Derrynadarragh Wind Farm, County Kildare and County Offaly

Appropriate Assessment Screening and Natura Impact Statement

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Prepared for:

Dara Energy Limited

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1 INTRODUCTION

Wetland Surveys Ireland (WSI) Ltd., were commissioned by *Dara Energy Limited* to assess the likely significant effects on any European site of developing Derrynadarragh Wind Farm, Co. Kildare and County Offaly, on sites designated as European conservation areas known as Natura 2000 sites (hereafter referred to as European sites).

The Proposed Development will consist of the construction of a nine-turbine windfarm development with a total site area of approximately 213.67 hectares (detailed description of the Proposed Development is provided in Appendix 1 - Ch 2 Description of Proposed Development). The nearest European site to the proposed development site is the River Barrow and River Nore Special Area of Conservation (SAC) (NPWS site code: 002162) located approximately 2.4km to the south at its nearest point (or approximately 6rkm) from the proposed wind farm site.

1.1 STATEMENT OF AUTHORITY

This Natura Impact Statement (NIS) was prepared by Ms. Caroline Laor and Dr. Patrick Crushell, professional ecologists with Wetland Surveys Ireland (WSI) Ltd. They completed all ecological field work on behalf of WSI.

Caroline Lalor

Caroline Lalor (BSc., MSc., MCEIEEM) received an honours degree in Applied Ecology from University College Cork and a Masters degree in Ecosystem Conservation and Landscape Management from National University of Ireland, Galway. She is a full member of the Institution of Ecology and Environmental Management (CIEEM). Caroline has 20 years of postgraduate experience, working in peatland conservation and ecological consulting. She has experience conducting baseline ecological surveys and impact assessments of various developments, including renewable energy projects; conducting protected species surveys; restoration and management of farmland habitats; conducting during and post-construction ecological monitoring; preparing Biodiversity chapters of the EIARs; and preparing AA Screening and NIS reports.

Dr. Patrick Crushell

Dr. Crushell (BSc Applied Ecology; MSc Environmental Resource Management, PhD Environmental Sciences, MCIEEM) received an honors degree in Applied Ecology from UCC, a Masters degree in Environmental Resource Management from UCD and defended his PhD at Wageningen University, the Netherlands. He is a Chartered Member of the Chartered Institute of Ecology and Environmental Management (MCIEEM). Dr. Crushell has been working in the area of nature conservation and ecological impact assessment for the past twenty five years. Projects that he has been involved in include wetland inventory surveys; evaluation of proposed designated sites; restoration and management of peatland habitats; baseline ecological surveys and impact assessments of various development proposals including solar farms, wind-farms, waste facilities, arterial drainage schemes, and residential developments; during and post-construction ecological monitoring.

Other experts contributed to the gathering of data in terms of conducting field work and specialised surveys. Their statements of authority are given below.

Ornithology

Daniel Moloney

Daniel is a respected local ornithologist who has been conducting bird surveys since 2006 for wind farm impact assessments and other construction works across a range of projects and consultancy companies in the Republic of Ireland, Northern Ireland, and Scotland. Daniel has been working

with BirdWatch Ireland for over 15 years across a range of projects and species including the Corncrake Conservation project on behalf of the NPWS, Curlew in the border counties as part of the Halting Environmental Loss project in conjunction with the RSPB, a project manager on the INTERREG VA Cooperation Across Borders for Biodiversity project on waders in the border counties and more recently a bird specialist on the ACRES Co-operation Project in Donegal.

Mark Davenport

Mark Davenport is an ecologist specialising in ornithology who has been conducting bird surveys for wind farm impact assessment and other various construction projects for several years. Mark has experience working with red listed species such as breeding Curlew on the NPWS Curlew Conservation Project. Through this project, Mark has gathered a wealth of experience in assisting and implementing conservation measures for threatened wader species in Ireland. Mark is a committee member of the Inishtrahull Bird Observatory conducting conservation measures for endangered seabird species.

Brendan Dunlop

Brendan is a highly experienced avian fieldworker specialising in a wide range of EIA and research surveys. He is skilled in surveying farmland, upland and coastal birds including Brown & Shepard walked transects and vantage point methodology for breeding season, winter / spring migratory and over wintering surveys and is conversant in habitat mapping for a wide range of protected species. Brendan has worked closely with the Irish Raptor study group Red Kite projects monitoring nest locations, breeding productivity and winter roosts. He is particularly experienced in Hen harrier and Merlin surveys of Northern Ireland SPAs for windfarm proposals. He has worked on numerous wind farm projects across the UK and Ireland. Brendan has in depth experience and a sound knowledge of SNH Guidelines and protocols for wind farm monitoring and post construction monitoring. Brendan has been an active member of the Northern Ireland Raptor Study Group since 2004 and previously held the posts of Treasurer and assistant secretary. He also worked closely with the Ulster Wildlife Trust and RSPB monitoring Barn Owls and Red Kites.

Gary Wilkinson

Gary has been an active Ornithologist for over fifty years. He is currently Chairman of the Northern Ireland Ornithologists Club 2005-present and was formerly Treasurer from 1987-2005. Gary is also the field trip leader for the NIOC leading trips from 1984 in the U.K. and Ireland as well as in Europe and Africa. Gary is a member of the NI Raptor Study Group and has been a life fellow of the RSPB and Norfolk Ornithologists Association since 1992. Gary has taken part in a variety of ornithological surveys for BTO and NIOC over the last 50 years including being the Regional Co-ordinator of *Project Barn Owl* for Northern Ireland for BTO/Hawk & Owl Trust; conducting BTO Waterway Breeding Bird Surveys at Annacloy River, Co. Down and conducting the BTO Wetland Bird Census for part of Belfast Lough.

Rob Wheeldon

Rob Wheeldon is an experienced ornithologist possessing a comprehensive knowledge and experience of bird identification and surveys. He has worked undertaken numerous bird surveys to inform impact assessment and has contributed to targeted bird survey work on contract to NPWS and Birdwatch Ireland. Rob previously worked with BirdWatch Ireland, RSPB, Norfolk Wildlife Trust, and the National Trust.

Aquatic Ecology

Dr. William O'Connor

The Aquatic Ecology survey and reporting was completed by Dr. William O'Connor, Senior Ecologist with EcoFact. Dr. Will O'Connor was assisted by junior staff when conducting field work. Dr. O'Connor has over 30 years professional experience and holds an MSc in Applied Hydrobiology from the University of Wales, Cardiff and a PhD in Zoology from the National University of Ireland, Galway. He is a Fellow of the Royal Society of Biology and a full member of the Chartered Institute of Ecology and Environmental Management.

Bat Ecology

Pat Doherty

Mr. Pat Doherty BSc., MSc, MCIEEM, of DEC Ltd. is a consultant ecologist with over 20 years' experience in completing ecological impact assessments and environmental impact assessments. Pat has been involved in the completion of assessment reports for proposed developments and land use activities under the EIA Directive and Article 6 of the Habitats Directive since 2003 and 2006 respectively. Pat was responsible for completing one of the first Appropriate Assessment reports for large scale infrastructure developments in Ireland when he prepared the Appropriate Assessment for the N25 New Ross Bypass in 2006/07. Since then, Pat has completed multiple examinations of both plans and projects in Ireland. He has completed Natura Impact Statements for national scale plans such as Ireland's CAP Strategic Plan and National Seafood Development Plan and regional and county scale plans including County Development Plans, Local Area Plans, Tourism Strategies and Climate Action Plans.

Pat has completed focused certified professional development training in Appropriate Assessment as well as in a range of ecological survey techniques and assessment processes. Training has been completed for National Vegetation Classification (NVC) and Irish Vegetation Classification (IVC) surveying, bryophyte survey for habitat assessment and identification, professional bat survey and assessment training, mammal surveying and specific training for bird and bat survey techniques. Ongoing training has been completed by approved training providers such as CIEEM, British Trust for Ornithology, the Botanic Gardens and the Field Studies Council.

1.2 STATUTORY CONTEXT

This Natura Impact Statement has been prepared in accordance with the provisions of Part XAB, Section 177U and Section 177V of the Planning and Development Act, 2000 (as amended) ("the 2000 Act") and in accordance with the European Commission Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC (European Commission 2021), the European Commission Guidance Managing Natura 2000 Sites (European Commission 2018) and with reference to the Department of the Environment and Heritage and Local Government guidance on Appropriate Assessment (AA) of plans and projects in Ireland (DEHLG 2010) and guidance from the Office of the Planning Regulator (OPR) (2021).

The EU Habitats Directive (92/43/EEC) provides the framework of legal protection for habitats and species of European importance. The directive provides the legislative means to establish a network of sites (known as the Natura 2000 network) throughout the EU with the objective of conserving habitats and species deemed to be of Community Interest. These sites include Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas (SPAs) designated under the Birds Directive (formally known as the Conservation of Wild Birds Directive 79/409/EEC).

Article 6(3) and 6(4) of the Habitats Directive lay down the procedure to be followed when planning new developments that might affect a European site. This stepwise procedure requires that a plan or project having a likely significant negative effect on a Natura 2000 site undergoes an 'Appropriate Assessment' by the competent authority to study these effects in detail and to see how they relate to the site's conservation objectives.

The competent authority may agree to the plan or project as it stands if, on the completion of its Appropriate Assessment, it has ascertained that it will not adversely affect the integrity of the European site(/s) concerned having regard to the sites' conservation objectives.

2 METHODOLOGY

2.1 APPROPRIATE ASSESSMENT

This Natura Impact Statement has been prepared in accordance with the following guidance:

- *Appropriate Assessment of Plans and Projects in Ireland.* Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government (2010).
- *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. European Commission (2021).
- *Managing Natura 2000 sites: The Provisions of Article 6 of the Habitats Directive* 92/43/EECA European Commission (2018).
- *Appropriate Assessment Screening for Development Management:* Office of the Planning Regulator (OPR) Practice Note PN01 (2021).

There are four main stages involved in the Appropriate Assessment (AA) process (European Commission 2021). The outcome at each stage determines whether the next stage in the process is required. The following describes each of the stages:

Stage 1 – Screening (under Article 6(3))

This is the first stage in the process and is carried out to determine the necessity for a more detailed Stage 2 Appropriate Assessment where the possibility of likely significant effects on European sites is identified. The following question needs to be addressed in the AA screening stage:

Is the project likely to have a significant effect, either individually or in combination with other plans or projects, on European site(s) in view of the site's conservation objectives?

The following steps are involved in Stage 1 AA Screening:

- Description of the project / plan and site characteristics (existing environment)
- Determination of whether the project is directly connected with, or necessary to, the management of a Natura 2000 site
- Identification and description of European sites that could potentially be affected
- Identification and description of potential impacts
- Assessment of potential impacts
- Exclusion of sites where no likelihood of significant effects arising

Stage 2 – Appropriate Assessment (under Article 6(3))

If there is a possibility of significant effects with respect to any or all European sites, within the Zone of Influence of the proposed development, in view of their conservation objectives, then the project must undergo Stage 2 Appropriate Assessment. The following question needs to be addressed in the Stage 2 Appropriate Assessment:

Will the project adversely affect the integrity of a European site(s) either individually or in combination with other plans and projects in view of the site's conservation objectives?

This stage involves assessing the impact of the plan or project on the integrity of the European site, either alone or in combination with other plans or projects, with respect to the structure and function of the site and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts is carried out. If adequate mitigation is prescribed to ensure no significant adverse effects on European sites, then the process may end at this stage. However, if there remains a significant effect on the integrity of a European site(s) remains, then planning permission may not be granted and if the project or plan is to proceed then the process must progress to Stage 3.

Stage 3 – Assessment of Alternatives

If the Appropriate Assessment determines that adverse effects are likely upon a European site, this stage examines the possibility of implementing the proposed project in an alternative way which would avoid adverse effects. For the avoidance of doubt, the developer of Derrynadarragh Wind Farm will not be relying on Stage 3.

Stage 4 – Procedure under Article 6(4) Assessment where no Alternative Solutions Exist and where Adverse Impacts Remain

Where imperative reasons of overriding interest (IROPI) exist, an assessment to consider whether compensatory measures will or will not effectively offset the damage to the European site will be necessary before the project can proceed. For the avoidance of doubt, the developer of Derrynadarragh Wind Farm will not be relying on Stage 4.

The Habitats Directive promotes a hierarchy of avoidance, mitigation and compensatory measures. First, the project or plan should aim to avoid any impacts on European sites by identifying possible impacts early in the process and designing / writing the project or plan in order to avoid such impacts. Second, if significant effects on European Sites cannot be excluded, mitigation measures should be applied, if necessary, during the AA process to the point where no adverse impacts on the site(s) remain. If the project or plan is still likely to result in impacts on European sites, and no further practicable mitigation is possible, then it must be either rejected or proceed to Stage 3. If no alternative solutions are identified and the plan is required for imperative reasons of overriding public interest (IROPI test) under Article 6(4) of the Habitats Directive, then compensation measures are required for any remaining adverse effect.

In the case of this Natura Impact Statement, it was found that the proposed development requires Stage 2 Appropriate Assessment as the likelihood of significant effects could not be ruled out at Screening for Appropriate Assessment stage (See Section 3 of this NIS).

2.2 BASELINE ECOLOGICAL SURVEYS

This NIS was informed by both desktop and field-based surveys as outlined below.

2.2.1 Desktop Review and Consultation

A desktop review of existing datasets and published reports was undertaken. This review included references to the following resources:

- OSI Aerial photography and other basemaps
- National Parks and Wildlife Service (NPWS) Data, including designated sites, conservation objectives, and habitats and species distribution
- National Biodiversity Data Centre (NBDC) datasets
- Geological Survey Ireland (GSI) maps
- Environmental Protection Agency (EPA) catchment maps
- Other information sources and reports as referenced throughout the document
- (Commission of the European Communities) (2013) Interpretation manual of European Union Habitats EUR28.

A thorough consultation process was undertaken for the Proposed Development. A summary of the results of consultation with bodies relevant to European sites is presented below in Table 1.

Table 1 Summary of consultation and responses received relevant to ecology

Consultee	Date Response Received	Response	Addressed in Section
An Taisce	N/A	No response received to date	N/A
Bat Conservation Ireland (BCI)	N/A	No response received to date	N/A
BirdWatch Ireland	N/A	No response received to date	N/A
Botanical Society of Britain and Ireland	N/A	No response received to date	N/A
Butterfly Conservation Ireland	N/A	No response received to date	N/A
Department of Housing, Local Government and Heritage	N/A	No response received to date	N/A
Development Application Unit	N/A	No response received to date	N/A
Department of Environment, Climate and Communications	N/A	No response received to date	N/A
Environmental Protection Agency	N/A	No response received to date	N/A
Forestry Service	N/A	No response received to date	N/A
Heritage Council	N/A	No response received to date	N/A

Consultee	Date Response Received	Response	Addressed in Section
Inland Fisheries Ireland	09/01/2025	Noted that historical modifications to the river channel (over-deepening and over-widening) have caused damage to the Cushina River and significantly reduced the suitability of the river for salmon-spawning. IFI stated that human intervention would be required to facilitate recovery of the fisheries habitat here and they requested that the proposed development include habitat restoration of the section of Cushina River flowing through the proposed development Site. Noted that excellent riparian/terrestrial habitat has been noted along the banks of the Cushina River. Request that any new crossings of the Cushina River would be clear span bridges and would not necessitate the removal of any high-quality habitat. Requested also that the design and construction method statement be agreed with IFI. Noted that the proposed development may require new crossing of the Bracknagh Stream, a small tributary of the Figile River. Requested that the design and construction method statement be agreed with IFI.	Instream restoration works would be beyond the scope and responsibility of the proposed development. Such works would likely need planning permissions of their own. However, the proposed development is committed to implementing measures to improve water quality and restoring certain areas of damaged habitat along river-banks. These are outlined in Appendix 2 (*Biodiversity Enhancement and Management Plan*). Inland Fisheries Ireland (IFI) will be consulted in advance of watercourse crossing works. The Inland Fisheries Ireland (2016): Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters; and the NatureScot (2024a) *Good Practice During Wind Farm Construction* (SNH, 2019, 4th Edition) shall also be adhered to. No high-quality riparian habitats will be impacted by the proposed new river crossing. The Bracknagh Stream (and the requirement for a new crossing) no longer lies within the proposed footprint of the proposed development.
Irish Peatland Conservation Council	N/A	No response received to date	N/A
Irish Raptor Study Group	N/A	No response received to date	N/A
Irish Wildlife Trust	N/A	No response received to date	N/A

Consultee	Date Response Received	Response	Addressed in Section
Kildare County Council	N/A	No response received to date	N/A
Laois County Council	N/A	No response received to date	N/A
National Parks and Wildlife Service	N/A	NPWS Divisional Ecologist met with WSI staff (Patrick Crushell and Caroline Lalor) to discuss various elements of the Proposed Development including any concerns regarding potential effects on the Natura 2000 network. No specific concerns were raised regarding Natura 2000 sites, including the River Barrow and River Nore SAC.	The NIS documents the full and robust assessment of the potential for the proposed project to adversely impact on European sites and the conservation objectives of the QIs/SCIs in the identified zone of Influence of the proposed development
Offaly County Council	N/A	No response received to date	N/A
Waterways Ireland	N/A	No response received to date	N/A

2.2.2 Field Surveys

The following targeted field surveys were undertaken to inform the existing ecological environment and potential connectivity with designated European sites:

2.2.2.1 Birds Surveys

In order to obtain baseline information on the occurrence of bird species within and adjacent to the Site and to inform impact assessment on the bird population, ornithological surveys were designed and undertaken in accordance with *'Recommended bird survey methods to inform impact assessment of onshore wind farms'* (SNH, 2017). Data collected from field surveys undertaken from October 2021 to September 2023 largely informs the assessment of significant effects. The survey period covered by the dataset includes two full non-breeding (winter) and breeding seasons. The data has been collected within 5 years of the planning submission, as specified for sites where bird populations are not rapidly changing. The ornithologists who conducted these surveys are Mark Davenport, Daniel Moloney, Brendan Dunlop and Gary Wilkinson.
Additional supplementary surveys were undertaken over a 24 month period between April 2017 and March 2019. These additional surveys were completed by Mr. Rob Wheeldon.

The following surveys were completed between October 2021 and September 2023:

- Vantage Point (VP) Surveys
- Winter Walkover Surveys
- Breeding Walkover Surveys
- Breeding Raptor Surveys
- Breeding Wader Surveys
- Breeding Woodcock Surveys

Additional comprehensive bird surveys were undertaken at the Site by Mr. Rob Wheeldon from April 2017 though to December 2018, covering two full breeding seasons (2017, 2018) and one full winter season (October 2017 to March 2018) and half of the next winter season (October 2018 to December 2018).

Surveys followed SNH (2017) guidelines and included VP watches, winter and breeding walkover surveys, breeding woodcock surveys, and waterbird distribution and abundance surveys. Surveys undertaken at that time covered a similar area to the current Proposed Wind Farm Site and 500m buffer.

Further details on the ornithological surveys completed are presented in Appendix 3.

2.2.2.2 Aquatic Ecology

An ecological assessment of six sites on the Cushina and Figile Rivers, upstream, within and downstream of the Proposed Development, was undertaken by Will O'Connor of EcoFact Ltd. Aquatic habitat surveys were completed with reference to the Environment Agency's "*River Habitat Survey in Britain and Ireland Field Survey Guidance Manual 2003*" (EA, 2003) and "*A Guide to Habitats in Ireland*" (Fossitt, 2000). Lamprey habitats in the study area were assessed with reference to the manuals 'Ecology of the River, Brook and Sea Lamprey *Lampetra fluviatilis*, *L. planeri* and *Petromyzon marinus'* by Maitland (2003) and 'Monitoring the River, Brook and Sea Lamprey' by Harvey and Cowx (2003). Salmonid habitat was evaluated with reference to the Department of Agriculture for Northern Ireland's Fisheries Division document, the '*Evaluation of habitat for Salmon and Trout'* (DANI, 1995), and the English Nature manual 'Ecology of the Atlantic

Salmon' by Hendry K & Cragg-Hine D (2003). Further details of aquatic surveys undertaken as part of the ecological assessment of the proposed development are presented in Table 2. Further details are presented in Appendix 4.

Table 2 Summary of Aquatic Ecology surveys completed which partly informs the NIS

Survey	Season	Survey methods	Surveyor
Aquatic Ecology	Summer 2024 (Repeat of earlier survey dated 2021)	Desktop review Aquatic habitat surveys Fisheries surveys (electrofishing: Salmonid, Lamprey)	Will O'Connor of Ecofact Ltd
Aquatic Ecology	September 2021	Desktop review Aquatic habitat surveys Fisheries surveys (electrofishing: Salmonid, Lamprey)	Will O'Connor of Ecofact Ltd

2.2.2.3 Terrestrial Ecology (habitats, terrestrial flora & fauna, invasive species)

Multidisciplinary walkover and targeted surveys of terrestrial ecology of the wind farm and associated underground Grid Connection Cable (GCC) route and Turbine Delivery Route (TDR) were undertaken to determine the ecological characteristics of the project area (see Table 4). This included habitat survey, habitat mapping, invasive alien plant species (IAPS) surveys, Badger surveys, Otter surveys, Red Squirrel, Pine Marten and Bat surveys. Only those surveys related to habitats or species listed on Annex I or Annex II of the EU Habitats Directive are described here.

