 crossings over the Ballykilleen Stream.

The Edenderry Gas Pipeline Project and that of the Project Site are both hydrologically linked to the River Barrow and River Nore SAC. The AA Screening for the Edenderry Gas Pipeline Project and The Proposed Project identified potential for likely significant effects on aquatic habitats and species of the River Barrow and River Nore SAC due to hydrological impacts. In addition, the AA Screening for the Edenderry Gas Pipeline Project and identified potential for likely significant effects on aquatic habitats and species of the River Boyne and Blackwater SAC and The River Boyne and Blackwater SPA. However, likely significant effects were not identified on these European Sites with respect to the Proposed Project. As such the potential for in-combination effects with the Proposed Project specifically in relation to the River Barrow and River Nore SAC were initially identified (construction related impacts on water quality, and disturbance impacts to species). However, the NIS prepared for Edenderry Gas Pipeline Project did not identify any potential for residual adverse effects on this SAC or any other European Sites following the implementation of mitigation measures prescribed in that NIS, and no potential for adverse cumulative effects was identified. With the implementation of mitigation measures outlined within this NIS for the Proposed Project, it is concluded that the Proposed Project, in combination with the Edenderry Gas Pipeline Project, will not adversely affect the integrity of the River Barrow and River Nore SAC, in view of the site's Conservation Objectives.

Substitute Consent Application for Extraction on Ballydermot and Surrounding Bogs – ACP Case Ref: SU09.324604

An application for substitute consent for peat extraction and ancillary works has been submitted to ACP (Case Ref: SU09.324604) on the 20th of August 2026. The substitute consent application includes all areas of where historical industrial peat extraction occurred within the Project Site. Described below in Section 8.2.3, and included as Appendix 3 to this AASR and NIS, current activities onsite include site management, decommissioning works, and environmental monitoring as required under IPC Licence P0503-01 issued by the EPA. The rEIAR and rNIS describe these activities in detail and in particular describe the activities that are intended to be carried out within part of the Project Site into the future (i.e. the 'Remedial Phase'). Whilst the Draft Cutaway Bog Decommissioning and Rehabilitation Plans detailed below in Section 8.2.3, and included in Appendix 3 are the most up to date plans, due consideration of this planning application, and in particular the findings of rEIAR and rNIS have been taken into account in describing the baseline and future environment within this cumulative assessment. Overall, when assessed in combination, it is concluded that the Proposed

Project and the Substitute Consent Application for Extraction on Ballydermot and surrounding bogs will not adversely affect the integrity of any European Sites, in view of their Conservation Objectives. The rehabilitation of cutaway peatlands is expected to contribute positively to the wider ecological context over the longer term, independent or in combination with the Proposed Project.

8.2.3 EPA Licenced Activities

EPA licensed activities refer to industrial and waste management operations that require a license from the EPA under various pieces of environmental legislation. A list of all EPA licenced activities within the cumulative study area is included in Appendix 8.

The categories of EPA licenced activities considered as part of the cumulative assessment are as follows:

- Industrial Emissions (IE) Licensing;
- Integrated Pollution Control (IPC) Licensing;
- Waste Licensing; and
- Waste Water Discharge Authorisations.

Current activities onsite include decommissioning, site management and environmental monitoring as required under IPC Licence P0503-01[86] from the EPA. Active commercial peat extraction under IPC Licence No. 503-01 ceased in June 2020. BnM's statutory duties to discharge the conditions of its IPC Licence from the EPA for the Allen Bog Group also remain on-going. These ongoing duties, such as environmental monitoring, do not facilitate the continuation of peat extraction, but rather ensure compliance with BnM's extant IPC Licence.

The IPC Licence is subject to 14 no. conditions pertaining to the ongoing monitoring and maintenance to ensure any emissions from site activities will comply with and not contravene, any of the requirements of Section 83(3) of the Environmental Protection Agency Act, 1992. Conditions 1-4 of the licence outlined the Scope, Management, Interpretation and Notification procedures required by the BnM, respectively. Conditions 5 to 10 pertain to environmental monitoring and management. Conditions 11 to 14 detail the Monitoring (equipment use), Recording and Reporting, Emergency Response and Financial Provisions duties of BnM.