Habitats onsite were identified according to Fossitt (2000) Guide to Habitats in Ireland and assessed with regards their vegetation, condition and conservation status. The habitats were mapped using GIS software. Methods used during the habitat survey and mapping followed best practice guidance as outlined in Smith *et al.* (2010). In addition, raised bog habitats were mapped using ecotope classification (as per ecotope methodology developed by Kelly and Schouten 2002). Suitable habitat for Marsh Fritillary Butterfly (*Euphydryas aurinia*) was searched for. A dedicated Marsh Fritillary Survey was completed.

During the multi-disciplinary walkover surveys, a search for IAPS was undertaken. The survey focused on the identification of IAPS listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (As Amended). Any non-native invasive species found was recorded in the field using ESRI GIS mapping.

The Otter survey was conducted as per NRA (2009) guidelines (Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes). This involved searching for all otter signs e.g. spraints, scat, prints, slides, trails, couches and holts within areas of suitable habitat. In addition to the width of the rivers/watercourses, a 10m riparian buffer (both banks) was considered to comprise part of the otter habitat (NPWS 2009).

Bat surveys were conducted to gather baseline data on the bat ecology of the Site. Multi-year surveys were undertaken by Doherty Environmental Ltd. from June 2021 to November 2024 and survey design and effort was created in accordance with the best practice guidelines available at the time, '*Bat Surveys for Professional Ecologists: Good Practice Guidelines'* prepared by the Bat Conservation Trust (Collins, 2023). Surveys included extended automatic monitoring of bat activity and bat roost surveys. Surveys were undertaken in strict accordance with those prescribed in NatureScot (2021) 'Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation'. This is in line with standard best practice industry guidelines.

For further details on terrestrial surveys completed please refer to Appendix 5.

Table 3 Summary of terrestrial ecology surveys completed which informs the NIS.

Survey	Season	Survey methods	Surveyor
19th April 2021	Spring	Multidisciplinary walkover (windfarm site)	Patrick Crushell, WSI
24th November 2021	Autumn	Multidisciplinary walkover (windfarm site)	Patrick Crushell, WSI
19th April 2022	Spring	Targeted terrestrial mammals (windfarm site)	Patrick Crushell, WSI
29th and 30th September 2022	Autumn	Multidisciplinary survey (windscreen and targeted walkover – UGC and TDR);	Patrick Crushell, WSI
14th November 2023	Winter	Multidisciplinary walkover (windfarm site)	Patrick Crushell, WSI
13th February 2025	Spring	Multidisciplinary walkover (windfarm site)	Patrick Crushell and Caroline Lalor, both WSI
3rd and 4th April 2025	Spring	Multidisciplinary survey (windscreen and targeted walkover - UGC and TDR)	Caroline Lalor, WSI
7th and 12th May 2025	Summer	Multidisciplinary walkover; Targeted Mammal Survey (windfarm site)	Patrick Crushell and Caroline Lalor
BATS			
2021 Bat Activity Season	Summer & Autumn	Extended automatic monitoring for bat activity	Pat Doherty of Doherty Environmental
2022 Bat Activity Season	Spring	Extended automatic monitoring for bat activity	Pat Doherty of Doherty Environmental
2023 Bat Activity Season	Spring, Summer & Autumn	Extended automatic monitoring for bat activity	Pat Doherty of Doherty Environmental
2024 Bat Activity Season	Spring, Summer & Autumn	Extended automatic monitoring for bat activity	Pat Doherty of Doherty Environmental
17th April and 1st May 2024	Spring/Summer	Bat Roost Surveys	Pat Doherty of Doherty Environmental

3 APPROPRIATE ASSESSMENT SCREENING

3.1 PROJECT DESCRIPTION

3.1.1 Site Location and Context

The proposed development Site (the Site) comprises approximately 213.67 hectares of land, and is contained within the townlands of Cushina, Clonsast Lower, and Chevychase or Derrynadarragh in County Offaly, and Aughrim and Derrylea in County Kildare. A map showing the extent of the Site is shown in Figure 1. Specific locations along the GCR and TDR are also shown in Figure 2 and Figure 3. The Wind Farm Site is located within both the jurisdictions of Kildare County Council and Offaly County Council, approximately 2km south of the village of Bracknagh, 5km northwest of Monasterevin, and approximately 6.5km northeast of Portarlington. The lowland landscape here is dominated by agricultural grassland, cutover bog, commercial forestry and rural one-off houses. The Quaternary Sediments (subsoils) underlying the Site are largely either Cutover Raised Peat or Lake Marl, with small pockets of Limestone Till.

The Proposed Development comprises a total of 9 no. turbines, with 4 no. turbines located in the jurisdiction of County Kildare, and 5 no. turbines located in the jurisdiction of County Offaly.
The Cushina River flows through the Site and part of the flood plain of this river is within the Site. The Figile River occurs in proximity to the eastern boundary of the Site. Both rivers meet approximately 290m downstream of the Proposed Wind Farm Site to the east. The south of the Site borders the north-eastern edge of Derrylea Bog and another raised bog lies partly within the north of the Site. The main landuses within the Site include agriculture (cattle grazing), forestry, and turf harvesting. The dominant habitats within the Site are a mosaic of wet grassland and improved agricultural grassland (GS4/GA1), bog woodland (WN7), cutover bog (PB4), conifer plantation (WD4), hedgerows (WL1), treelines (WL2), and drainage ditches (FW2). Large areas of cutover (subject to recent peat cutting) and cutaway bog (under active peat mining operations) occur adjacent to the Site.

The proposed underground Grid Connection Route (GCR) is approximately 11.4km and follows existing or proposed tracks and roadways from the Site to the existing national grid infrastructure at the Bracklone Substation. The GCR will exit the Site to the south and follow the public road to Bracklone Substation (currently under construction) through the following townlands; Derrylea, Inchacooly, Ballyhast, and Loughmansland Glebe. All of the tracks and roads it follows are categorised as Buildings and Artificial Surfaces (BL1). Adjacent habitats include Hedgerows (WL1), Treelines (WL2), Dry meadows and grassy verges (GS2) Depositing/lowland rivers (FW2) and Drainage ditches (FW4). The GCR also includes a number of water crossings of minor streams and one crossing of the River Barrow (FW2).

The Turbine Delivery Route (TDR) is described in Chapter 2 of the EIAR (Appendix 1). The TDR will exit the M6 at junction 5 and continue along existing public road network to the Site via Tullamore and Daingean. The TDR encompasses one location where a watercourse crossing is required. This will be a clear-span bridge over the Philipstown River (also known as the Daingean River) approximately 5km east of Daingean, Co. Offaly. The TDR follows existing public roads for the most part. It also includes some proposed new access tracks and proposed new sections of roads in order to avoid certain junctions or bends. All of the existing access tracks and roads it follows are categorised as Buildings and Artificial Surfaces (BL3). Adjacent habitats include Hedgerows (WL1), Treelines (WL2), Dry meadows and grassy verges (GS2) Depositing/lowland rivers (FW2) and Drainage ditches (FW4). At the TDR nodes where new sections of road are proposed, the habitats include Improved Agricultural Grassland (GA1), Arable Crops (BC1), Hedgerows (WL1) and a small area of a mosaic of Improved Agricultural Grassland and Dry Calcareous Grassland (GA1/GS1) which includes some species typical of dry calcareous grassland.

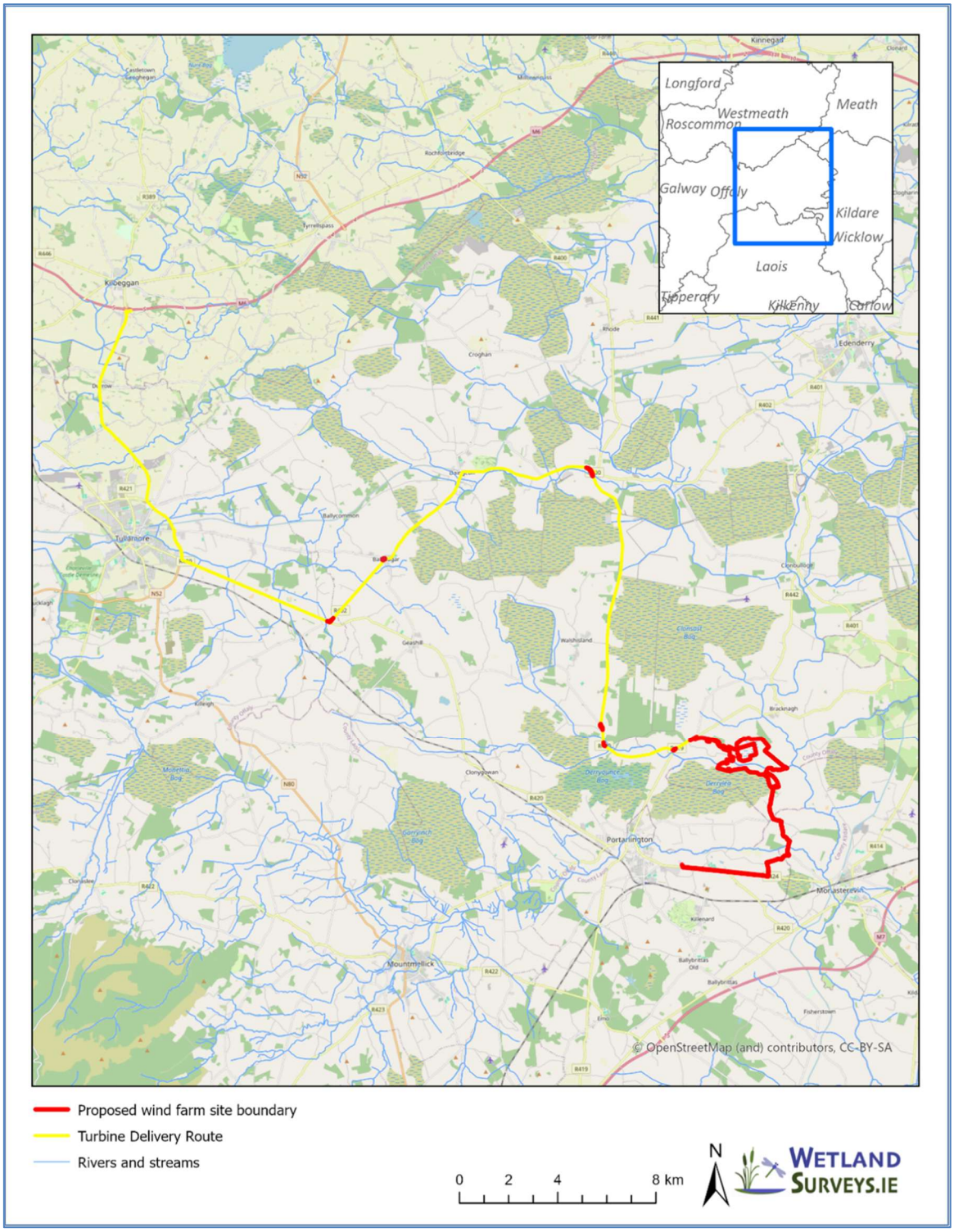

Figure 1: Site Location of Proposed Wind Farm site boundary including the Turbine Delivery Route and underground Grid Connection Route.

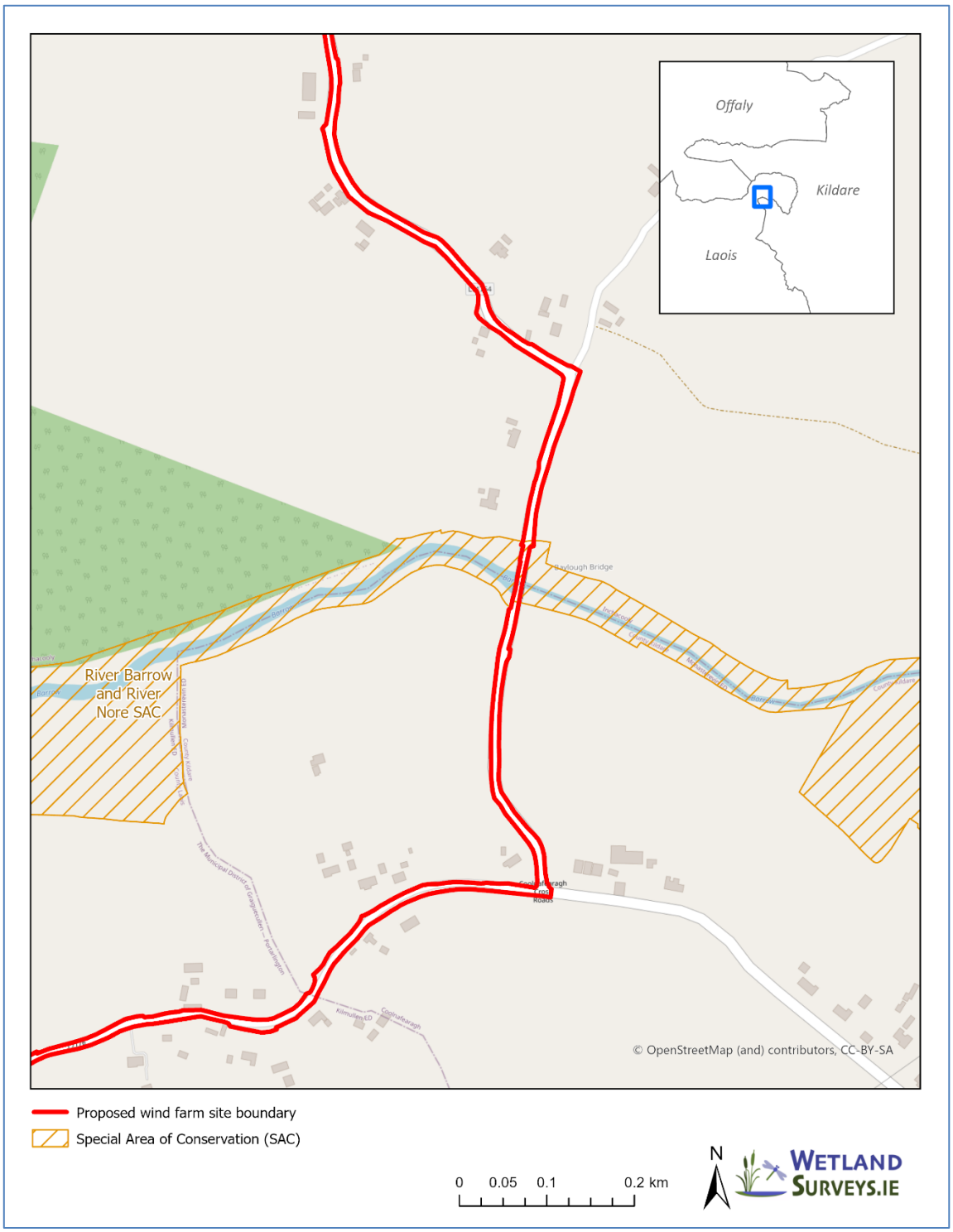

Figure 2. Location of underground Grid Connection Route where it crosses the River Barrow approx. 2.5km south of the Proposed Derrynadarragh Wind Farm Site.

Figure 3. Site location of the proposed Turbine Delivery Route (TDR) at the point where it proposes to cross the Philipstown River 5km east of Daingean, Co. Offaly.

Turbine Delivery Route and all associated works related to the construction of the proposed development.

A proposed new access road will link the Site to the R419 road and there will be new and upgraded access tracks within the Site. In addition to the nine turbines, there is also a proposed substation in the west of the Site, three proposed temporary construction compounds, 6 no. spoil deposition areas, associated surface water management systems, laying of approximately 11.4km of underground 110kV electrical cabling to facilitate the connection to the national grid from the proposed onsite substation and all underground electrical and communications cabling connecting the proposed turbines to the proposed onsite substation.

The Proposed Wind Farm will include a new Site entrance along the R419 Regional Road to serve as construction and operation access to the proposed wind farm and onsite 110kV substation, an additional access from L-70481 will be used for construction to the south of the Cushina River, prior to completion of a new bridge crossing included as part of the development.

The proposed Grid Connection Route (GCR) identified to supply power from the proposed development to the Irish National Electricity Grid will exit the Site to the south and follow the public road to Bracklone Substation (currently under construction) through the townlands of Cushina in County Offaly; Derrylea, and Inchacooly in County Kildare, and Coolnaferagh, Ullard or Controversyland, Clonanny, Lea, Loughmansland Glebe, and Bracklone in County Laois. Works for the grid connection will involve trenching, laying of ducting, installing 15 no. joint bays and 5 no. watercourse crossings, pulling cables and the back filling of trenches and reinstatement works. The route will run through 0.3km in existing tracks and 2km in new access tracks on the wind farm Site and 9.1 Km of existing public road, 0.3km in existing tracks and 2km in new access tracks on the wind farm Site. Of the 7 no. crossing points, 6 no. comprise watercourse crossings and one is a dry stone arch bridge crossing at a disused canal. There will be 6 no. Horizontal Directional Drilling (HDD) and 1 no. flat formation crossing within the road above an existing culvert.

The Turbine Delivery Route (TDR) route is described in Chapter 2 of the EIAR (see Appendix 1). It will include a number of accommodation works (see Table 4), some of which will include ground works and construction. The turbine components will be delivered to the port of entry of Galway and the delivery route will extend from Lough Atalia Road, R339, crossing junction with R338, continuing on R339, R336, N6, onto the M6, from the M6 the route will progress as follows:

- At Junction 5, depart the M6 and continue south on the N52.
- Depart the N52 to the east of Tullamore and turn left onto the R420, eastbound.
- Turn left onto the R402 northbound.
- Continue north and then east on the R402 through Ballinagar and Daingean.
- Turn right from the R402 onto the R400 travelling south.
- Remain on the R400 until reaching R419.
- Turn left from to join the R419 then proceed northeast towards the Site entrance.

At TDR Node 29/30 accommodation works proposed include the construction of 282m of new road across an existing field including a 20m clear-span bridge across the Philipstown River (also known as Daingean River) in order to by-pass the R402/R400 junction. At Node 35/36 it is proposed to construct approximately 178m of new access road to bypass a bend on the R400.

The Biodiversity Enhancement Management Plan (BEMP) lands are wholly located within the proposed development Site and include lands in the townlands of Cushina and Aughrim. The BEMP is presented in Appendix 2. This includes:

- plans to install in-ditch wetlands to reduce existing sediment loads in drains and prevent same from reaching the Cushina River.

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The Biodiversity Enhancement Management Plan (BEMP) lands are wholly located within the proposed development Site and include lands in the townlands of Cushina and Aughrim. The BEMP is presented in Appendix 2. This includes:

- plans to install in-ditch wetlands to reduce existing sediment loads in drains and prevent same from reaching the Cushina River.
- riparian enhancement measures to prevent stock access to the 2.4km of northern riverbank and the 2.4km of southern riverbank along the River Cushina. This is expected to result in enhanced river and riverbank habitats and greater riverbank stability.
- 2.7ha woodland development in the riparian zone to the north of the most eastern 1km of the Cushina River. This will lead to woodland habitat enhancement and creation and will further contribute to the protection and enhancement of the aquatic ecology of the Cushina River within the Site.
- 2.6ha bog woodland protection and enhancement.

A 10-year planning permission and an operational period of 35 years from the date of commissioning of the Proposed Wind Farm is being sought. This reflects the lifespan of modern-day turbines.

A full description of the Proposed Development is given in Chapter 2 of the EIAR (see Appendix 1). The general layouts of the Proposed Development and TDR are presented in Appendix 6.

Table 4 Turbine Delivery Route (TDR) Accommodation Work Nodes

TDR Node Reference	Location	Details	Summary Description of Proposed Temporary Accommodation Works
13	M6 Slip Road / N52 Roundabout	Loads will take the third exit at the roundabout to join the N52 southbound, undertaking a contraflow manoeuvre.	Installation of Load Bearing Surface on southern verge of entry arm and the central reservation.
19	R420 / R402 Junction	Loads will turn left using the option area identified by the client.	Installation of Load Bearing Surface on the inside of the left turn.
22	R402 St Joseph's National School	Loads will turn right at the junction to head east, remaining on the R402	Installation of Load Bearing Surface on the western footway/verge, the northern footway/verge and the traffic island.
25	Daingean Main Street / Edenderry Road	Loads will continue through Daingean on the R402	Installation of Load Bearing Surface in the northern footway.
29/30	R402 / R400 Junction & River Philipstown Bridge	Loads will turn right prior to the junction, through the field and rejoin the R400.	Construction of new access road and bridge bypassing R402/R400 Junction.
31	R400 North of Drumcaw Or Mountlucas	Loads will head south-east on the R400 through a left bend.	Installation of Load Bearing Surface on the southern verge.
32	R400 East of Mountlucas	Loads will continue on the R400 southbound.	Installation of Load Bearing Surface on the western verge.
33	R400 South-east of Mountlucas	Loads will continue on the R400 southbound.	Installation of Load Bearing Surface on the eastern verges.
34	R400 Northeast of Brackagh	Loads will continue on the R400 southbound.	Trimming of vegetation and trees on both verges.
35/36	R400 South of Enaghan	Loads will drive over a bridge, then continue straight at the junction through the field and rejoin the R400 following the right bend.	Construction of new offline track to bypass bend on R400.
38	R400 East of Moanvane	Loads will continue on the R400 heading south-east through a left bend.	Installation of Load Bearing Surface on the northeastern verge.
46/47	R400 / R419 Junction	Loads will head east on the R400 through two right bends then turn left onto the R419 at the junction heading northeast.	Installation of Load Bearing Surface on the south-eastern verge.

3.1.3 Development Phases

3.1.3.1 Construction Phase

The construction phase will comprise several stages including site investigations, site preparation, turbine foundation works, erection of turbines, and initial commissioning. It is foreseen that these stages will overlap and the total timeframe up to commissioning is expected to be approximately 24 months from the date planning permission is granted or any subsequent judicial review is resolved or determined, whichever is the later.

The proposed development will include the following elements that need to be considered:

- Construction of 9 no. wind turbines – 4 no. turbines will have a tip height of 186m above existing ground level with a hub height of 105m and rotor diameter of 162m, and 5 no. turbines will have a tip height of 187m above existing ground level with a hub heigh of 106m and rotor diameter of 162m.
- Construction of permanent turbine foundations and crane pad hard standing areas and associated drainage;
- Construction of 1 no. new main Site entrance on Regional Road R419 to serve as construction and operation access, and upgrade works to 1 no. existing Site entrance (Derrylea Road) to the south to service for construction only;
- Construction of of 9,360m of new internal access tracks and associated drainage infrastructure;
- Upgrading of 550m of existing tracks and associated drainage infrastructure;
- All associated drainage and sediment control including interceptor drains, cross drains, sediment ponds and swales;
- Installation of 1 no. permanent single span bridge crossing the Cushina River within the proposed Wind Farm Site;
- All associated infrastructure, services and site works including excavation, earthworks and spoil management;
- Creation of dedicated peat and spoil deposition areas for the management of peat and spoil within the Site;
- Establishment of 3 no. temporary construction compounds and associated ancillary infrastructure including parking;
- Establishment of 2 no. temporary wheel washing areas during construction only;
- Forestry felling of 6.01ha (60,100 m2) to facilitate construction and operation of the Proposed Development;
- Installation of medium voltage electrical and communication cabling underground between the proposed turbines and the proposed on-site substation and associated ancillary works;
- Installation of 11.4km of high voltage (110kV) and communication underground cabling between the proposed on-site substation and the Bracklone Substation and associated ancillary works.
- Construction of 1 no. permanent onsite 110kV electrical substation and associated compound including:
    - Welfare facilities;
    - Wind farm control building with welfare facilities;
    - Electrical infrastructure;
    - Parking;
    - Wastewater holding tank;
    - Rainwater harvesting tank;
    - Security fencing;
- Enabling works to accommodate turbine delivery including:
    - Installation of a new watercourse crossing comprising a 1 no. single span bridge crossing at Daingean River/Philipstown Bridge;

- Load bearing surfaces and temporary watercourse and drain crossings;
- Temporary removal of road signage, poles, bollards and fencing;

Environmental Management During Construction

Construction will be undertaken in strict compliance with the Construction and Environmental Management Plan (CEMP) that is submitted as part of this application (see Appendix 7).

The CEMP sets out the key environmental management measures associated with the construction, operation and decommissioning of the Proposed Development, to ensure that during these phases of the Proposed Development, the environment is protected, and any likely significant adverse impacts are minimised. The live CEMP will be developed further at the construction stage, on the appointment of the main contractor to the Proposed Development to address the requirements of any relevant planning conditions and environmental authorisations, including any additional mitigation measures that are conditioned.

Surface Water Management Plan (SWMP): A detailed SWMP (Appendix 8) has been developed and all environmental mitigation measures within the SWMP will be implemented locally in advance of the works. The SWMP includes the following:

- The procedures which will be followed by the Contractor to identify and plan the appropriate erosion and sediment controls which need to be put in place for each element of the Works;
- The procedures which will be followed by the Contractor to ensure the proper implementation of the appropriate sediment and erosion control measures during the construction of each element of the Works;
- Details of the Contractor's obligations with respect to the supervision, monitoring and documentation of the implementation of the erosion and sediment control measures included in the Works in accordance with the requirements of the SWMP;
- Requirement for appropriate training to be provided for and recorded for all personnel engaged by the Contractor for the Works.

The following environmental controls will be in place during construction to safeguard downstream water quality:

- Concrete washing of machines will take place off-site at an appropriate dedicated wash facility that will pose no threat to surface waters.
- Re-fueling of machinery will only be carried out in designated areas removed from any natural watercourses. All fuels used on Site will be stored in bunded units. Plant and vehicles will be inspected regularly for leaks. Drip trays will be fitted to all plant machinery.
- Use of weather forecasting to plan dry days for concrete pouring.
- Stockpiling of materials during construction will only occur in suitably designated areas away from watercourses with adequate measures taken to prevent any surface water run-off. Silt traps and silt fencing will be employed to safeguard the protection of watercourses in the vicinity of the proposed works.
- The following dust-control measures will be put in place during construction and decommissioning works:
    - Compaction of the sides of all stockpiled soil
    - The internal access roads will be constructed prior to the commencement of other major construction activities. These roads will be finished with high quality graded aggregate;
    - A water bowser will be available to spray work areas and haul roads, especially during periods of excavations works coinciding with dry periods of weather, in order to suppress dust migration from the Site;
    - All loads which could cause a dust nuisance will be covered to minimise the potential for fugitive emissions during transport;

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable;
- The access and egress of construction vehicles will be controlled to designated locations, along defined routes, with all vehicles required to comply with onsite speed limits, which shall be reduced in periods of dry, windy weather;
- Wheel washing facilities will be provided at the two main entrance/exit points of the Proposed Development Site.

In addition, the Surface Water Management Plan (SWMP) (Appendix 8) outlines emergency response procedures in the event of leaks or silt breakouts. A trained and dedicated environmental and fuel spill emergency response team will be set up on Site before commencement of construction on-site. All personnel working on site will be trained in pollution incident control response and will be familiar with the emergency response procedures set in place for this Proposed Development. These procedures include:

- Suitable spill kits and absorbent material for dealing with oil spills will be maintained on site and will be provided in all construction vehicles.
- The drainage engineer will be contacted if there is an accidental spill or breakout of silt on Site.
- In the event of pollution or potential risk of pollution the relevant Local Authority will be informed immediately.
- In the case of water pollution in addition to the Local Authority, Inland Fisheries Ireland will also be informed immediately.
- Works will stop immediately where safe to do so.
- The size of the incident will be assessed and determined if it can be controlled by Site staff or if emergency services are required to attend.

The implementation of the CEMP and SWMP will be overseen by the Environmental / Ecological Clerk of Works (EnCoW / ECoW). The (EnCoW / ECoW) will be appointed by the Developer and will have responsibility for monitoring at the Site during the construction phase of the Development. The Clerk of Works will have the authority to temporarily stop works to prevent negative effects on water quality or biodiversity and/or to ensure corrective action is taken to mitigate adverse effects.

The Project Ecologist and/or EnCoW/ECoW will oversee the implementation of the Biodiversity Enhancement and Management Plan (BEMP). One element of this will be completed before any works begin – the removal of invasive alien plant species (IAPS) from the construction / felling footprint. The felling footprint within the Site includes one location (near T04) where the Low Impact Species, Snowberry (*Symphoricarpos albus*) is present and a second location (TDR Node 35/36) where Snowberry and Sycamore (Medium Impact) were recorded. All of these will be safely removed by a licenced invasive species contactor and disposed of to an appropriately licenced waste facility prior to the beginning of construction/felling in these areas. These works will follow the procedures of the Invasive Species Plan as outlined in Chapter 9 (see Appendix 5) and summarised below.

Where present within the footprint of the Proposed Development, the soil and vegetation cuttings containing, or likely to contain, any parts of IAPS including seeds or root fragments, will present a risk of spread. In such situations where works (including felling) will occur within or adjacent to known infestations of non-native invasive species (such as at T04 and TDR Node 35/36), the contaminated areas will be cordoned off. Mechanical removal will be undertaken by a licenced invasive species contractor and no other persons or machinery will be permitted within the cordoned off area. Machinery and footwear used in the vicinity of the infested areas will be thoroughly cleaned and all washings contained. Washings will be disposed of appropriately (as described below).

Unwanted material originating from the Site (including soil, rhizomes, plant fragments and washings) will immediately be transported off site by an appropriately licensed waste contractor and disposed of properly at a suitably licenced facility, in accordance with the (NRA, 2010) guidelines, i.e., where cut, pulled or mown non-native invasive plant material arises, its disposal will not lead to a risk of further spread of the plants.

Care will be taken near watercourses as water is a fast medium for the dispersal of plant fragments and seeds. Before contact with water is made, any equipment or machinery that will be used in the water, including Personal Protective Equipment (e.g. footwear, gloves), will undergo the Clean-Check-Dry biosecurity protocol: https://www.fisheriesireland.ie/Biosecurity/biosecurity.html. This will similarly be carried out upon completion of the work or moving the equipment or machinery from the water. All disposals will be carried out in accordance with the Waste Management Acts. All management and control measures implemented on-site will be carried out in accordance with best practice guidance as set out in '*The Management of Invasive Alien Plant Species on National Roads (GE-ENV-01104)'* TII (2020), '*The Management of Noxious Weeds and Non-native Invasive Species on National Roads*' NRA (now TII) (2010) and '*Best Practice Management Guidelines Rhododendron Rhododendron ponticum and Cherry Laurel Prunus laurocerasus'* Maguire, *et al*., (2008).

The BEMP also includes the removal of Giant Hogweed (*Heracleum mantegazzianum*) from within the Site, although this is not within the construction footprint or the Zone of Impact of the Proposed Development. This Third Schedule, High Impact IAPS, is highly invasive and presents a real threat to human health. Giant Hogweed can form dense stands that outcompete native floral biodiversity. The seeds, which are the sole means of dispersal of the plant, are heavy and disperse well in water which is why this species spreads well along riverbanks. Mechanical removal will be undertaken by an licenced invasive species contractor and all contaminated materials (soil, root fragments, plant fragments etc.) will be disposed of through an appropriately licenced haulier to a licensed landfill.

Once eradication treatments are completed, monitoring will be undertaken approximately 6-8 weeks after treatment to determine the success of the measures. Follow-up eradication treatment is likely to be necessary for about 7 years.

3.1.3.2 Operational Phase

It is envisaged that the project will remain in operation for about 35 years following its commissioning, subject to planning. Wind farms are designed to operate largely unattended and during the operational phase, the wind farm will normally be unmanned.

Maintenance activities will include the following:

- Six-month service - three week visit by four technicians
- Annual service - six week visit by four technicians
- Weekly visit by Developer or agents to check over the site, notices etc.

Once the onsite underground cable has been constructed and installed, its operation will be for the main part, fully autonomous.

For security purposes the Site will remain fenced in from the surrounding lands and artificial/security lighting will be in place together with CCTV equipment. Security lighting will be intermittent and localised; it will be motion controlled and may be augmented using infrared cameras. Turbine lighting will include lighting on the turbines in accordance with the Irish Aviation Authority (IAA) requirements for aviation visibility purposes.

3.1.3.3 Decommissioning Phase

On decommissioning, cranes will disassemble the above ground turbine components which will be removed off site for recycling. All the major component parts are bolted together, so this is a relatively straightforward process.

The foundation pedestals will be covered over and allowed to re-vegetate naturally. Leaving the turbine foundations *in situ* is considered a more environmentally sensible option. The alternative of removing the reinforced concrete associated with each turbine would result in unnecessary environmental nuisances such as noise and vibration, and dust and the ensuing potential disturbance to biodiversity, including mobile species of Qualifying Interest (QIs) that might by then be using the area.

It is proposed that all the internal Site access tracks and turbine hard standings will be left in place. These will continue to be available for future land uses.

The temporary accommodation works along the TDR will not be required for the decommissioning phase as turbine components can be dismantled on site and removed using standard HGVs.

Grid connection infrastructure including the on-site substation and ancillary electrical equipment will form part of the national grid and will remain *in situ*.

It is expected that the decommissioning phase will take no longer than 6 months to complete.

3.2 EXISTING ECOLOGICAL ENVIRONMENT

The following description of the existing ecological environment at the proposed development Site was informed by a series of ecological surveys as outlined in Section 2.2.2 above. The ecological characteristics of the Site with particular relevance to designated European sites and Annex II species in the surroundings are presented.

A detailed description of the existing ecological environment within and immediately surrounding the proposed development Site is also presented in Chapters 9 and 10 of the Environmental Impact Assessment Report (EIAR) that accompanies the application. A habitat map of the Proposed Wind Farm Site following the Fossitt (2000) classification scheme is presented in Figure 4 below. Habitat maps for specific areas along the TDR where accommodation works are proposed are presented in Figure 5 and Figure 6.

3.2.1 Habitats and Flora

3.2.1.1 Terrestrial habitats

The two most widespread habitats of the study area include agricultural grasslands, either Improved Agricultural Grassland (GA1) or a mosaic of Improved Agricultural Grassland and Wet Grassland (GA1 / GS4), and Cutover Bog habitat (PB4). The GA1 grassland is intensively managed for agriculture, predominantly for livestock grazing. It is relatively species-poor and is subject to significant nutrient inputs. Perennial Ryegrass is the dominant species. GA1 is the dominant grassland to the north of the Cushina River but to the south the grassland is wetter and is largely classified as a mosaic of GA1 with Wet Grassland (GS4). A relatively small area of GS4 also occurs to the south of the river. The GA1/GS4 habitat is more species-rich with species indicative of wet conditions and a less intensive management regime. Species here include Yellow Flag-Iris (*Iris pseudacorus*), Sedges (*Carex* spp.), Mint (*Mentha* sp.), Silverweed (*Potentilla anserina*), Rushes (*Juncus* spp.), Meadowsweet (*Filipendula ulmaria*) and Cuckooflower (*Cardamine pratensis*). The grassland gets gradually less species-rich towards the south-east of the Site where grasses such as Cocksfoot (*Dactylis glomerata*), Perennial Rye-Grass (*Lolium perenne*) dominate and common agricultural herbs such as Ragwort (*Jacobaea vulgaris*) and Dandelion (*Taraxacum officinale* agg.) are frequent. The grasslands that occur within the Site do not correspond with any EU Habitats Directive Annex I habitats.

Cutover bog habitats are common within the Site, indeed some of the grassland has been converted from cutover. Cutover Bog (PB4) occurs in the north of the Site and represents the remnants of a lobe of raised bog (PB1) which once was part of the extensive network of raised bogs of this region, otherwise known as the Bog of Allen. There remains some Raised Bog (PB1) habitat within the Site on the edge of the industrial cutaway (this cutaway lies just outside of the Site). The Cutover Bog is used for peat harvesting with many bare peat fields and regular drains throughout. Within the Raised Bog (PB1) habitat, two ecotopes were recorded ecotope (as per ecotope methodology developed by Kelly and Schouten 2002), marginal and facebank. The facebank ecotope is the more disturbed of these two and the peat bank is collapsing in places. The facebank was impacted by regular drains and was dominated by tall Heather (*Calluna vulgaris*) with occasional Bog Cotton (*Eriophorum* sp.), Birch (*Betula* sp.) and Pine (*Pinus* sp.). In the areas of marginal ecotope, drains were present but more typical raised bog species were recorded here including various Sphagnum mosses (e.g. *Sphagnum cuspidatum* and *S.capillifolium*), White Beak-sedge (*Rhynchospora alba*), Bog Asphodel (*Narthecium ossifragum*), Cross-leaved Heath (*Erica tetralix*), Reindeer Moss (a lichen) (*Cladonia portentosa*), and Pine (*Pinus* sp.) seedlings. Overall, the raised bog habitat onsite is in poor ecological condition with an absence of high quality raised bog communities.

The peatland habitats present onsite have been damaged through drainage, desiccation and subsidence – they do **not correspond** with any EU Annex I habitat as outlined below.

- Annex I priority habitat **Active Raised Bogs* [7110] : NO as there is an absence of the ecotopes corresponding to ARB (central and sub-central) (NPWS, 2019).
- Annex I habitat *of Degraded Raised Bogs still capable of natural regeneration* [7120]: NO as the requirements of size (>30ha) and hydrological characteristics as defined by NPWS (2019) are not met.
- Annex I habitat *Depressions on peat substrates of the Rhynchosporion* [7150] : NO. These vegetation communities can be found extensively in man--modified situations such as degraded raised bog (e.g. tracks and cutover areas) but in these situations, they do not correspond to the Annex I habitat in the Irish context (NPWS, 2019).
- Annex I habitat *Bog Woodland* [91D0] : NO. This Annex I habitat typically has a luxuriant growth of *Sphagnum* mosses. None of the bog woodland onsite conforms to this and is quite dry.

Other terrestrial habitats common on the windfarm Site include Conifer Plantation (WD4), Scrub (WS1), Hedgerows (WL1), Treelines (WL2) and Depositing/lowland River (FW4). The Third Schedule IAPS, Giant Hogweed (*Heracleum mantegazzianum*) was recorded within one hedgerow in the south-west of the Site outside of the construction footprint.

The proposed underground grid connection route (GCR) is approximately 11.4km and follows existing or proposed tracks and roadways. All these tracks and roads correspond to Buildings and Artificial Surfaces (BL1). Adjacent habitats include Hedgerows (WL1), Treelines (WL2), and Dry meadows and grassy verges (GS2).

The proposed turbine delivery route (TDR) is along existing road infrastructure categorised as Buildings and Artificial Surfaces (BL3). Adjacent habitats include Improved Agricultural Grassland (GA1), Conifer Plantation (WD4), Cutover Bog (PB4) and Raised Bog (PB1) habitats. It also passes by rural houses, villages and towns (BL3).

At the TDR Node 29/30, the TDR will include a new section of road and bridge over the Philipstown River (FW2) near where the R400 joins the R402. The dominant habitat here is improved agricultural grassland (GA1), though there is a small area of dry, calcareous grassland / improved grassland mosaic (GA1/GS1) in the north of the field, some of which will also be removed. However, care will be taken with the sod of this section when constructing the access track such that it will be replaced on the verge of the access road once construction is finalised.

At the TDR Node 35/36, a new section of road will be constructed to bypass a bend on the R400. The construction footprint here is predominantly arable crops (BC1) with a small length of Treeline (WL2). The Low Impact invasive species, Snowberry (*Symphoricarpos albus*) is present within this treeline but outside of the construction footprint.

Habitat maps of the Site and Nodes 29/30 and 35/36 are presented in Figure 5 and Figure 6 below.

3.2.1.2 Drainage

Drainage Ditches (FW4) are common in the Site occurring adjacent to cutover bog, raised bog and grassland habitats. Most of the drains are deep and carry water throughout the year, though levels vary seasonally. The drains in the grassland habitats north and south of the Cushina River, drain into the Cushina. The drains from the north in particular, often carry a high load of peat sediment, likely originating from peat mining activities in the surroundings.

3.2.1.3 Watercourses

A single natural watercourse (Depositing/lowland River FW2), the Cushina River, occurs within the Proposed Wind Farm Site. The river flows eastwards through the central part of the Site, exiting the Site at its eastern extent. The river channel has been subject to channelisation as indicated by its straightened course, deep channel, and near vertical banks.

widened (IFI *pers comm.*). The river had circa 1-1.5m of water depth at the time of survey and is circa 3-4m wide. The river substrate was comprised of fine material and had a moderate flow. The banks are relatively steep throughout the Site, with some slumped areas present where cattle access the river as a drinking source. There are occasional trees along the watercourse and for the last approximately 700m of the river before it exits the Site, the banks (and embankments) support a scrub habitat that is developing into woodland.

Baseline aquatic surveys of the Cushina River by Ecofact in 2021 & 2024, within and adjacent (50m downstream of the Site) to the proposed development Site, determined the water quality to be Poor (Q3) and concluded that the river is degraded due to the effects of channelisation and regular dredging. Approximately 1.8rkm upstream of the Proposed Development the Cushina River was also surveyed by EcoFact in 2021 & 2024. Here, the habitats here were noted as being very suboptimal for salmonids and lampreys. However, potential spawning habitat for lamprey at this location was found to be present. The Cushina River is also monitored by the EPA and was classed as having a Moderate Q-Value (3-4) status in 2023 at a monitoring station approximately 2km upstream of the Site. The section of the Cushina River which includes the 2.4km that flows through the Sit has been assessed as having 'Good' ecological status or potential following the most recent WFD monitoring (River Waterbody WFD Status 2016-2021). However, it is noted that this assessment is based on modelling and it is stated that there is a 'low confidence' in this status. The risk of not achieving good status in the third cycle is listed as being 'in review' (EPA River Waterbodies Risk). No Annex I habitats were recorded in the Cushina River with the Site.