Irrespective of the consenting or construction of the Proposed Project, BnM's statutory duties to discharge the conditions of its IPC Licence will remain ongoing.

8.2.3.1 IPC Licence (P0503-01) - Draft Rehabilitation Plans

It is a requirement of '*Condition 10 Cutaway Bog Rehabilitation'* of the IPC Licence that following the decommissioning of use of all or part of their bogs, BnM, prepares (to the satisfaction and approval of the EPA) and implements a Cutaway Bog Rehabilitation Plan for each bog within its landbank under IPC Licence. BnM have produced Draft Rehabilitation Plans for the Bogs contained within the Allen Bog Group which form part of the Project Site, and it is the intention of BnM to rehabilitate the bogs in a phased approach under IPC Licence. The 9 no. Draft Rehabilitation Plans and 1 no. Final Rehabilitation Plan (Lodge Bog) are included as Appendix 3 to this AASR and NIS and are as follows:

- Ballydermot Bog Draft Cutaway Bog Decommissioning and Rehabilitation Plan (2026);
- Barnaran Draft Cutaway Bog Decommissioning and Rehabilitation Plan (2026);
- Blackriver Bog Draft Cutaway Bog Decommissioning and Rehabilitation Plan (2026);
- Codd Bog Draft Cutaway Bog Decommissioning and Rehabilitation Plan (2026);

[86] *Integrated Pollution Control License PO-503-01 issued by the EPA for the Allen Bog Group*

- Derrybrennan Bog Draft Cutaway Bog Decommissioning and Rehabilitation Plan (2026);
- Glashabaun Bog Draft Cutaway Bog Decommissioning and Rehabilitation Plan (2026);
- Killinagh Bog Draft Cutaway Bog Decommissioning and Rehabilitation Plan (2026);
- Lullybeg Bog Draft Cutaway Bog Decommissioning and Rehabilitation Plan (2026);
- Lullymore Bog Draft Cutaway Bog Decommissioning and Rehabilitation Plan (2026);
- Ticknevin Bog Draft Cutaway Bog Decommissioning and Rehabilitation Plan (2026);
- Lodge Bog Cutaway Bog Decommissioning and Rehabilitation Plan (2022).

The Draft Rehabilitation Plans provide a description of the constituent bogs within the Allen Bog Group and its ecology and have been taken account in describing the baseline environment in this AASR and NIS as outlined in Section 3.6 above. The objectives of the Draft Rehabilitation Plan are to achieve environmental stabilisation of cutaway peatlands, including the management of drainage, reduction of suspended solids and protection of receiving water quality. Their implementation is expected to result in gradual changes in ecological conditions over time through rewetting and natural revegetation. The decommissioning of the Proposed Wind Farm will be completed in compliance with the requirements of the Rehabilitation Plans listed above as appropriate and once the plans have been finalised.

The potential for cumulative effects between the Proposed Project and the implementation of the Draft Rehabilitation Plans have been assessed for all relevant European Sites identified in this AASR and NIS. Potential interaction pathways considered include habitat condition, hydrology and surface water quality, and indirect effects on downstream receptors.

The Proposed Project has been designed to be compatible with the planned rehabilitation of the constituent bogs within the Allen Bog Group. There is no overlap in activities or impact pathways that would give rise to adverse cumulative effects on the integrity of any European Sites.

In relation to aquatic habitats and species, both the part of the Project Site located on lands under IPC Licence and the Draft Rehabilitation Plan include measures to protect surface water quality. These measures are complementary and are not predicted to interact in a manner that would result in adverse cumulative effects on receiving watercourses or the integrity of downstream European Sites.