Approximately 290m east of the Site, the Cushina joins the Figile River, which then flows in a southerly direction for approximately 6.2km before entering the River Barrow (or 5.8rkm before it reaches the River Barrow and River Nore SAC [002162]). Downstream of the Cushina-Figile confluence, EPA monitoring from 2023 has classified it as having Moderate status (Q-value 3-4).

The underground GCR crosses the River Barrow at one point on its route approximately 2.4km south-east of the Site. There is an existing bridge, Baylough Bridge, at this crossing point, and it is within the River Barrow and River Nore SAC. The cabling will be installed using HDD methodology, the entry and exit points for which will be located 50m beyond the SAC boundary (i.e. greater than 50m from the River Barrow) within the existing road corridor. This section of the River Barrow has been assessed as having 'Poor' Ecological Status or Potential and also 'Poor' Fish Status or Potential following the most recent WFD monitoring (River Waterbody WFD Status 2016-2021). This assessment is based on monitoring. The closest upstream and downstream EPA monitoring stations both assess the water quality to be Moderate (Q-value 3-4).

The TDR crosses a number of watercourses along its length including the Cushina River, Enaghan Stream, the Silver and the Brosna Rivers. A new bridge is required at the Philipstown River (aka Daingean River). The Philipstown River has an EPA monitoring point just 50m downstream of the proposed new crossing-point. The EPA has found the water quality here to be of Poor Quality (Q-Value 3 The Philipstown River was classed as having 'Poor' ecological status or potential following the most recent WFD monitoring (River Waterbody WFD Status 2016-2021) and is listed as being at risk of not achieving good status in the third cycle (EPA River Waterbodies Risk). The Philipstown River at the proposed new crossing point is approximately 5m wide and supports plentiful macrophytes.

The total area of habitats within the Proposed Development Site are presented below in Table 5 below.

3.2.1.3.1 Flora

The only EU Annex II plant species record from within the 10km grid squares (N51 and N61) which overlap with the Proposed Wind Farm Site is Marsh Saxifrage (*Saxifraga hirculus*). This species is restricted in Ireland to mineral flushes in blanket bogs in the west. Records of occurrence in this area are from the miid-19th century when Marsh Saxifrage also occurred in the midlands of Ireland. There is no suitable habitat present on-site for this species so it is considered unlikely to occur.

Evaluation

The habitats present on site are generally of Local Importance (Lower value) and Local Importance (higher value). No habitats of high conservation concern occur on site. There are no EU Habitats Directive Annex I listed habitats present within or immediately surrounding the Site. The River Cushina within and downstream of the Proposed Development Site was assessed to not have any salmonid nursery or fishery habitat. It was assessed to have potential lamprey nursery habitat but no potential lamprey spawning habitat present. It has been assessed as being of Local Importance (Higher Value) with direct connectivity to the River Barrow and River Nore SAC, approximately 6rkm downstream from the Site.

Table 5. Total area of habitats identified within the Proposed Development

Habitat Type	Area (ha)
Bog Woodland (WN7)	11.9
Conifer plantation (WD4)	9.9
Cutover bog (PB4)	20.6
Cutover bog / Bog woodland (PB4 / WN7)	0.4
Cutover bog / Wet grassland (PB4 / GS4)	22.2
Improved agricultural grassland (GA1)	83.2
Improved agricultural grassland / Wet grassland (GA1 / GS4)	52.9
Mixed broadleaved / conifer woodland (WD2)	1.8
Raised bog (PB1)	4.6
Scrub (WS1)	2.2
Wet grassland (GS4)	2.8
Wet pedunculate oak-ash woodland (WN4)	0.8
Total site area	**213.5**

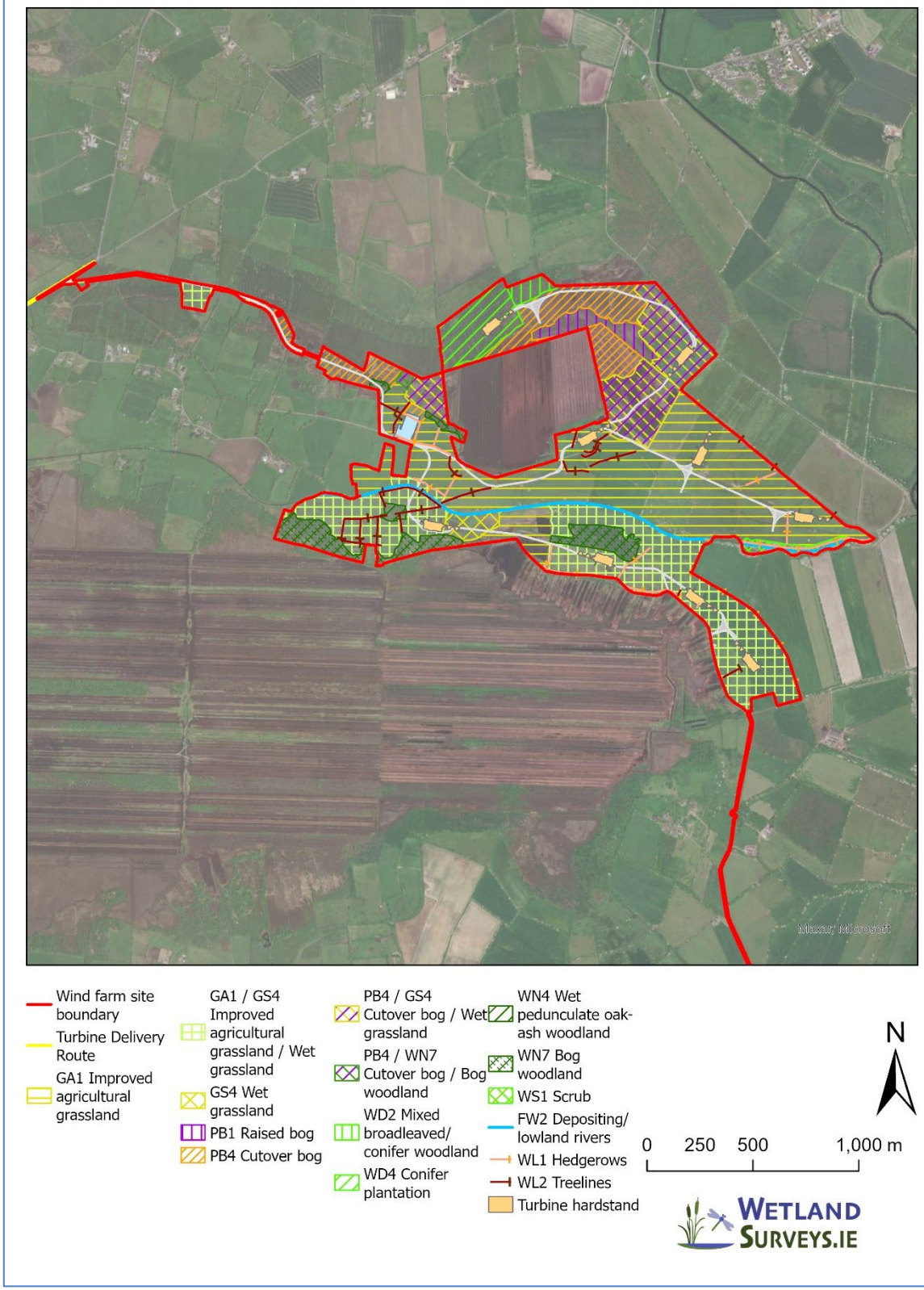

Figure 4 Habitat Map of Proposed Wind Farm Site at Derrynadarragh, Co. Offaly and Co. Kildare with proposed turbine and internal tracks layout.

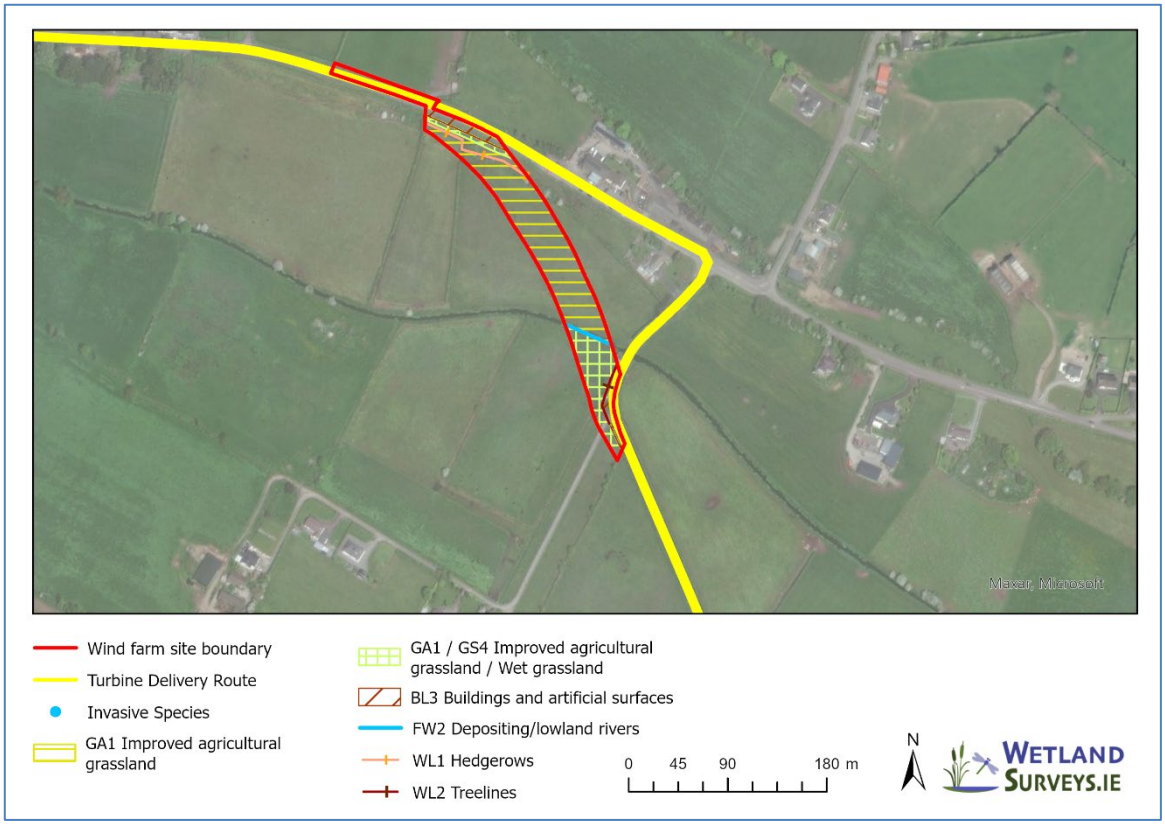

Figure 5 Map of habitats at TDR Node 29/30 where new section of road and bridge over Philipstown River is proposed.

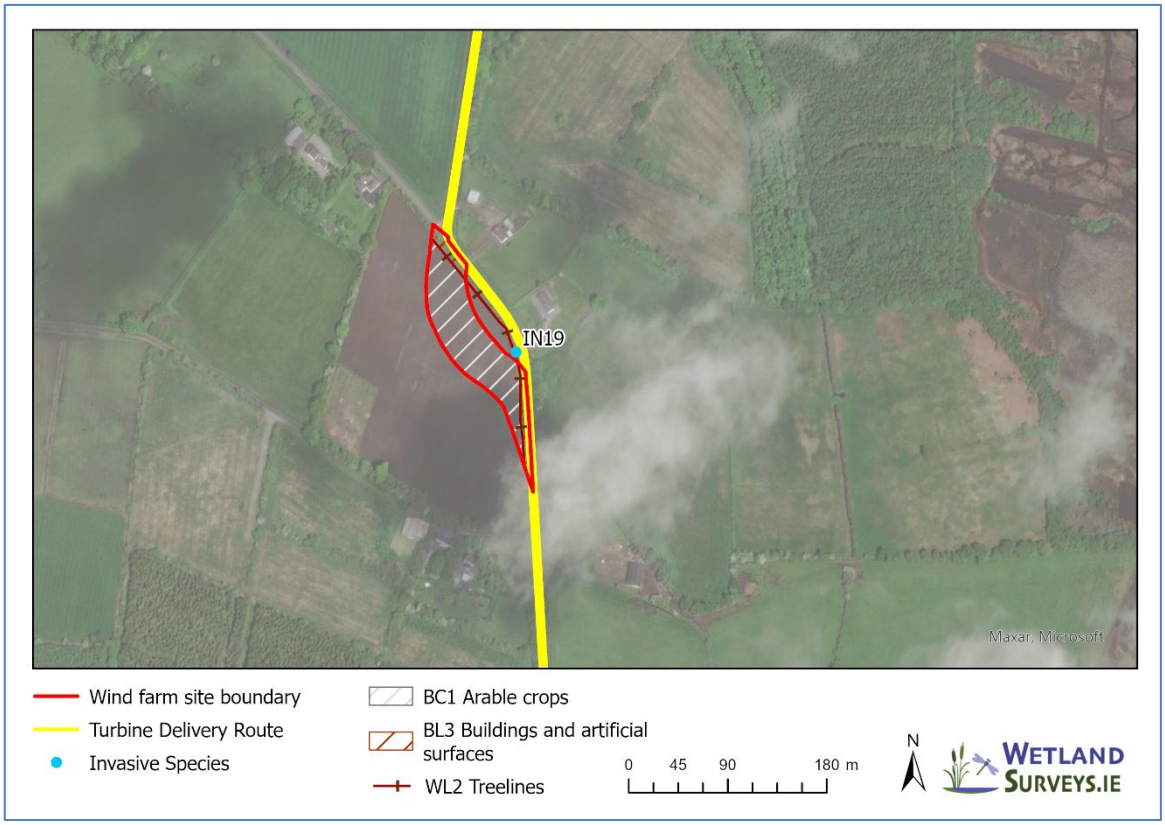

Figure 6. Map of habitats at TDR Node 35/36 where new section of road is proposed.

3.2.2 Fauna

3.2.2.1 Mammals

Annex II mammal species for which evidence of presence was recorded within the Site were Bats and Otter.

3.2.2.1.1 Bats

The Lesser Horseshoe Bat (*Rhinolophus hipposideros*) is the only Irish bat species listed on Annex II of the EU Habitats Directive. The Lesser Horseshoe Bat in Ireland is confined to the west of the country and would not be expected in County Kildare or County Offaly. The bat surveys conducted onsite did not record the presence of Lesser Horseshoe Bats.

3.2.2.1.2 Otter (Lutra lutra)

Otter is listed on Annex II of the EU Habitats Directive and is a QI for the River Barrow and River Nore SAC. Otter have been recorded from both N51 and N61 hectads. Evidence of Otter was recorded at one location approximately 17m west of the point where the Cushina River exits the Site. In total, the signs consisted of an otter spraint on the riverbank and some otter prints in mud nearby. Signs of Otter were searched for in suitable habitat along the Cushina River within the Site and along the Philipstown River at Node 29/30. No further signs of Otter were noted. Given that male Otters in Ireland have a territory of approximately up to 20km of river and females up to approximately 10km (O'Neill, 2008), the signs of Otter observed at the Site could possibly be from an Otter of the River Barrow and River Nore QI population.

The River Barrow at Baylough Bridge, where the proposed GCR will cross, is not expected to support Otter due to 'Poor' ecological and fisheries status here.

No signs of otter were observed on the Philipstown River at TDR Node 29/30. Given the 'Poor' ecological status and potential assessment for this river, it is considered not likely that Otter are using this river with any frequency. Records of Otter using the Philipstown River are noted in 2015 (NBDC online records). These records are unlikely to be linked to the River Barrow and River Nore SAC due to the distance (29rkm) upstream of the SAC.

3.2.2.2 Birds

Those bird species of high conservation concern recorded occurring within and surrounding the proposed development Site are presented in Table 6 below. Species listed on Annex I of the EU Birds Directive observed during the bird surveys are Golden Plover, Hen Harrier, Merlin, Peregrine Falcon, and Whooper Swan.

Table 6: Bird species of high conservation concern recorded within and surrounding the proposed development Site.

Species	EU Birds Directive Status
Buzzard	N/A
Curlew	Annex II
Golden Plover	Annex I
Hen Harrier	Annex I
Kestrel	NA
Lapwing	Annex II
Merlin	Annex I
Peregrine Falcon	Annex I
Snipe	Annex II
Sparrowhawk	NA
Whooper Swan	Annex I
Woodcock	Annex II

In Ireland, SPAs are sites that are designated for the conservation of species listed on Annex I of the Birds Directive. Hence, the Annex I species that were identified onsite are assessed below to help inform the Zone of Impact.

3.2.2.3 Field Study Results 2021-2023 for Annex I Species

Golden Plover

Vantage Point Survey

Golden Plover (*Pluvialis apricaria*), a Red Listed species (Gilbert *et al.* 2021) also listed on Annex I of the EU Birds Directive, were recorded on 34 occasions over the survey period. All observations were from the winter period (September to April). All observations related to flocks, with flock size ranging from 4 individuals to an estimate of 4,000 birds in a single flock observed during October 2022. In all, an estimated 15,358 bird flights were recorded. The range of flock sizes is as follows:

- Fifteen observations related to flocks of between 4 and 100 birds.
- Fourteen observations related to flocks of between 100 and five hundred birds.
- Five observations related to flocks of more than 1,000 birds

Golden Plover were not observed utilising the habitats within the site for feeding or roosting. They were generally concentrated in lands to the east and southeast of the wind farm site in proximity to the River Figile. An off-site observation of ca 8,000 birds was made on 25th October 2022 from this area where birds were seen circling and dropping (assumed foraging) throughout much of the day. Based on the occurrence of the large numbers of birds during the migration period it is likely that the birds may on occasion use the lands nearby the wind farm site as a staging area. The regularly observed circling flight behaviour is typical. Based on observed flight times and behaviour it is likely that the birds roost in proximity to the Derryounce lakes 4km WSW of site.

Winter Walkover

Four observations of Golden Plover were made during winter walkover surveys. All of these records were of birds flying over the site. Two records were of flocks estimated to include 1,500 birds and 200 birds respectively. Both observations were made on the 31st of October 2022 and are likely to be the same flock as recorded during VP watches in late October 2022.

Breeding Walkover

A single observation of Golden Plover was made during the breeding walkover surveys from September 2023. It comprised a flock of 20 individuals flying over the site. The autumn migration period for Golden Plover is typically September to November, and this record therefore relates to wintering birds.

The breeding and non-breeding buffer zone recommended by Goodship and Furness (2022) is 200m-500m. Based on field survey observations, only wintering and Golden Plovers on migration occur near the Site. They were not observed foraging within the 200m buffer zone of the proposed turbines and over the 8 years of observations, Golden Plovers were observed foraging within the 500m buffer once (in 2025).

Hen Harrier

Vantage Point Survey

A total of five Hen Harrier (Circus cyaneus) observations were recorded during the survey period. Flightlines were recorded in Winter 2021/2022 (November 2021), Summer 2022 (June and July 2022), and Winter 2022/2023 (February 2023). Each flightline recorded a single individual. Hen Harrier flightlines were concentrated in the east of the proposed Wind Farm site, often adjacent to areas of cutover peatland. Flightlines were recorded in the vicinity of proposed turbines T01, T03, and T08.

The two winter records indicate that the site is visited on occasion by wintering birds. A single observation (7 Feb 2023) of a bird dropping into vegetation around dusk suggested a possible roost. However, based on no further observations it is concluded that the site is not regularly used as a winter roost. Anecdotal records suggest the presence of a roost ca 3.5km from the site.
Hen Harrier were not recorded during the winter walkover, breeding walkover, or breeding raptor surveys.

In a study on Hen Harriers by University College Cork, the maximum foraging range for female Hen Harriers 7.5km and for male Hen Harriers was found to be 11.4km (Irwin et al. 2012). Goodship and Furness (2022) found that the disturbance range for Hen Harrier is 300-750m during the breeding and non-breeding seasons.

Kingfisher
There were no records of Kingfisher during Vantage Point Surveys. A single observation of Kingfisher was observed along the Cushina River in the central part of the site during December 2021 during a Winter Walkover Survey. No other observations throughout the survey period. No observations of Kingfisher during the breeding walkover surveys.

Merlin
Merlin was recorded on two occasions during the survey period on Vantage Point Surveys, once in December 2021 and once in March 2022. A single bird was recorded on each occasion. Merlin were not observed during the winter walkover, breeding walkover, or breeding raptor surveys.

Peregrine Falcon
Vantage Point Survey
Two Peregrine (*Falco peregrinus*) flightlines were recorded during the winter 2021/2022 season, one in November 2021 and the other in March 2022. Both flightlines recorded an individual bird flying within the proposed Wind Farm site boundary (eastern part of the proposed development site) in proximity to T08 and T09. Merlin were not observed during the winter walkover, breeding walkover, or breeding raptor surveys.

Whooper Swan
Vantage Point Survey
Three Whooper Swan flightlines (*Cygnus cygnus*), an Annex I listed species, were recorded over the two-year survey period. One flightline (4 birds) was recorded in November 2021, one flightline (7 birds) in December 2022, and one flightline (8 birds) in March 2023. All Whooper Swan flightlines were recorded across the northern part of the site and two of them were within rotor height. Whooper Swans were not observed foraging or roosting within the site. A flock of Whooper Swans are known to occasionally forage in farmland areas adjacent the River Figile to the southeast of the site (River Barrow (Monasterevin-Portarlington) IWEBS Site Code OS 301). Whooper Swan were not observed during winter or breeding walkover surveys.

3.2.2.4 Fish

The fish community as sampled within and immediately adjacent to the Site is dominated by coarse fish, while small numbers of brown trout and lampreys (EU Annex II species) are present.

The Cushina River was also surveyed approximately 1.8rkm upstream of the Proposed Development. At this location Atlantic Salmon, Brown Trout and Brook lamprey (all EU Annex II species) were recorded. The habitats here are noted as being very suboptimal for salmonids and lampreys. However, potential spawning habitat for lamprey at this location was found to be present.

Two locations downstream of the Site were also sampled. Both of these sampling sites were dominated by coarse fish. Small numbers of Atlantic Salmon were recorded at one of these sites in 2021 but not in 2024. In addition, Brook Lamprey was present at both locations.

The fish community recorded was again dominated by coarse fish species. The most abundant species was Minnow. Three-spined stickleback were recorded in small numbers. Small numbers of Brook lamprey were also present. Salmonids were recorded during the 2021 survey but not in the 2024 survey. This does not mean they were absent, but they are present in very low numbers in suboptimal habitat here and were not detected during the September 2024 survey. The river levels were slightly lower during the 2021 survey, and this may have affected sampling efficiency.

3.2.2.5 Invertebrates

Marsh Fritillary (*Euphydryas aurinia*) was recorded within one of the hectads (N61) with which the extreme east of the Wind Farm Site overlaps. No suitable breeding habitat was identified within the Site. As a result it is considered unlikely that this species occurs within the Site as no suitable habitat is present.

White-clawed crayfish (*Austropotamobius pallipes*) and Freshwater Pearl Mussel (*Margaritifera margaritifera*) (EU Annex II species) were not recorded within, upstream or downstream of the Site during the surveys.

Desmoulin's Whorl Snail (*Vertigo (Vertigo) moulinsiana*) was recorded at Bergin's Bridge in 1971. This bridge will be crossed by the GCR as part of the Proposed Development.

3.3 IS THE PROJECT NECESSARY TO THE MANAGEMENT OF EUROPEAN SITES

Under the Habitats Directive, projects that are directly connected with or necessary to the management of a European site do not require AA. For this exception to apply, management is required to be interpreted narrowly as nature conservation management in the sense of Article 6(1) of the Habitats Directive. This refers to specific measures to address the ecological requirements of annexed habitats and species (and their habitats) present on a site(s). The relationship should be shown to be direct and not a by-product of the project, even if this might result in positive or beneficial effects for a site(s).

The primary purpose of the proposed development is not the nature conservation management of European sites, but to develop a wind farm. Therefore, the proposed development is not considered by the Habitats Directive to be directly connected with or necessary to the management of European sites.

3.4 IDENTIFICATION OF EUROPEAN SITES

This section of the screening process identifies and describes the European sites within the potential zone of influence of the Proposed Development. The ecological receptors in Table 7 were taken into account when determining the Zone of Influence. Based on these ecological receptors and the European sites in the vicinity, an adequate Zone of Influence is assessed to be 20km. Taking a precautionary approach the Zone of Influence for the Proposed Development was set at 30km.

Table 7 Ecological receptors taken into account to inform Zone of Influence

Ecological Receptor	EU Protection	Zone of Influence	Comment/European Sites within ZOI
River Barrow and River Nore SAC	EU Habitats Directive	Downstream	Includes all aquatic Annex II species it supports e.g. Desmoulin's snail, White-Clawed Crayfish, Lamprey etc.
Eurasian Otter	Annex II EU Habitats Directive	SPA within foraging range - 20km	Max. range for foraging along rivers for male Otters is 20km. ZOI is likely to include River Barrow and River Nore SAC Otter population.
Golden Plover	Annex I EU Birds Directive		Nearest SPA with Golden Plover as SCI is located approximately 41km to the north-west, Lough Iron SPA. Wintering IWeBS site approx. 180m to the south-east. Field observations indicate feeding within approx. 1km to the east and south-east along the River Figile. Observations were predominantly in October and November suggesting this area is used as a staging area for birds on migration to main wintering grounds. No regular connectivity between the Golden Plover onsite and any SPA was identified.
Hen Harrier	Annex I EU Birds Directive	Nearest SPA – 20km	The nearest SPA for which Hen Harrier is an SCI is the Slieve Bloom SPA [004160] located 19.6km to the south-west. It is determined there is no connectivity between the proposed Wind Farm and the SPA during the breeding season as the Proposed Development Site lies outside of the breeding foraging range of the Hen Harrier. However, as Hen Harrier disperse from their upland breeding sites to lowland areas during winter there is a possibility for birds associated with SPAs to be interacting with the Proposed Wind Farm site during winter.
Kingfisher	Annex I EU Birds Directive	n/a	Nearest SPA for this species is the River Nore SPA approximately 32km to the south-west from the Proposed Development Site at the nearest point. This site is designated for Kingfisher which hold territories in the site. The species was rarely encountered during the bird surveys. This species is known to rarely move from their territory (www.birdwatchireland.ie). Hence, it can be concluded that there is no connectivity between the Proposed Development site and the Kingfisher in this SPA.

Ecological Receptor	EU Protection	Zone of Influence	Comment/European Sites within ZOI
Merlin	Annex I EU Birds Directive	n/a	This species was only very infrequently recorded at the Site. The nearest SPA for this species is 42km to the east in the Wicklow Mountains SPA [0004040]. There is no evidence of regular connectivity between the Proposed Wind Farm Site and this SPA.
Peregrine Falcon	Annex I EU Birds Directive	n/a	Nearest SPA for this species is 42km to the east in the Wicklow Mountains SPA [0004040]. The results of the bird surveys show a low use of the site by this species. Hence, there is no evidence of regular connectivity between this SPA and the Proposed Development Site for this species.
Whooper Swan	Annex I EU Birds Directive	5km	The results of the latest International Swan Census show that Whooper Swans are becoming more abundant in the midlands of Ireland than in previous years. In general, the foraging range of wintering Whooper Swan from night roosts is estimated to be less than 5km (Scottish Natural Heritage, 2016), but this can vary depending on site and landscape. There are no SPAs for Whooper Swan within 5km of the Proposed Development. The nearest SPA for Whooper Swans is Lough Iron SPA, approx. 41km to the north-west. There is no evidence of connectivity between the Proposed Wind Farm and this SPA.

Fourteen European sites occur within a 30km radius of the proposed development as presented in Table 8 and Figure 7 below. Thirteen of these sites are designated Special Areas of Conservation (SACs) designated for the protection of habitats and or species listed on Annex I and Annex II of the EU Habitats Directive. One site is a designated Special Area of Conservation designated for the protection of birds as per the EU Birds Directive.

Further details of these fourteen SACs are presented in Table 8 below where the information presented provides sufficient evidence to screen out some of the European sites from further assessment.

Table 8: Summary of European Sites within 15km of the proposed development Site.

European Site	Distance from proposed development Site	Hydrological / Ecological connectivity to proposed development Site
River Barrow and River Nore SAC (Site Code: 002162)	The SAC occurs ca 2.3km (nearest point) (approximately 6rkm hydrological downstream distance) to the south of the proposed development Site.	The Proposed Development Site lies within the catchment of the River Barrow. The Proposed Development is hydrologically connected to the River Barrow and River Nore SAC via the Cushina and Figile Rivers which discharge into the SAC ca 6rkm downstream of the proposed development. The underground cable route includes a crossing of the River Barrow within the SAC at Baylough Bridge. It is proposed to cross by means of horizontal directional drilling (HDD). Works to facilitate turbine transport to the Site are only required at one watercourse crossing where a new bridge is to be constructed at the Philipstown River near Dangean approximately 29rkm upstream of the River Barrow and River Nore SAC. The Cushina River flows east through the proposed development Site and exits from the south-east of the Site. It flows for approximately 290m from the Site before entering the Figile River which flows south. From this point, the Figile continues southwards and enters the River Barrow and River Nore SAC approx. 5.8rkm to the south-east and enters the River Barrow 450m south of this point. Various drainage ditches within the Site discharge to the Cushina River.
Mountmellick SAC (Site Code: 002141)	The SAC occurs ca 10.6km to the south-west of the proposed development Site. No ecological connection between the SAC and the wind farm Site has been identified.	This SAC comprises a disused stretch of the Grand Canal between Dangan's Bridge and Skeagh Bridge, approximately 3km east of Mountmellick, Co. Laois. No source-pathway-receptor link, hydrological or otherwise, has been identified between this SAC and the Proposed Development. This SAC does not need to be further assessed.
The Long Derries, Edenderry SAC (Site Code: 000925)	The SAC occurs ca 13.8km to the north-east of the proposed development Site. No ecological connection between the SAC and the wind farm Site has been identified.	This SAC comprises primarily of glacial gravels interspersed with loam and peat soil. It is designated for the protection of orchid-rich calcareous grasslands. The SAC drains to the Figile River and lies upstream of the proposed development. No source-pathway-receptor link, hydrological or otherwise, has been identified between this SAC and the proposed development. This SAC does not need to be further assessed.

European Site	Distance from proposed development Site	Hydrological / Ecological connectivity to proposed development Site
Slieve Bloom Mountains SPA (Site Code: 004160)	This SPA occurs ca. 19.6km to the south-west of the Proposed Development.	The Slieve Bloom Mountains SPA supports breeding Hen Harrier, the only SCI for this designated site. While the Proposed Development lies outside of the foraging range for breeding Hen Harrier (11.5km) it is within range of wintering Hen Harrier which generally disperse from the breeding grounds to lowland wintering areas. There is a potential link between wintering Hen Harriers and the SPA.
Slieve Bloom Mountains SAC (Site Code: 000412)	This SAC occurs ca. 23km to the south-west of the Proposed Development.	This Slieve Bloom Mountains SAC is designated to protect Wet Heath, Active Blanket Bogs and Alluvial Forest Annex I habitats. There is no connectivity between these habitats in the Slieve Bloom Moutnains SAC and the Proposed Wind Farm Site. No source-pathway-receptor has been identified for this SAC. This SAC does not need to be further assessed.
Pollardstown Fen SAC (Site Code: 000396)	This SAC lies approximately 15.5km to the east of the Proposed Development.	Pollardstown Fen SAC is designated for three Annex II habitats and three Annex II species. These are : [7210] Cladium Fens*, [7220] Petrifying Springs*, [7230] Alkaline Fens, [1013] Geyer's Whorl Snail (*Vertigo geyeri*), [1014] Narrow-mouthed Whorl Snail (*Vertigo angustior*) and [1016] Desmoulin's Whorl Snail (*Vertigo moulinsiana*). Although Pollardstown Fen SAC is within the same catchment as the Proposed Development (the Barrow Catchment), they are within different sub-catchments and there is no direct connectivity, hydrological or otherwise between them. No source-pathway-receptor link has been identified. This SAC does not need to be further assessed.
Mouds Bog SAC (Site Code: 002331)	This SAC lies approximately 17km to the east of the Proposed Development	This SAC has been designated for the following Qualifying Interests: [7110] Raised Bog (Active)*, [7120] Degraded Raised Bog, [7230] Alkaline Fens, [1016] Desmoulin's Whorl Snail (*Vertigo moulinsiana*), [1065] Marsh Fritillary (*Euphydryas aurinia*), and [7150] Rhynchosporion Vegetation. Part of this SAC is within the same catchment as the Proposed Development (the Barrow Catchment). However, it is within a different sub-catchment to the Proposed Development and there is no direct connectivity, hydrological or otherwise between the two sites. No source-pathway-receptor link has been identified between this SAC and the Proposed Development This SAC does not need to be further assessed.

European Site	Distance from proposed development Site	Hydrological / Ecological connectivity to proposed development Site
Raheenmore Bog SAC (Site Code: 000582)	This SAC lies approximately 20km to the northwest of the Proposed Development.	This SAC is designated for the protection of [7110] Raised Bog (Active)*, [7120] Degraded Raised Bog [7150] and Rhynchosporion Vegetation. It lies within a different catchment to the Proposed Development. there is no direct connectivity, hydrological or otherwise between the two sites. No source-pathway-receptor link has been identified between this SAC and the Proposed Development This SAC does not need to be further assessed.
Ballyprior Grassland SAC (Site Code: 002256)	This SAC lies approximately 22km to the south of the Proposed Development.	This SAC is designated for the Annex I habitat, [6210] Orchid-rich Calcareous Grassland*. There is no connectivity between this SAC and the Proposed Development Site, hydrological or otherwise. No source-pathway-receptor link has been identified. This SAC does not need to be further assessed.
Ballynafagh Lake SAC (Site Code: 001387)	This SAC lies approximately 24km to the north-east of the Proposed Development.	This SAC is designated for the following Qualifying Interests: [7230] Alkaline Fens, [1016] Desmoulin's Whorl Snail (*Vertigo moulinsiana*) and [1065] Marsh Fritillary (*Euphydryas aurinia*). Part of this SAC is within the same catchment as the Proposed Development (the Barrow Catchment). However, it is within a different sub-catchment to the Proposed Development and there is no direct connectivity, hydrological or otherwise between the two sites. No source-pathway-receptor link has been identified between this SAC and the Proposed Development. This SAC does not need to be further assessed.
Ballynafagh Bog SAC (Site Code: 000391)	This SAC lies approximately 24km to the north-east of the Proposed Development.	This SAC is within the same catchment as the Proposed Development (the Barrow Catchment). However, it is within a different sub-catchment to the Proposed Development and there is no direct connectivity, hydrological or otherwise between the two sites. No source-pathway-receptor link has been identified between this SAC and the Proposed Development. This SAC does not need to be further assessed.
Charleville Woods SAC (Site Code: 000571)	Approx. 26km to the west of the Proposed Development Site.	This SAC is designated for the protection of one Annex I habitat, 91E0] Alluvial Forests* [1016] and one Annex II species, Desmoulin's Whorl Snail (*Vertigo moulinsiana*). There is no connectivity between this SAC and the Proposed Development Site, hydrological or otherwise. No source-pathway-receptor link has been identified. This SAC does not need to be further assessed.

European Site	Distance from proposed development Site	Hydrological / Ecological connectivity to proposed development Site
Split Hills and Long Esker SAC (Site Code: 001831)	Approx. 26km to the north-west of the Proposed Development Site.	This SAC is designated for the Annex I habitat, [6210] Orchid-rich Calcareous Grassland*. There is no connectivity between this SAC and the Proposed Development Site, hydrological or otherwise. No source-pathway-receptor link has been identified. This SAC does not need to be further assessed.
Clonaslee Eskers and Derry Bog SAC (Site Code: 000859)	This SAC lies approximately 29km to the west of the Proposed Development.	This SAC is designated for the Annex I habitat, [6210] Orchid-rich Calcareous Grassland*. There is no connectivity between this SAC and the Proposed Development Site, hydrological or otherwise. No source-pathway-receptor link has been identified. This SAC does not need to be further assessed.

River Barrow and River Nore SAC [002162]

Proposed Development is located ca 2.3km north of the SAC at its nearest point and approximately 6km upstream of the SAC. NPWS (2025) describe this SAC as consisting of the freshwater stretches of the Barrow and Nore River catchments as far upstream as the Slieve Bloom Mountains, and it also includes the tidal elements and estuary as far downstream as Creadun Head in Waterford. The site passes through eight counties – Offaly, Kildare, Laois, Carlow, Kilkenny, Tipperary, Wexford and Waterford. Major towns along the edge of the site include Mountmellick, Portarlington, Monasterevin, Stradbally, Athy, Carlow, Leighlinbridge, Graiguenamanagh, New Ross, Inistioge, Thomastown, Callan, Bennettsbridge, Kilkenny and Durrow. The larger of the many tributaries include the Lerr, Fushoge, Mountain, Aughavaud, Owenass, Boherbaun and Stradbally Rivers of the Barrow, and the Delour, Dinin, Erkina, Owveg, Munster, Arrigle and King's Rivers on the Nore. This SAC contains excellent examples of a number of Annex I habitats, including the priority habitats Alluvial Forests [91E0] and Petrifying Springs [7220]. The site also supports populations of several important animal species, some of which are listed on Annex II of the Habitats Directive or listed in the Irish Red Data Book. These include Atlantic Salmon (*Salmo salar*), Otter (*Lutra lutra*), Freshwater Pearl Mussel (*Margaritifera margaritifera*) and White-Clawed Crayfish (*Austropotamobius pallipes*). The SAC is also recognised as being of ornithological importance for a number of EU Birds Directive Annex I species including Whooper Swan, Peregrine and Kingfisher. Nationally important numbers of Golden Plover and Bar-tailed Gowit are found in the SAC during the winter.

Recognised Threats and Vulnerabilities

NPWS (2025) note that the land use within the SAC consists mainly of agricultural activities – mostly intensive in nature and principally grazing and silage production. Slurry is spread over much of the area. Arable crops are also grown. The spreading of slurry and fertiliser poses a threat to the water quality of the salmonid river and to the populations of E.U. Habitats Directive Annex II animal species within the site. Many of the woodlands along the rivers in the SAC belong to old estates and support many non-native species. Fishing is a main tourist attraction along stretches of the main rivers and their tributaries and there are a number of Angler Associations, some with a number of beats. Fishing stands and styles have been erected in places. Both commercial and leisure fishing takes place on the rivers. Other recreational activities such as boating, golfing and walking, particularly along the Barrow towpath, are also popular. There is a golf course on the banks of the Nore at Mount Juliet and GAA pitches on the banks at Inistioge and Thomastown. There are active and disused sand and gravel pits throughout the SAC. Several industrial developments, which discharge into the river, border the site. New Ross is an important shipping port.

The main threats to the site and current damaging activities include high inputs of nutrients into the river system from agricultural run-off and several sewage plants, over-grazing within the woodland areas, and invasion by non-native species, for example Cherry Laurel (*Prunus laurocerasus*) and Rhododendron (*Rhododendron ponticum*). The water quality of the site remains vulnerable. Good quality water is necessary to maintain the populations of the Annex II animal species listed above. Good quality is dependent on controlling fertilisation of the grasslands, particularly along the Nore. It also requires that sewage be properly treated before discharge.

Drainage activities in the catchment can lead to flash floods which can damage the many Annex II species present. Capital and maintenance dredging within the lower reaches of the system pose a threat to migrating fish species such as lamprey and shad. Land reclamation also poses a threat to the salt meadows and the populations of legally protected species therein.

3.4.1.1 Qualifying Interests

The site has been selected for the protection of those habitats and species listed in Table 9.

Table 9: Qualifying Interests (QIs) of the River Barrow and River Nore SAC (source: www.npws.ie)

EU Annex I Habitats	EU Annex II Species
Estuaries [1130]	Desmoulin's Whorl Snail (*Vertigo moulinsiana*) [1016]
Tidal Mudflats and Sandflats [1140]	Freshwater Pearl Mussel (*Margaritifera margaritifera*) [1029]
Reefs [1170]	White-clawed Crayfish (*Austropotamobius pallipes*) [1092]
Salicornia and other annuals colonising mud and sand [1310]	Sea Lamprey (*Petromyzon marinus*) [1095]
Atlantic Salt Meadows (Glauco-Puccinellietalia maritimae) [1330]	Brook Lamprey (*Lampetra planeri*) [1096]
Mediterranean Salt Meadows (Juncetalia maritimi) [1410]	River Lamprey (*Lampetra fluviatilis*) [1099]
Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]	Twaite Shad (*Alosa fallax fallax*) [1103]
European Dry Heaths [4030]	Atlantic Salmon (*Salmo salar*) [1106]
Hydrophilous Tall Herb [6430]	Otter (*Lutra lutra*) [1355]
Petrifying Springs with tufa formation (Cratoneurion) * [7220]	Killarney Fern (*Trichomanes speciosum*) [1421]
Old sessile oak woods with ***Ilex*** and ***Blechnum*** in the British Isles [91A0]	
Alluvial forests with ***Alnus glutinosa*** and ***Fraxinus excelsior*** (Alno-Padion, Alnion incanae, Salicion albae)* [91E0]	

*Denotes Priority Habitat

The Slieve Bloom Mountains SPA [004160]

The Proposed Wind Farm lies approximately 19.6km to the north-east of this SPA. The NPWS (2015) site synopsis describes the site as having a near continuous ridge mountain blanket bog, with wet and dry heaths also well represented. It notes that this SPA is one of the strongholds for Hen Harrier in the country and is the easterly, regular population. The SPA is also a traditional breeding site for Peregrine Falcon and Merlin are also known to breed within the SPA.