Overall, when assessed in combination, due to the design of the Proposed Project and contents of the Draft Rehabilitation Plans, which have each been developed to be compatible and complementary to one another, there will be no cumulative adverse effects on the integrity of any European Sites, in view of their Conservation Objectives. The rehabilitation of cutaway peatlands is expected to contribute positively to the wider ecological context over the longer term, independent of the Proposed Project.

8.2.4 Peatland Climate Action Scheme

PCAS is a form of enhanced peatland rehabilitation, which provides additional measures than that are required under IPC license, and has been successfully incorporated at the recently constructed Cloncreen Wind Farm. To date, approximately 24,503ha of peatland has been rehabilitated under the PCAS. PCAS is supported by Government through the Climate Action Fund and Ireland's National Recovery and Resilience Plan administered by the Department of Environment, Climate and Communications (DECC). Please see https://www.bnmpcas.ie/ for details. The NPWS acts as the Scheme regulator and there is ongoing engagement with the EPA. This scheme is separate to the IPC licence requirements and does not form part of the Proposed Project application.

PCAS works have been completed within sections of Lodge Bog within the Project Site. These sections were subject to enhanced restoration, including targeted rewetting measures. The implementation of PCAS measures at Lodge Bog has provided greater surface water attenuation and water quality benefits both in and downstream of the restoration areas. These PCAS measures and the standard remedial

measures, which will be implemented across the Project Site, will not contribute to any adverse effects on the integrity of any European Sites.

PCAS involves peatland rehabilitation measures including rewetting and revegetation which are intended to restore ecological function to degraded peatlands. These activities do not introduce hydrological, disturbance or habitat loss pathways that would interact with the Proposed Project in a manner that could result in cumulative adverse effects on any European Sites, in view of their Conservation Objectives.

8.2.5 Arterial Drainage Schemes

The OPW carried out several Arterial Drainage Schemes on catchments under the Arterial Drainage Act, 1945. Under section 37 of the 1945 Act, the OPW is required to maintain drainage works in proper repair and effective condition. These drainage works include watercourses, embankments and other structures. The Boyne Arterial Drainage Scheme is located on the northern perimeter of the Project Site.

The potential for these drainage works to result in cumulative adverse effects on the integrity of European Sites has been considered. As outlined within Chapter 9 Water of the EIAR (Appendix 5) which is included here as Appendix 5, there is no surface water outfall from the Proposed Wind Farm to the River Boyne or its tributaries, and therefore no potential for likely significant effects on the downstream River Boyne and River Blackwater SAC or SPA was identified during the AA Screening (presented in Section 4 above) as a result of water quality deterioration. Furthermore, the potential for likely significant effects on otter associated with the River Boyne and River Blackwater SAC was ruled out due to the intervening hydrological distance and the known foraging range of otter (see Table 4-1 above for full details). Therefore, due to the lack of any pathways for effect within the Boyne catchment, there is no potential for the Proposed Project to result in any cumulative adverse effects on the integrity of any European Sites when considered in combination with the Boyne Arterial Drainage Scheme, in view of their Conservation Objectives.

8.2.6 Forestry Operations

The forestry works (felling/planting) associated with the forestry in the wider surroundings of the Project Site will be subject to relevant licencing and guidance from the Forestry Service. These land-uses have been taken into account in this cumulative assessment.

Clear-Felled Forestry Associated with the Proposed Project

The Forest Service is responsible for ensuring the development of Forestry within Ireland occurs in a manner and to a scale that maximises its contribution to national socio-economic well-being on a sustainable basis that is compatible with the protection of the environment. The forestry felling associated with the Proposed Project will be carried out under the relevant guidance and under licence from the Forest Service. As described in Section 2.3.1.8, permanent felling of forestry will be required as part of the Proposed Project. The felling activities will be subject to a Limited Felling Licence application to the Forest Service in accordance with the Forestry Act 2014 and the Forestry Regulations 2017. The Forest Service policy requires that planning permission for the Proposed Project is available prior to determination of the associated felling licence application. Where replacement afforestation is required by the Forest Service as part of the felling licence process, the replacement afforestation lands will also be subject to the applicable statutory forestry consent process. The specific lands on which any such replacement afforestation would occur have not been identified at this stage.