Recognised Threats and Vulnerabilities

There are no threats and vulnerabilities listed for this SPA. However, general pressures and threats are identified in NPWS (2022) "*Conservation Objectives Supporting Document: Breeding Hen Harrier*". This document identifies the threats (within its breeding range) considered of most significance to the conservation of Hen Harrier in Ireland to be linked to forestry, agriculture and wind energy developments.

3.4.1.2 Qualifying Interests

The Slieve Bloom Mountains SPA has one Qualifying Interest:
A082 Hen Harrier (*Circus cyaneus*)

3.4.2 Conservation Objectives

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. These habitats and species are listed in the Habitats and Birds Directives and Special Areas of Conservation and Special Protection Areas are designated to afford protection to the most vulnerable of them. These two designations are collectively known as the Natura 2000 network.

Favourable conservation status of a habitat is achieved when:

- its natural range, and area 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.

The favourable conservation status of a species is achieved 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

3.4.2.1 Connectivity *Between the Proposed Development and European Sites*

3.4.2.1.1 River Barrow and River Nore SAC

The proposed development occurs 2.3km north of the boundary of the River Barrow and River Nore SAC (see Figure 7 below). The proposed development is located within the hydrological catchment of the SAC and therefore drainage and associated watercourses provide a potential impact pathway from the proposed development site to the SAC which is designated for a range of aquatic habitats and species.

3.4.2.1.2 The Slieve Bloom Mountains SPA

The Proposed Development lies approximately 19.6km to the north-east of this SPA. The SPA is designated for Hen Harrier (*Circus cyaneus*). This species is known to move from its upland breeding territory to lowland wintering sites around the coast and midlands of Ireland. Hen Harrier have been observed using the Site. Hence, there is a potential source-pathway-link between this SPA and the Proposed Development.

All other identified European sites have been screened out due the absence of any connectivity (see Table 8 above).

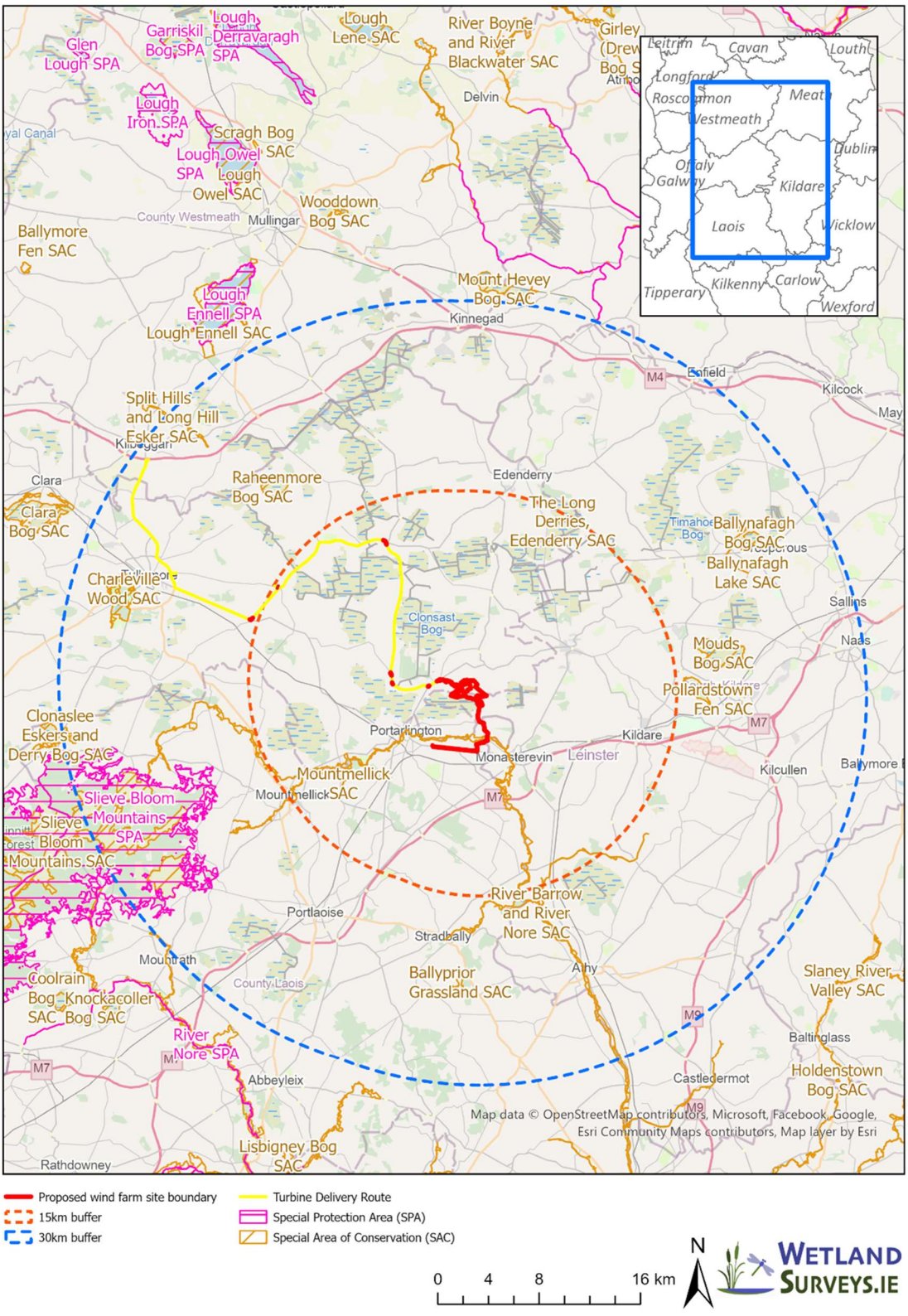

Figure 7: European sites within 15km and 30km of the proposed development site.

3.5 IDENTIFICATION AND DESCRIPTION OF POTENTIAL IMPACTS

Ecological receptors of the potentially affected European sites (River Barrow and River Nore SAC and the Slieve Blooms SPA) that are sensitive to likely impacts from the proposed development habitats and species for which the site is designated (see Section 3.4 above) are assessed here.

The characteristics, location, and scale of the development together with the ecological requirements of the conservation interests of the European site potentially affected have been taken into consideration in identifying potential impacts.

Elements of the proposed Project with Potential to Give Rise to Significant Effects

Considering the characteristics of the development as described in Section 3.1 above, it is considered that the following activities have the potential to give rise to significant effects:

3.5.1.1 Construction Phase

- Construction of turbines, site access tracks, construction compound, and other site infrastructure can result in habitat loss, and disturbance to resident species of fauna.
- Habitat loss can result in displacement of fauna, including EU Habitats Directive Annex II and Birds Directive Annex I species (e.g. Hen Harrier).
- Noise, vibration, and light during construction can lead to disturbance of resident fauna.
- Excavation and earthworks associated with the construction phase can give rise to sediment run-off and potentially impact aquatic receptors downstream.
- Potential run-off of hydrocarbons or other harmful substances can lead to deterioration of downstream water quality.
- Movement, management, and storage of unconsolidated material can give rise to pollution events in surrounding aquatic receptors. This can occur should material become entrained by surface water runoff during site works.
- Accidental spillages of cementitious material, fuels or other harmful substances can impact on sensitive aquatic ecosystems.

3.5.1.2 Operational Phase

- Operation of nine turbines could present a collision risk to bird species that use (or fly through) the proposed wind farm site.
- Operation of machinery and personnel has the potential to cause disturbance to sensitive fauna resident in the area due to noise, vibration, light etc.
- The presence of fencing around the perimeter of the Wind Farm may displace fauna species from utilising the proposed development site;
- Routine maintenance of the Wind Farm and associated electricity substation compound may cause temporary disturbance to wildlife; and
- Artificial lighting could potentially impact on resident mammal species, including Otter.

3.5.1.3 Decommissioning Phase

- Site works during decommissioning could give rise to similar type and scale of impacts as the construction phase.

3.5.2 Direct, Indirect or Secondary Impacts

The likelihood of significant effects through the implementation of the Proposed Wind Farm Development can be assessed under the following headings (as outlined by guidelines issued by the European Commission (2001)):

- Loss / reduction of habitat area.
- Disturbance/displacement to key species.
- Direct collision.
- Habitat or species fragmentation.
- Reduction in species density.
- Changes in key indicators of conservation value such as decrease in water quality and quantity.

In determining the potential for significant effects, the conservation requirements of the Qualifying Interests of each European site are considered together with the characteristics of the proposed development. The outcome of the assessment is described in the following paragraphs in relation to each site with reference to the different types of potential impact outlined above.

3.5.3 Identification of Potential Impacts

The potential for impacts to occur through the implementation of the proposed development can be assessed under the following headings:

- Loss / reduction of habitat area:

Total expected habitat loss from the Proposed Development is presented in Table 10 and Table 11.

Table 10 Expected habitat loss arising from the Proposed Development

Habitat Code	Area of permanent habitat loss (ha)
GA1	4.79
GA1 / GS4	3.27
GS4	0.178
PB4 (includes some PB4/GS4)	2.39
WD4	0.227
WN7	0.2
Total Permanent Habitat Loss	**11.055**

Table 11 Expected temporary habitat loss arising from the Proposed Development

Habitat Code	Area of temporary habitat loss (ha)
GA1	1.1
GA1 / GS4	2.11
PB4 (includes some PB4/GS4)	4.817
WD4	3.94
WN7	1.915
Total Temporary Habitat Loss	**13.882**

Direct habitat loss within a European site will not occur as the Proposed Development is located more than 2.3km (and approximately 6rkm downstream) from the nearest European site (River Barrow and River Nore SAC). Terrestrial habitats directly affected through either permanent or temporary habitat loss by the proposed development do not correspond with any EU Habitats Directive (HD) Annex I habitats.

Hen Harrier were observed occasionally flying over the Proposed Development Site during the survey period. Flightlines were concentrated near to areas of cutover peatland. There is a possibility, based on a single observation (on 7th Feb 2023) of one bird possibly roosting within the Site, that the Proposed Development Site is sometimes used as a wintering roost. However, the infrequency of such observations indicates that this, if it is a winter roost, is a very infrequently used one.

The winter foraging habitat of Hen Harrier includes cutover bog (PB4), semi-natural and non-intensively managed grassland (within the Site this corresponds to GA1, GA1/GS4 and GS4). Hence, potential permanent loss of winter foraging habitat for Hen Harrier is expected to be approximately 5.84ha. There is expected to be a further temporary loss of 6.93ha, some of which may revert to suitable foraging habitat during the operational phase of the Proposed Development. The following habitats are considered suitable foraging habitat for Hen Harrier within the Site: GA1/GS4, GS4, PB1, PB4, PB4/GS4 and PB4/WN7 of which there is a total of 103.5ha within the Site. The Proposed Development will result in the permanent habitat loss of approximately 5.84ha of these habitats which is approx. 5.6% of the available suitable habitat within the Site. It is concluded, that, due to the high proportion of remaining suitable habitat and the low frequency of Hen Harrier observations, that habitat loss will not have a significant effect on this species, and hence will not have a likely significant effect on the Conservation Objectives of the Slieve Bloom Mountains SPA.

- Disturbance to key species:

Based on the risk to water quality and construction works at proposed river crossings, it is determined that there is potential for the Proposed Development to result in disturbance to Otter and other QI species of the downstream River Barrow and River Nore SAC. No evidence of breeding or resting sites were found within the Proposed Development and only two signs of Otter presence were found at one location along the Cushina River at the edge of the Site. Results of the Otter survey conducted onsite indicate that the Cushina River is used only infrequently by Otter and no evidence of usage at the Philipstown crossing was found. However, records of Otter spraint and slides were recorded in 2015 (NBDC online records) along the Philipstown River both upstream and downstream of the proposed TDR crossing. It is possible that the river is still occasionally used. In addition, the Philipstown River has been assessed as being of 'Poor' ecological status or potential following the most recent WFD monitoring (River Waterbody WFD Status 2016-2021) which indicates that it does not provide suitable foraging habitat for Otter. Hence it is unlikely that Otter use this river with great frequency. A 50m set-back of all development from all natural watercourses has been applied (except at crossing points). Given the low usage of the Site by Otter as determined from the baseline, significant disturbance effects are not considered likely.

While is some potential to cause disturbance to Hen Harrier (the SCI of the Slieve Blooms SPA), it is considered that the low frequency of observations onsite means that any disturbance during construction is likely to be a short-term, insignificant effect on this species.

During the Operational phase of the Proposed Wind Farm there is the potential for the wind turbines to present a barrier-effect for Hen Harriers. This could possibly result in avoidance behaviour of the turbines which would increase energy output of foraging Hen Harriers. However, the paucity of observations confirm that the Site is not a frequent hunting ground of either breeding or wintering Hen Harriers. Hence, there are no likely significant effects on foraging Hen Harriers and hence there are no likely significant effect on the conservation objectives of the Slieve Bloom Mountains SPA.

- Habitat or species fragmentation:

The proposed development site is in an agricultural area deemed to be of relatively low ecological importance. The proposed development will not give rise to fragmentation of any semi-natural habitat within European sites or of any habitat used by a European protected species. The impacts on the rivers within the Proposed Development are not expected to cause fragmentation of habitat as where new crossings are proposed, these will be by clearspan bridges which allow for the continued use of the riparian habitat. These clear-span bridges will leave the natural bed and banks undisturbed. It is therefore concluded that there is no potential for fragmentation impacts on any of the three SACs which have been identified.

- Reduction in species density:

A number of QI species of the River Barrow and River Nore SAC were recorded from the Cushina River, namely Otter, Brook Lamprey and Atlantic Salmon. The Proposed Development presents a risk to water quality within the Cushina River and, if water quality deteriorated, this could result in a reduction in density of these QI species.

- Direct Collision/Mortality

The Collision Risk Modelling (CRM) report (see Appendix 13) which was conducted to inform the Ornithology Chapter of the EIAR, predicts that there will be 0.001 collisions with Hen Harrier per year. This predicts that one Hen Harrier would collide with the turbines every 1,000 years. Hence, it is concluded that the operation of the Proposed Wind Farm will not have a likely significant effect the Conservation Objectives of the Slieve Blooms SPA.

Direct mortality of any of the Annex II species of the River Barrow and River Nore SAC are not expected as there will be 50m set-back buffers from the river and no instream works in either the Cushina or Philipstown Rivers.

- Changes in key indicators of conservation value:

A principal indicator of conservation value within the River Barrow and River Nore SAC is hydrological integrity and water quality (and quantity). Should the proposed development give rise to significant aquatic pollution, there is potential for this to have a likely significant effect on water quality in the SAC via hydrological connectivity between the proposed development site and the SAC. Drains and watercourses that occur in proximity to the development provide a potential impact pathway whereby potential pollutants could be transported from the proposed development to the SAC. There is therefore potential for impacts on downstream waterbodies and associated aquatic habitats and species of the River Barrow and River Nore SAC to occur. No such pathway was identified for the Slieve Blooms SPA. A further description of the potential impacts that could arise from the proposed development relevant to the Qualifying Interests of the River Barrow and River Nore SAC is provided in the following paragraphs.

3.6 DESCRIPTION OF LIKELY IMPACTS

Potential impacts would mainly relate to the effects on aquatic communities from sediment inputs during construction. Sediment loss from the construction site could arise from earth works associated with: access tracks, turbine foundation works, trenching (site ducting, internal cable trenches, proximity to drain and watercourse crossings), and installation of site drainage features and the clear-span bridge over the Cushina River. There is also some potential for sediment release associated with machinery movements during the construction and disassembly of the turbines and associated infrastructure.

Excessive sediment losses to downstream watercourses could locally give rise to increased suspended solids and bottom sedimentation in small streams, and could negatively affect aquatic habitat quality through smothering of macroinvertebrate habitats and fish nursery areas when deposited. Elevated concentrations of suspended solids within the water column also reduce water quality and are potentially damaging to gills of salmonid fish and/or benthic macroinvertebrates. Lamprey nursery areas are unlikely to be adversely affected by small amounts of instream sedimentation as juveniles (ammocoetes) inhabit areas of silt deposition during their nursery stage. However, lampreys do depend on clean gravels for spawning, similar to salmonids. Such negative impacts on these Annex II species would correspond to a likely significant effect on the River Barrow and River Nore SAC.

The nature of the works means there is also potential for the loss of hydrocarbons (diesel, oils and hydraulic fluid) and/or wet concrete during the construction phase. Hydrocarbon spills from poorly secured or non-bunded fuel storage areas, leaks from vehicles or plant or spills during re-fuelling can all lead to the escape of hydrocarbons from construction sites to watercourses. These spills can pose a risk of fish tainting downstream or, if large enough, fish and invertebrate kills. Concrete spills, or release of concrete wash-out or wheel-wash water to nearby watercourses is potentially toxic to instream fauna, and can cause fish and invertebrate kills downstream, if in high concentration. Salmonids and lamprey were recorded circa 50m downstream of the proposed development Site (as part of the Aquatic Ecology surveys that were conducted to inform the EIAR – see Appendix 4). Pre-mitigation it is considered that there is a likely, significant effect on downstream water quality and surface water-dependent habitats and species of the River Barrow and River Nore SAC.

The nature of the works also have the potential to have a significant effect on the flow regime of the surface water. The bridges over the Cushina and Philipstown Rivers are designed in line with consultation feedback and in accordance with Inland Fisheries Ireland (IFI) 2016 'Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters' and NRA (2008) 'Guidelines for the Crossing of Watercourses During the Construction of Road Schemes'. With such a suitably designed bridge, there will be no likely effect on flows within watercourses and the risk of flooding will not be increased as a result of the proposed bridge. In the long-term, the effect on the surface water flow was assessed to be a likely, insignificant effect.

3.7 OUTCOME OF SCREENING

The outcome of screening is presented in relation to the relevant European sites in the following paragraphs.

3.7.1 River Barrow and River Nore SAC [002162]

Following due consideration to the scale, location, and characteristics of the proposed development together with the ecological requirements of the habitats and species of the SAC it has been established that there is potential for significant effects on the conservation status of the River Barrow and River Nore SAC. The hydrological connectivity between the proposed development site and the SAC provides a pathway for potential impacts on aquatic habitats and species of the SAC. Likely significant effects on the qualifying features of the SAC therefore cannot be ruled out and require further consideration in the Appropriate Assessment. The potential for significant effects on individual Qualifying interests of the SAC is summarised in Table 12 below. It is concluded that the River Barrow and River Nore SAC is screened in for Appropriate Assessment and potential significant effects are considered further in Section 4 below.

Table 12: Outcome of AA Screening on individual Qualifying Interest features of the River Barrow and River Nore SAC

EU Annex I Habitat [EU Code]	Potential for likely significant effects (in the absence of mitigation)	Potential for significant effects
Estuaries [1130]	No – these habitats are restricted to the tidal sections of the River Barrow and the River Nore located approximately 99km downstream of the development site at the nearest point. Considering distance and likely dispersal of any potential pollutants, there is no potential for likely significant effects.	No
Tidal Mudflats and Sandflats [1140]		
Reefs [1170]		
Salicornia and other annuals colonising mud and sand [1310]		
Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]		
Mediterranean salt meadows (Juncetalia maritimi) [1410]		
Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]	In the absence of mitigation, the proposed development may potentially lead to a local deterioration of in local water quality. The main area of this habitat for which the SAC is designated is located in the Kings tributary of the River Nore. It is noted that the full distribution of this habitat in the SAC is not currently known (NPWS 2025). This habitat occurs in areas of good water quality, the water quality in the Figile sub-catchment is not sufficient to support this habitat type. However, pre-mitigation the effects on the water dependent designated site (River Barrow and River Nore SAC) due to potential effects on water quality are considered negative, indirect, short term and significant (see Appendix 11). Hence, likely significant effects on this QI cannot be ruled out at this stage.	Yes
European Dry Heaths [4030]	This habitat has not been mapped within the SAC but is indicated as occurring on the steep, free-draining, river valley sides especially of the River Barrow and tributaries in the foothills of the Blackstairs Mountains (NPWS, 2025). Considering the characteristics and requirements of the habitat and its distance from the Proposed Wind Farm, it is concluded that there is no potential for significant effects.	No
Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]	This habitat has not been mapped within the SAC and its distribution within the SAC is currently unknown. NPWS (2025) notes that it is considered to occur in association with riparian woodlands, unmanaged river islands and in narrow bands along the floodplain of slow-flowing stretches of river. Pre-mitigation the effects on the water dependent designated site (River Barrow and River Nore SAC) due to potential effects on water quality are considered negative, indirect, short term and significant (see Appendix 11). Hence, likely significant effects on this QI cannot be ruled out at this stage.	Yes
Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]	This terrestrial woodland habitat type does not occur in proximity to the proposed development site (the nearest is approximately 96km downstream of the proposed development Site). This type of woodland is not dependent on surface water quality. Considering the nature and scale of the proposed development, the requirements of this habitat type, and the distance removed from the development site, it is concluded that there is no potential for significant effects.	No

EU Annex I Habitat [EU Code]	Potential for likely significant effects (in the absence of mitigation)	Potential for significant effects
Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]	This terrestrial woodland habitat types do not occur in proximity to the proposed development site (the nearest Alluvial forest is approximately 26km downstream of the proposed development Site). However, considering that without mitigation there is potential for likely effects on the surface water quality, there is potential for effects on alluvial forests. Considering the nature and scale of the proposed development, the requirements of this habitat type, and the likely significant effects pre-mitigation on surface water quality, likely significant effects for this habitat cannot be ruled out at this stage.	Yes
Petrifying Springs with tufa formation (Cratoneurion)* [7220]	The exact distribution of this habitat is not mapped within the SAC (NPWS 2025) and its extent within the SAC remains unknown. This Annex I habitat was not present within the proposed Wind Farm Site. The groundwater vulnerability of the site is mapped as low-moderate. This groundwater fed habitat is very sensitive to changes in water quality and quantity and land management (Denyer *et al.*, 2023). The unmitigated effects on groundwater are assessed as ranging from imperceptible to slight/moderate (see Appendix 12). Hence, likely significant effects cannot be ruled out at this stage.	Yes
Vertigo moulinsiana (Desmoulin's Whorl Snail) [1016]	This species is restricted to calcareous wetlands and is threatened from habitat loss. The nearest population identified in the SAC Conservation Objectives document (NPWS 2025) is near Borris, Co. Carlow and is sufficiently removed approximately 70km downstream of the proposed Wind Farm Site such that any likely significant effects on water quality are likely to have dispersed at this distance. Suitable habitat for this species was not identified within the Site. Old records within the area exist but are not associated with the SAC, instead they are associated with the canal network.	No
Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]	This species is sensitive to effects on water quality. However, no impact pathways were identified between the Proposed Wind Farm Site and the listed populations of the SAC in Mountain River, Ballyroughan Little and the River Nore) (NPWS, 2025) due to its occurrence within different sub-catchments. Aquatic ecology surveys of the Cushina and Figile river found no evidence of FWPM. This species is screened out due to no potential for likely significant effects.	No
Austropotamobius pallipes (White-clawed Crayfish) [1092]	White-clawed crayfish have been recorded along almost the entire length of non-tidal water within the River Barrow and River Nore from the most upstream points at Clarahill Crossroads, near Clonaslee and downstream of Camross to Graiguenamanagh and Thomastown (NPWS 2025). This species is dependent on good water quality and high dissolved oxygen. Even though this species was not recorded at any of the sites surveyed as part of the aquatic ecology surveys, it is screened in due to potential risk to water quality downstream of the development site that could potentially give rise to significant effects.	Yes
Petromyzon marinus (Sea Lamprey) [1095]	The range in the Barrow catchment is limited to the lower reaches due to barriers to migration. – therefore is not present in these rivers of the Upper Barrow catchment. Due to the distance (99rkm) to the upper reaches of the River Barrow and the more local likely significant effects on water quality from the Proposed Development, likely significant effects on this species can be ruled out at this stage	No

EU Annex I Habitat [EU Code]	Potential for likely significant effects (in the absence of mitigation)	Potential for significant effects
Lampetra planeri (Brook Lamprey) [1096]	The exact distribution of these species is not mapped within the SAC (NPWS 2025). Lamprey depend on clean gravels on the river bed for breeding. Potential effects due to sedimentation of spawning beds cannot be ruled out.	Yes
Lampetra fluviatilis (River Lamprey) [1099]		
Salmo salar (Salmon) [1106]	This species was recorded in the Cushina River during the Aquatic Ecology surveys conducted to inform the EIAR (see Appendix 4) and so can be assumed to pass through the proposed development Site on their upward and downward spawning migrations. The habitats within the Cushina and Figile surveyed were assessed as being sub-optimal for Salmon. The species is dependent on good water quality and clean gravel habitats for spawning. Given the hydrological connection between the proposed development Site and the SAC and the presence of Salmon within the Cushina upstream of the Site, potential effects due to sedimentation or water pollution cannot be ruled out.	Yes
Lutra lutra (Otter) [1355]	Evidence of Otter was recorded within the proposed development Site along the River Cushina. Otter are likely to occur in the Figile River and other rivers connected downstream of the development site, including the River Barrow. Considering the nature and scale of the proposed development, and the hydrological connectivity between the proposed development and the SAC, pre-mitigation the proposed development could potentially lead to a deterioration of water quality downstream which could cause significant effects on foraging habitat for Otter. No evidence of Otter was found in Philipstown River in the vicinity of the proposed new bridge. The low fisheries potential and low ecological status of this river indicates the low potential for Otter to occur at this locations and significant effects here are not likely.	Yes
Twaite Shad (*Alosa fallax fallax*) [1103]	This species is mostly confined to the tidal reaches of the River Barrow and River Nore within the SAC. Considering the distance removed from the development and the likelihood of any pollutants arising from the Proposed Development to be dispersed at this downstream distance, site it is concluded that potential significant effects on the species habitat are not likely.	No

CONCLUSION OF AA SCREENING

In conclusion, there is no likelihood of significant effects on the following European Sites

- Mountmellick SAC [002141]
- The Long Derries, Edenderry SAC [000925]
- Slieve Bloom Mountains SPA [004160]
- Pollardstown Fen SAC [000396]
- Mouds Bog SAC [002331]
- Raheenmore Bog SAC [000582]
- Ballyprior Grassland SAC [002256]
- Ballynafagh Lake SAC [001387]
- Ballynafagh Bog SAC [000391]
- Charleville Woods SAC [000571]
- Split Hills and Long Esker SAC [001831]
- Clonaslee Eskers and Derry Bog SAC [000859]

The above sites have been screened out from further assessment.

However, the likelihood of significant effects cannot be excluded for the River Barrow and River Nore SAC [002162]. It is the considered view of the authors that Stage 2 Appropriate Assessment is required for the River Barrow and River Nore SAC [002162].

Further consideration of this SAC and the likely significant effects in the form of Stage 2 Appropriate Assessment is presented in Section 4 below.

4 STAGE 2: APPROPRIATE ASSESSMENT

This section of the NIS assesses the direct and indirect impacts of the proposed development on the European sites which fall within its zone of influence. For each of these European sites, the assessment below sets out the relevant ecological baseline information, the analysis of the potential impacts, the qualifying interests/special conservation interests at risk of these potential impacts, in view of the sites' conservation objectives, and the mitigation measures (if required) to avoid/reduce the effects of any potential impacts.

4.1 RIVER BARROW AND RIVER NORE SAC

As outlined in the previous sections, one European site, the River Barrow and River Nore SAC [Site Code: 002162], was identified as being potentially impacted by the proposed development. The SAC occurs ca 6rkm downstream to the south of the Proposed Development Site. The presence of drains and watercourses within and adjoining the proposed development site provides a potential impact pathway whereby pollutants could give rise to significant effects on the SAC. These effects are summarised below in Table 13.

Table 13 Summary of likely significant effects on the screened-in European site, the River Barrow and River Nore SAC.

EU Annex I Habitat [EU Code]	Potential for likely significant effects (in the absence of mitigation)	Potential for significant effects
Estuaries [1130]	No – these habitats are restricted to the tidal sections of the River Barrow and the River Nore located approximately 99km downstream of the development site at the nearest point. Considering distance and likely dispersal of any potential pollutants, there is no potential for likely significant effects.	No
Tidal Mudflats and Sandflats [1140]		
Reefs [1170]		
Salicornia and other annuals colonising mud and sand [1310]		
Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]		
Mediterranean salt meadows (Juncetalia maritimi) [1410]		
Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]	In the absence of mitigation, the proposed development may potentially lead to a local deterioration of in local water quality. The main area of this habitat for which the SAC is designated is located in the Kings tributary of the River Nore. It is noted that the full distribution of this habitat in the SAC is not currently known (NPWS 2025). This habitat occurs in areas of good water quality, the water quality in the Figile sub-catchment is not sufficient to support this habitat type. However, pre-mitigation the effects on the water dependent designated site (River Barrow and River Nore SAC) due to potential effects on water quality are considered negative, indirect, short term and significant (see Appendix 11). Hence, likely significant effects on this QI cannot be ruled out at this stage.	Yes
European Dry Heaths [4030]	This habitat has not been mapped within the SAC but is indicated as occurring on the steep, free-draining, river valley sides especially of the River Barrow and tributaries in the foothills of the Blackstairs Mountains (NPWS, 2025). Considering the characteristics and requirements of the habitat and its distance from the Proposed Wind Farm, it is concluded that there is no potential for significant effects.	No
Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]	This habitat has not been mapped within the SAC and its distribution within the SAC is currently unknown. NPWS (2025) notes that it is considered to occur in association with riparian woodlands, unmanaged river islands and in narrow bands along the floodplain of slow-flowing stretches of river. Pre-mitigation the effects on the water dependent designated site (River Barrow and River Nore SAC) due to potential effects on water quality are considered negative, indirect, short term and significant (see Appendix 11). Hence, likely significant effects on this QI cannot be ruled out at this stage.	Yes

EU Annex I Habitat [EU Code]	Potential for likely significant effects (in the absence of mitigation)	Potential for significant effects
Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]	This terrestrial woodland habitat type does not occur in proximity to the proposed development site (the nearest is approximately 96km downstream of the proposed development Site). This type of woodland is not dependent on surface water quality. Considering the nature and scale of the proposed development, the requirements of this habitat type, and the distance removed from the development site, it is concluded that there is no potential for significant effects.	No
Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]	This terrestrial woodland habitat types do not occur in proximity to the proposed development site (the nearest Alluvial forest is approximately 26km downstream of the proposed development Site). However, considering that without mitigation there is potential for likely effects on the surface water quality, there is potential for effects on alluvial forests. Considering the nature and scale of the proposed development, the requirements of this habitat type, and the likely significant effects pre-mitigation on surface water quality, likely significant effects for this habitat cannot be ruled out at this stage.	Yes
Petrifying Springs with tufa formation (Cratoneurion)* [7220]	The exact distribution of this habitat is not mapped within the SAC (NPWS 2025) and its extent within the SAC remains unknown. This Annex I habitat was not present within the proposed Wind Farm Site. The groundwater vulnerability of the site is mapped as low-moderate. This groundwater fed habitat is very sensitive to changes in water quality and quantity and land management (Denyer *et al.*, 2023). The unmitigated effects on groundwater are assessed as ranging from imperceptible to slight/moderate (see Appendix 12). Hence, likely significant effects cannot be ruled out at this stage.	Yes
Vertigo moulinsiana (Desmoulin's Whorl Snail) [1016]	This species is restricted to calcareous wetlands and is threatened from habitat loss. The nearest population identified in the SAC Conservation Objectives document (NPWS 2025) is near Borris, Co. Carlow and is sufficiently removed approximately 70km downstream of the proposed Wind Farm Site such that any likely significant effects on water quality are likely to have dispersed at this distance. Suitable habitat for this species was not identified within the Site. Old records within the area exist but are not associated with the SAC, instead they are associated with the canal network.	No
Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]	This species is sensitive to effects on water quality. However, no impact pathways were identified between the Proposed Wind Farm Site and the listed populations of the SAC in Mountain River, Ballyroughan Little and the River Nore) (NPWS, 2025) due to its occurrence within different sub-catchments. Aquatic ecology surveys of the Cushina and Figile river found no evidence of FWPM. This species is screened out due to no potential for likely significant effects.	No
Austropotamobius pallipes (White-clawed Crayfish) [1092]	White-clawed crayfish have been recorded along almost the entire length of non-tidal water within the River Barrow and River Nore from the most upstream points at Clarahill Crossroads, near Clonaslee and downstream of Camross to Graiguenamanagh and Thomastown (NPWS 2025). This species is dependent on good water quality and high dissolved oxygen.	Yes

EU Annex I Habitat [EU Code]	Potential for likely significant effects (in the absence of mitigation)	Potential for significant effects
	Even though this species was not recorded at any of the sites surveyed as part of the aquatic ecology surveys, it is screened in due to potential risk to water quality downstream of the development site that could potentially give rise to significant effects.	
Petromyzon marinus (Sea Lamprey) [1095]	The range in the Barrow catchment is limited to the lower reaches due to barriers to migration. – therefore is not present in these rivers of the Upper Barrow catchment. Due to the distance (99rkm) to the upper reaches of the River Barrow and the more local likely significant effects on water quality from the Proposed Development, likely significant effects on this species can be ruled out at this stage.	No
Lampetra planeri (Brook Lamprey) [1096]	The exact distribution of these species is not mapped within the SAC (NPWS 2025). Lamprey depend on clean gravels on the river bed for breeding. Potential effects due to sedimentation of spawning beds cannot be ruled out.	Yes
Lampetra fluviatilis (River Lamprey) [1099]		
Salmo salar (Salmon) [1106]	This species was recorded in the Cushina River during the Aquatic Ecology surveys conducted to inform the EIAR (see Appendix 4) and so can be assumed to pass through the proposed development Site on their upward and downward spawning migrations. The habitats within the Cushina and Figile surveyed were assessed as being sub-optimal for Salmon. The species is dependent on good water quality and clean gravel habitats for spawning. Given the hydrological connection between the proposed development Site and the SAC and the presence of Salmon within the Cushina upstream of the Site, potential effects due to sedimentation or water pollution cannot be ruled out.	Yes
Lutra lutra (Otter) [1355]	Evidence of Otter was recorded within the proposed development Site along the River Cushina. Otter are likely to occur in the Figile River and other rivers connected downstream of the development site, including the River Barrow. Considering the nature and scale of the proposed development, and the hydrological connectivity between the proposed development and the SAC, pre-mitigation the proposed development could potentially lead to a deterioration of water quality downstream which could cause significant effects on foraging habitat for Otter. No evidence of Otter was found in Philipstown River in the vicinity of the proposed new bridge. The low fisheries potential and low ecological status of this river indicates the low potential for Otter to occur at this locations and significant effects here are not likely.	Yes
Twaite Shad (*Alosa fallax fallax*) [1103]	This species is mostly confined to the tidal reaches of the River Barrow and River Nore within the SAC. Considering the distance removed from the development and the likelihood of any pollutants arising from the Proposed Development to be dispersed at this downstream distance, site it is concluded that potential significant effects on the species habitat are not likely.	No

4.1.1 Conservation Objectives

As described in Section 3.4.1 above detailed site-specific conservation objectives (SSCOs, version 2) for the SAC have been published (NPWS 2025).

The SSCOs for the following Qualifying Interest features of the SAC for which likely significant effects cannot be ruled out are presented in Table 14.

Table 14: Overall SSCOs and associated attributes and targets for relevant Qualifying Interests (NPWS 2025).

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, which is defined by the following list of attributes and targets:		
Attribute	**Measure**	**Target**
Habitat Distribution	Occurrence	No decline, subject to natural processes
Habitat Area	Kilometers	Area stable or increasing, subject to natural processes
Hydrological regime: river flow	Metres per second	Maintain appropriate hydrological regimes
Hydrological regime: groundwater discharge	Metres per second	The groundwater flow to the habitat should be permanent and sufficient to maintain tufa formation
Substratum composition: particle size range	Millimetres	The substratum should be dominated by large particles and free from fine sediments
Water chemistry: minerals	Milligrammes per litre	The groundwater and surface water should have sufficient concentrations of minerals to allow deposition and persistence of tufa deposits
Water quality: suspended sediment	Milligrammes per litre	The concentration of suspended solids in the water column should be sufficiently low to prevent excessive deposition of fine sediments
Water quality: nutrients	Milligrammes per litre	The concentration of nutrients in the water column should be sufficiently low to prevent changes in species composition or habitat condition
Vegetation composition: typical species	Occurrence	Typical species of the relevant habitat sub-type should be present and in good condition
Floodplain connectivity	Area	The area of active floodplain at and upstream of the habitat should be maintained
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, which is defined by the following list of attributes and targets:		
Attribute	**Measure**	**Target**
Habitat distribution	Occurrence	No declines, subject to natural processes
Habitat area	Hectares	Area stable or increasing, subject to natural processes

Hydrological regime: flooding depth/height of water table	Metres	Maintain appropriate hydrological regimes
Vegetation structure: sward height	Centimetres	30-70% of sward is between 40 and 150cm in height
Vegetation composition: broadleaf herb:grass ratio	Percentage	Broadleaf herb component of vegetation between 40 and 90%
Vegetation composition: typical species	Number	At least 5 positive indicator species present
Vegetation composition: negative indicator species	Occurrence	Negative indicator species, particularly non-native invasive species, absent or under control- NB Indian balsam (Impatiens glandulifera), monkeyflower (Mimulus guttatus), Japanese knotweed (Fallopia japonica) and giant hogweed (Heracleum mantegazzianum)
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, which is defined by the following list of attributes and targets:		
Habitat area	Square metres	Area stable or increasing, subject to natural processes
Habitat distribution	Occurrence	No decline. See map 6 for recorded location (in NPWS, 2025).
Hydrological regime: height of water table; water flow	Metres; metres per second	Maintain appropriate hydrological regimes
Water quality	Water chemistry measures	Maintain oligotrophic and calcareous conditions
Vegetation composition: typical species	Occurrence	Maintain typical species
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, which is defined by the following list of attributes and targets:		
Attribute	**Measure**	**Target**
Habitat area	Hectares	Area stable or increasing, subject to natural processes, at least 181.54ha for sites surveyed: see map 6 in NPWS (2025)
Habitat distribution	Occurrence	No decline. Surveyed locations shown on map 6 in NPWS (2025)
Woodland size	Hectares	Area stable of increasing. Where topographically possible, "large" woods at least 25ha in size and “small” woods at least 3ha in size
Woodland structure: cover and height	Percentage and metres	Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semimature trees and shrubs; and well-developed herb layer.
Woodland structure: Community diversity and extent	Hectares	Maintain diversity and extent of community types

Woodland structure: natural regeneration	Seedling:sapling:pole ratio	Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy
Hydrological regime: flooding depth/height of water table	Metres	Appropriate hydrological regime necessary for maintenance of alluvial vegetation
Woodland structure: dead wood	m^3 per hectare; number per hectare	At least $30m^3$/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)
Woodland structure: veteran trees	Number per hectare	No decline
Woodland structure: indicators of local distinctiveness	Occurrence	No decline
Vegetation composition: native tree cover	Percentage	No decline. Native tree cover not less than 95%
Vegetation composition: typical species	Occurrence	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*)
Vegetation composition: negative indicator species	Occurrence	Negative indicator species, particularly non-native invasive species, absent or under control
1092 White-clawed Crayfish *Austropotamobius pallipes*		
To maintain the favourable conservation condition of White-clawed Crayfish in the River Barrow and River Nore SAC, which is defined by the following list of attributes and targets:		
Attribute	**Measure**	**Target**
Distribution	Occurrence	No reduction from baseline. (See map 7 in NPWS, 2025)
Population structure: recruitment	Occurrence of juveniles and females with eggs	Juveniles and/or females with eggs in at least 50% of positive samples
Negative indicator species	Occurrence	No alien crayfish species
Disease	Occurrence	No instances of disease
Water quality	EPA Q value	At least Q3-4 at all sites sampled by EPA
Habitat quality: heterogeneity	Occurrence of positive habitat features	No decline in habitat heterogeneity or habitat quality
1096 Brook Lamprey *Lampetra planeri*		
To restore the favourable conservation condition of Brook Lamprey in the River Barrow and River Nore SAC, which is defined by the following list of attributes and targets:		
Attribute	**Measure**	**Target**
Distribution	Percentage of river accessible	Access to all water courses down to first order streams
Population structure of juveniles	Number of age/size groups	At least three age/size groups of brook/river lamprey present
Juvenile density in fine sediment	Juveniles/m^2	Mean catchment juvenile density of brook/river lamprey at least 2/m^2
Extent and distribution of spawning habitat	m^2 and occurrence	No decline in extent and distribution of spawning beds
Availability of juvenile habitat	Number of positive sites in 2^{nd} order channels (and greater), downstream of spawning areas	More than 50% of sample sites positive

1099 River Lamprey *Lampetra fluviatilis*		
To restore the favourable conservation condition of River Lamprey in the River Barrow and River Nore SAC, which is defined by the following list of attributes and targets:		
Attribute	**Measure**	**Target**
Distribution: extent of anadromy	Percentage of river accessible	Greater than 75% of main stem and major tributaries down to second order accessible from estuary
Population structure of juveniles	Number of age/size groups	At least three age/size groups of river/brook lamprey present
Juvenile density in fine sediment	Juveniles/m²	Mean catchment juvenile density of brook/river lamprey at least 2/m²
Extent and distribution of spawning habitat	m² and occurrence	No decline in extent and distribution of spawning beds
Availability of juvenile habitat	Number of positive sites in 2nd order channels (and greater), downstream of spawning areas	More than 50% sample sites positive
1106 Salmon *Salmo salar*		
To restore the favourable conservation condition of Atlantic Salmon in the River Barrow and River Nore SAC, which is defined by the following list of attributes and targets:		
Attribute	**Measure**	**Target**
Distribution: extent of anadromy	Percentage of river accessible	100% of river channels down to second order accessible from estuary
Adult spawning fish	Number	Conservation limit (CL) for each system consistently exceeded
Salmon fry abundance	Number of fry/5 minutes electrofishing	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 minutes sampling
Out-migrating smolt abundance	Number	No significant decline
Number and distribution of redds	Number and occurrence	No decline in number and distribution of spawning redds due to anthropogenic causes
Water quality	EPA Q value	At least Q4 at all sites sampled by EPA
1355 Otter *Lutra lutra*		
To maintain the favourable conservation condition of Otter in the River Barrow and River Nore SAC, which is defined by the following list of attributes and targets:		
Attribute	**Measure**	**Target**
Distribution	Percentage positive survey sites	No significant decline
Extent of terrestrial habitats	Hectares	No significant decline. Area mapped and calculated as 122.8ha above high water mark (HWM) and 1136.0ha along river banks/around ponds
Extent of marine habitat	Hectares	No significant decline. Area mapped and calculated as 857.7ha
Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 616.6km
Extent of freshwater (lake) habitat	Hectares	No significant decline. Area mapped and calculated as 2.6ha
Couching sites and holts	Number	No significant decline
Fish biomass available	Kilograms	No significant decline

4.2 LIKELY SIGNIFICANT EFFECTS

It has been established that owing to the physical characteristics of the proposed development site, its location in relation to, and hydrological connectivity to the River Barrow and River Nore SAC, the potential for likely significant effects on water quality impacts arising from the proposed

development must be considered further in this assessment. In addition, likely significant effects could not be ruled out

Baseline aquatic surveys of the Cushina River by Ecofact in 2021 & 2024 (Appendix 4), within and adjacent (50m downstream of the Site) to the proposed development Site, determined the water quality to be Poor (Q3) and concluded that the river here is degraded due to the effects of channelisation and regular dredging. However, the Cushina does provide connectivity to larger more sensitive rivers downstream. In addition, a number of EU Annex II species have been recorded in and/or adjacent to the proposed development Site, namely Otter, Salmon and Brook Lamprey, albeit in small numbers. Connectivity from the proposed development Site to the SAC is provided as follows (and see Figure 8, Figure 9 and Figure 10 below).