The Forestry Service's Felling and Reforestation Policy provides for circumstances in which permanent forest removal may be permitted without a requirement for alternative afforestation,including where deforestation is justified by overriding environmental considerations and conversion to

open habitat is necessary to benefit the habitat or species concerned. In the case of the Proposed Project, 60.7ha of permanent forestry removal are associated with ornithological offsetting and biodiversity enhancement as described in Section 2.3.4. The applicability of this provision to the Proposed Project will ultimately be a matter for determination by the Forestry Service through the relevant felling licence process. Accordingly, this AASR and NIS does not assume that an exemption will apply and, on a precautionary basis for the purposes of the environmental assessment, considers the potential effects associated with replacement afforestation on the basis that it may be required.

Replacement Afforestation

Where replacement afforestation is required, the replacement of forestry, felled as part of the Proposed Project, may occur on any lands, within the state, benefitting from Forest Service Technical Approval[87] for afforestation, subject to the spatial and hydrological criteria set out below and to the applicable statutory forestry consent process, should the Proposed Project receive planning permission. Under the Forestry Regulations 2017, all applications for licences for afforestation require the prior written approval (technical approval) of the Minister for Agriculture, Food and the Marine.

The requirements for afforestation licencing are set out in the Forestry Regulations 2017 - this includes consideration of Environmental Impact Assessment and Appropriate Assessment as set out in parts 7 and 8 of the Regulations, respectively. Further detail is set out in the Environmental Requirements for Afforestation (DAFM, 2016)[88]. This ensures that afforestation takes place in a way that complies with environmental legislation and enhances the contribution new woodlands and forests can make to the environment and to the provision of ecosystem services, such as water protection and landscape enhancement.

The typical environmental effects of afforestation which may be considered within the Appropriate Assessment include potential habitat loss, degradation or fragmentation, disturbance to fauna, hydrological and hydrogeological impacts, and impacts to air quality.

The Applicant is seeking a ten-year planning permission which incorporates time to secure a grid connection agreement, a route to market, select the preferred equipment suppliers and put the necessary capital funding in place to allow construction and delivery to commence. Thus, the identification of forestry replacement lands at this stage is seen as premature. If a licence for afforestation was obtained prior to seeking and/or obtaining planning permission, it is highly likely that any licencing approvals sought from the Forest Service would have expired before it could be taken up due to the time required for the planning processes and post-planning delivery preparations. The Forest Service Afforestation Licences expire after 3 years from when they are consented.

Furthermore, as mentioned above, the key environmental issues relating to afforestation include water, flora and fauna. Each is subject to regular updates in terms of best practice, guidelines, standards and national policies. Delaying the identification of alternative afforestation lands until such time as they are required enables identification of optimum lands available (from an environmental perspective) for afforestation at that time. This AASR and NIS and the EIAR which accompanies this planning application identify the relevant effect pathways and establish binding spatial and hydrological parameters for future site selection, with the eventual site-specific assessment then undertaken through the statutory forestry consent process, if afforestation is required.

Notwithstanding that the specific replacement afforestation lands are not presently identified, the potential environmental effects associated with replacement afforestation have been considered within this AASR and NIS. The cumulative study areas identified in Table 1-1 have been established for the assessment of the Proposed Project and are specific to the nature of the potential effects being assessed

[87] *All proposed forestry developments where the area involved is greater than 0.1 hectare must receive the prior written approval of the Forest Service. The application for approval is known as Pre-Planting Approval – Form 1.*
[88] https://www.gov.ie/en/publication/642e6-forestry/#environmental-requirements

within this AASR and NIS. It is not therefore appropriate to apply each of these study areas automatically as an exclusion area for future replacement afforestation. In particular, cumulative study areas established for effects associated with wind turbines, including those relating to birds, do not necessarily represent the spatial extent of potential effects associated with afforestation.

The assessments undertaken in this AASR and NIS, as well as those within each of the discipline-specific Chapters of the accompanying EIAR, have considered the realistic cumulative effect pathways associated specifically with replacement afforestation. These assessments identify 10km from the Proposed Wind Farm site as the maximum precautionary spatial extent within which cumulative effects associated with replacement afforestation could reasonably arise across the relevant terrestrial receptors. Potential effects on the water environment are not appropriately defined by radial distance and are instead dependent on hydrological connectivity and, where relevant, temporal overlap.

On a precautionary basis, the Applicant commits that, where replacement afforestation is required, the replacement afforestation lands will be located at least 10km from the Proposed Wind Farm site and will not be located where there is a hydrological pathway through which the afforestation works could give rise to cumulative effects with the Proposed Project. On this basis, it is reasonable to conclude that there will be no potential for cumulative adverse effects on the integrity of any European Sites associated with the replacement afforestation, in view of their Conservation Objectives.

The 10km spatial criterion represents the maximum identified spatial extent within which cumulative adverse effects associated specifically with replacement afforestation could reasonably arise, having regard to the principal pathways through which replacement afforestation could potentially interact cumulatively with the Proposed Project including changes to habitats and habitat availability, disturbance or changes in suitability for SCI or QI species, or effects on the water environment associated with afforestation establishment and drainage. It also takes into account landscape and visual constraints, as addressed within Chapter 13 of the EIAR which accompanies this planning application.

In addition, the Applicant commits to not commencing the Proposed Project until the required felling licence(s), and where replacement afforestation is required, the associated afforestation licence(s), are in place. This will ensure that any required replacement afforestation lands are identified, assessed and licenced appropriately by the relevant consenting authority.

8.2.7 Land-uses

Within the context of the cumulative study area for other plans and projects, the land-uses cover everything from agriculture to urban fabric. Land-use in the wider landscape of the Project Site comprises a mix of agriculture, peat cutting, quarrying, low density residential, public road corridor, and commercial forestry. The Proposed Project has been considered in combination with other land uses in the surrounding area, such as those identified above and within the cumulative study area.

With the implementation of mitigation measures outlined within this NIS for the Proposed Project, no potential for residual adverse effects on the integrity of any European Sites was identified. On this basis, there is no pathway through which the Proposed Project could act in combination with existing land uses the to give rise to cumulative adverse effects on the integrity of any European Sites, in view of their Conservation Objectives.

8.3 Conclusion of Assessment of Cumulative Effects

Following the assessment provided in the preceding sections, it is concluded that the Proposed Project will not result in any residual adverse effects on the integrity of any European Sites, in view of their Conservation Objectives. All pathways by which adverse effects could occur have been robustly blocked through the implementation of mitigation and best practice in the design of the development.

In the review of the plans and projects that was undertaken, no pathways that could potentially result in additional or cumulative impacts was identified. Neither was there any potential for different (new) impacts resulting from the combination of the various projects and plans in association with the Proposed Project.

Having considered other projects in the area as listed above, no potential for the Proposed Project to contribute to any adverse cumulative effects on any European Sites was identified in view of their Conservation Objectives when considered in combination with other plans and projects.

9. CONCLUDING STATEMENT

This NIS has provided an assessment of all potential direct or indirect adverse effects on the integrity of European Sites, taking into account all relevant guidance including the European Commission's *Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC* (EC, 2021).

Where the potential for any adverse effect on the integrity of 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, operation and decommissioning of the Proposed Project will not have an adverse effect on the integrity of any European Sites in view of their Conservation Objectives.

Following an examination, evaluation and analysis, in light of best scientific knowledge and the Conservation Objectives of the relevant European Sites, and, on the basis of objective information, having taken into account the relevant mitigation measures, it can be concluded beyond reasonable doubt that the Proposed Project will not have an adverse effect on the integrity of any European Sites, either alone or in combination with other plans or projects.

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