- The Cushina River flows east through the proposed development Site. A proposed new clear-span bridge is to be constructed over the River Cushina to facilitate construction and serve as an internal access track during the operational phase. A clear-span bridge was chosen to avoid in-stream works within the river. The Cushina River leaves the proposed development Site, flows for approximately 290m and then joins the Figile River.
- The Figile River flows in a south-easterly direction before joining the River Barrow approximately 5.8rkm downstream.
- The underground Grid Cable Route (GCR) crosses the River Barrow (and the River Barrow and River Nore SAC) at an existing crossing point at Baylough Bridge approximately 2.5km south of the proposed development Site. Horizontal Directional Drilling (HDD) techniques will be used for this crossing. Drilling entry and exit points have been designed to be beyond a 50m buffer of the SAC boundary. However, disturbance and/or displacement of Otter are not expected at this location due to the low ecological status and low fisheries potential of this stretch of the River Barrow.
- The proposed Turbine Delivery Route (TDR) involves the construction of a new clear-span bridge over the River Philipstown (Daingean River) near Mount Lucas to facilitate turbine delivery traffic. This location is approximately 29rkm upstream of the River Barrow and River Nore SAC. This clear-span bridge will avoid in-stream works as per Inland Fisheries Ireland (IFI) (2016) guidelines.

Further consideration of likely significant effects is discussed in relation to each phase and aspect of the proposed development in the following sections.

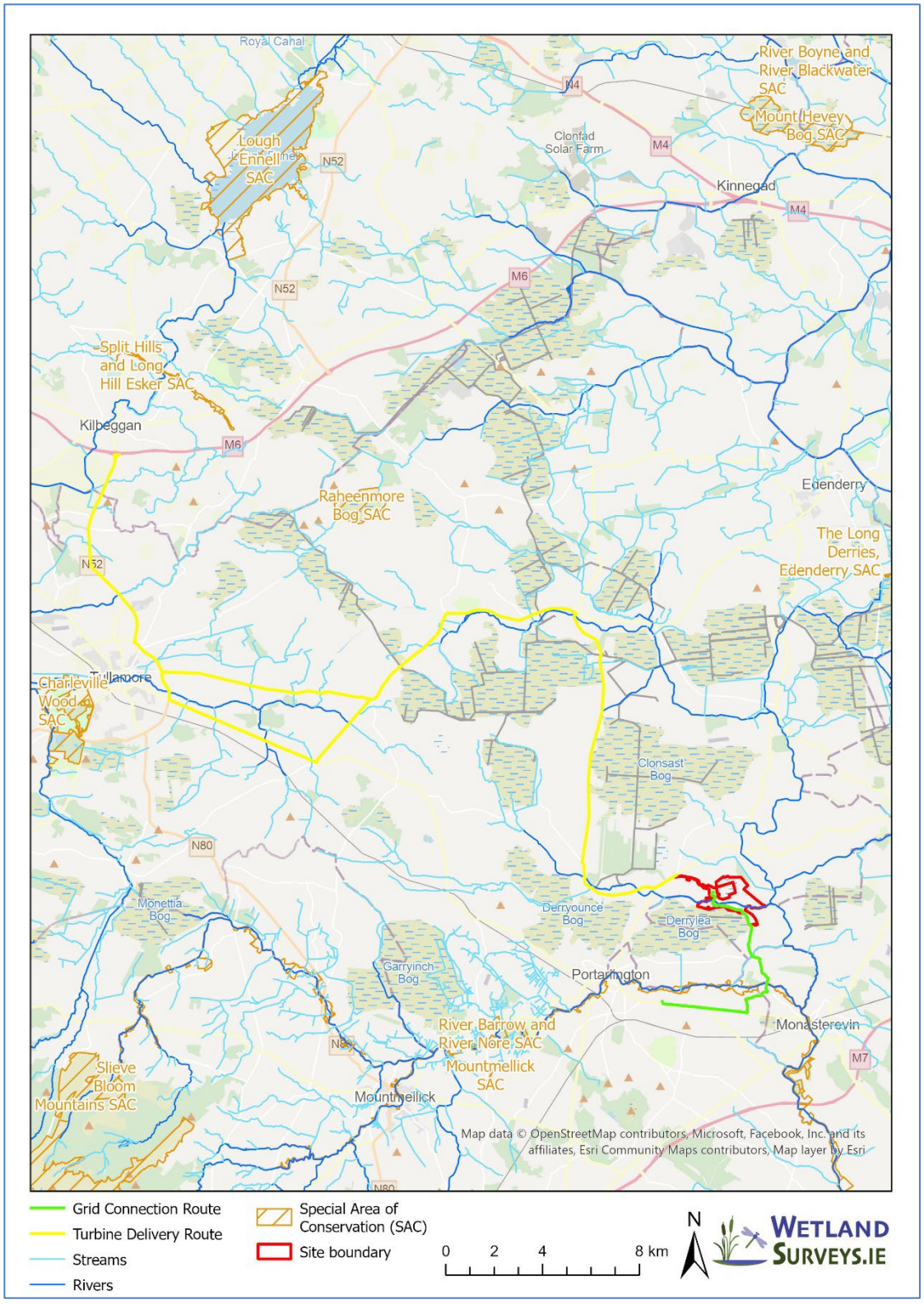

Figure 8: Map showing watercourses in proximity to the proposed development.

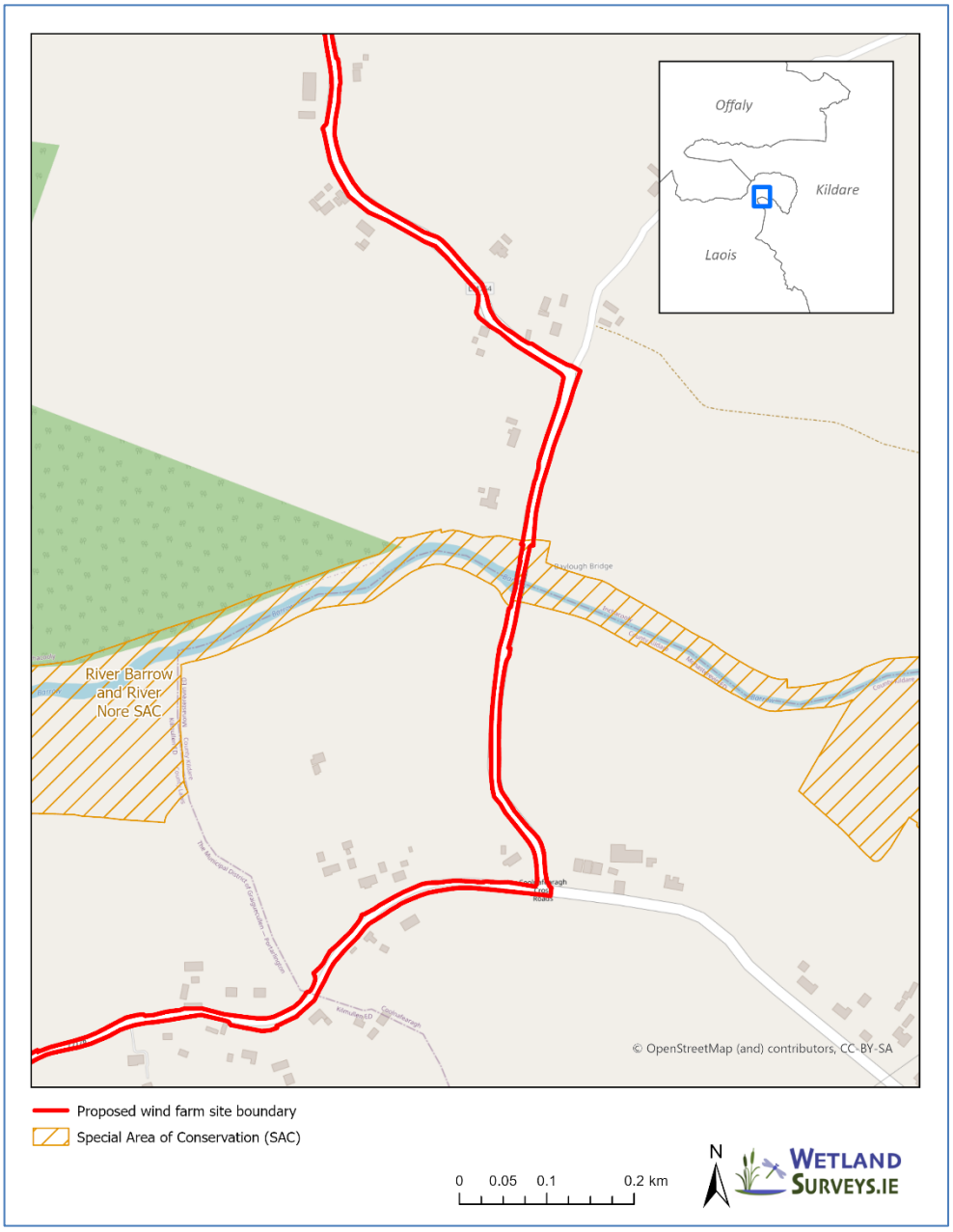

Figure 9 Map showing the location of the proposed crossing of the Grid Connection Route (GCR) over the River Barrow within the River Barrow and River Nore SAC at Baylough Bridge.

Figure 10 Map illustrating the proposed new river crossing of the Philipstown River (Daingean River) to accommodate the proposed new Turbine Delivery Route (TDR).

4.2.1 Construction Phase

As described above the downstream distance from the Proposed Derrynadarragh Wind Farm Site and the River Barrow and River Nore SAC is approximately 6rkm via the Cushina and Figile Rivers. Throughout the excavation, storage, and reuse of materials in the Proposed Development, suspended solids could be carried by surface water runoff and into the surface water networks. This likelihood is particularly high during sustained rainfall events. Water dewatered from excavations for foundations and roads can become contaminated whereby soil or water from areas of potential contamination is drawn down. If not properly controlled, such contaminated water can enter the aquatic environment.

During the construction phase of the Development, the utilization of plant, equipment and vehicles for excavation, material transport, and construction activities introduces the potential for hydrocarbon spillages and leaks which might enter the aquatic environment, especially during regular refuelling procedures. If hydrocarbons are accidentally introduced into the environment, they are expected to be intercepted by the drainage and surface water networks that will be constructed as part of the Proposed Development in accordance with the surface water management plan. However, areas of particular risk of water pollution are where works will be carried out in stream or on the riverbank i.e. for culvert and bridge construction.

The proposed development will require the excavation and removal of vegetation cover and soil, and replacement with less permeable surfaces with a resulting potential to contribute to the increase in rate and volume of rainfall runoff from the Site. Any alteration in the existing drainage regime / hydrology of the Site can impact on the volume of surface water which drains to the local streams and watercourses or to the rate at which such drainage occurs. This in turn can have an effect on hydromorphology and water quality through, for example, an increase in erosion and sediment transport, increase flow velocity, alteration of flood regime.

The Hydrology Chapter (see Appendix 11) concluded that:

- *Pre-mitigation, the likely effects on water quality (from accidental release of pollutants, cement material, and hydrocarbons) at the site are considered negative, direct/indirect, short term, moderate.*
- *Pre-mitigation, the likely effects on water quality (from accidental release of pollutants, HDD drilling fluids, cement material, and hydrocarbons) at the site are considered negative, direct/indirect, short term, moderate; and*
- *Pre-mitigation, the likely effects on the water dependent designated site (River Barrow and River Nore SAC) due to potential effects on water quality are considered negative, indirect, short term and significant.*

Taking this into account, it is concluded that, pre-mitigation, the export of sediment and small amounts of potentially damaging waterborne pollutants (e.g., sediment, wet cement, hydrocarbons) during the construction phase is likely to cause significant effects at the SAC boundary. Hence, significant effects on all the surface-water dependent QI habitats and species are considered likely.

In the absence of mitigation there may be temporarily elevated concentrations of suspended solids during the construction phase within the Cushina River. This may arise if heavy rain occurred during earth excavation and soil spreading during construction and trenching operations. In this event, the various drainage ditches within the site would provide a pathway for contaminants to enter the river and/or contaminants could enter the River Cushina and/or the Philipstown River directly. This could result in a temporary disturbance to any Salmon, Lampreys or White-clawed Crayfish that happen to be migrating or foraging in watercourses within and/or downstream of the construction site. The recruitment success of these species may be affected if spawning and / or nursery habitat occurred in vicinity. Similarly, White-clawed crayfish that may occur in these downstream watercourses would be susceptible to any significant decline in water quality.

It is proposed that a clear-span bridge will be installed over the River Cushina within the proposed development Site, between T6 and the on-site substation. In the absence of mitigation there could be temporarily elevated concentrations of suspended solids during installation of the bridge. The effect would be, at worst, a temporary disturbance on any Salmon, Lampreys or White-clawed Crayfish that happen to be migrating or foraging in watercourses within and/or downstream of the construction site. The recruitment success of these species may be affected if spawning and / or nursery habitat occurred in the vicinity. Similarly, White-clawed Crayfish that may occur in these downstream watercourses would be susceptible to any significant decline in water quality.

Evidence of Otter (scat and prints) were recorded along the Cushina River within the proposed development Site. It is possible that, without mitigation, impacts on this species could arise from reduction in water quality via temporarily elevated concentrations of suspended solids or other pollutants during construction of the clear-span bridge. This could cause direct and indirect impacts through reduced water quality for the otter and also through reduced prey availability.

The proposed HDD crossing of the River Barrow for grid connection cabling is proposed in proximity to the River Barrow and River Nore SAC. The HDD drilling points are designed to be outside of a 50m buffer of the River Barrow and also lie outside of the SAC (minimum 50m outside SAC), in order to avoid potential water pollution. However, there remains a risk of likely significant effects from the accidental release of pollutants which could have an impact on other QI habitats and species of this SAC.

Disturbance effects to Otter are considered unlikely here due to the 'Poor' Ecological Status or Potential and also 'Poor' Fish Status or Potential following the most recent WFD monitoring (River Waterbody WFD Status 2016-2021) on this section of the river, which make this habitat unlikely to be suitable as foraging habitat for Otter.

A new clear-span bridge is proposed over the Philipstown River (Daingean River) as part of the Turbine Delivery Route (TDR). This new bridge will be constructed in accordance with IFI (2016) '*Guidelines on protection of fisheries during construction works in and adjacent to waters*'. The construction of this will be scheduled to align with fisheries seasonal restrictions and the Scottish Natural Heritage (SNH) *Good Practice During Wind Farm Construction* (SNH, 2019, 4th Edition) will also be adhered to. Disturbance to the Otter population of the River Barrow and River Nore SAC is not expected at this point due to the lack of evidence of Otter here, its 'Poor' ecological status and the fact that it is greater than the foraging range of male Otter in Ireland (i.e. >20km) upstream of the SAC.

No invasive species were identified in the riparian zone where any construction works are proposed. One Third Schedule species, Giant Hogweed, was identified on the Proposed Wind Farm Site but is located 172m from the Cushina River and is not adjacent to a drain. In addition, it lies 220m away from the nearest site of works.

4.2.2 Operational Phase

The operational phase will include the operation of the turbines and substation and regular maintenance. During the operational phase, accidental pollution from spills and leaks of fuel, oil and chemicals from vehicles and maintenance works may locally occur. Additionally, transformer oil will be used in cooling the transformers associated with the sub-station which creates potential for oil spills during any oil replacement activity or leaks during the operational phase, although the likelihood of this is low. Permanent drains and settlement ponds will be installed and maintained across the Site as shown on the 1:500 series layout planning drawings (P22-145-0100-0006 to P22-145-0100-0059). These will act to attenuate any accidental spills such that they can be controlled and managed (see Appendix 8). The operational phase maintenance routine will involve the regular inspection of the following: drains, check-dams, cross-drains and culverts for blockages; outfalls to existing field drains and watercourses, existing roadside swales for obstructions; progress of re-vegetation.

The Hydrology assessment (Appendix 11) concludes that *the significance of the likely effect of the release of the hydrocarbons into the receiving waters is Slight due to the low likelihood and low quantities involved.*

The increase in impermeable area caused by the constructed wind farm footprint can directly influence the volume and velocity of runoff. As the footprint expands, there is a larger proportion of lower permeability surfaces compared to natural or vegetated areas.

This alteration can disrupt the natural hydrological cycle, reducing the amount of water that can infiltrate the soil and increasing the amount of runoff generated. In accordance with *Drainage of Runoff from Natural Catchments (including Amendment no. 1 dated June 2015)* published by Transport Infrastructure Ireland (TII, 2015); the runoff from each of the three catchment areas associated with the Proposed Development has been calculated and is presented in Chapter 12 (Hydrology) of the accompanying EIAR (presented here in Appendix 11). The Hydrology Chapter concluded: *"At the scale being examined, where catchment areas have been delineated over small areas, the percentage increase in run-off is not significant*". It further concludes that "*the Proposed Development will have a direct, long-term and not significant effect on alteration of surface water flow and flood extents".*

4.2.3 Decommissioning

Potential impacts associated with possible future decommissioning of the Wind Farm are likely similar to those identified for the construction phase, albeit 35 years later. At decommissioning, it is proposed that wind turbines would be deconstructed by unbolting the components and disassembling using cranes. The hardstanding and foundation pedestals of the turbines would be covered over (with soil that was stripped during construction) and allowed to re-vegetate. This would be less disruptive to the environment than removing the hardstanding and foundations.

Infrastructure that would be left *in-situ* following decommissioning includes: internal site access tracks, the on-site substation and ancillary electrical equipment. Potential impacts at decommissioning would be similar to the construction phase but on a smaller scale.

There is a similar risk to water quality, without mitigation, during decommissioning. Hence, significant effects on all the surface-water dependent QI habitats and species are considered likely during Decommissioning stage, premitigation.

4.2.4 Potential Significant Effects in relation to Conservation Objectives of European Site/s

The assessment for significant effects in relation to the attributes and targets of Conservation Objectives for the River Barrow and River Nore SAC is presented below in Table 15..

Table 15: Significant effects on attributes and targets as per the SSCOs for the River Barrow and River Nore SAC.

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, which is defined by the following list of attributes and targets:		
Attribute	**Target**	**Significant Effects**
Habitat Distribution	No decline, subject to natural processes	None. It is considered unlikely that the unmitigated effects will result in a change in the current baseline distribution of this habitat within the SAC.
Habitat Area	Area stable or increasing, subject to natural processes	None. It is considered unlikely that the unmitigated effects will result in a change in the current baseline distribution of this habitat within the SAC.
Hydrological regime: river flow	Maintain appropriate hydrological regimes	None. It is considered unlikely that the unmitigated effects will result in significant effects on the hydrological regime.

Hydrological regime: groundwater discharge	The groundwater flow to the habitat should be permanent and sufficient to maintain tufa formation	In the absence of mitigation, the effect on groundwater has been assessed as ranging from low to slight/moderate.
Substratum composition: particle size range	The substratum should be dominated by large particles and free from fine sediments	In the absence of mitigation, it has been found that likely significant effects from sedimentation cannot be ruled out.
Water chemistry: minerals	The groundwater and surface water should have sufficient concentrations of minerals to allow deposition and persistence of tufa deposits	In the absence of mitigation, the effect on groundwater has been assessed as ranging from low to slight/moderate and hence similar effects on groundwater chemistry are likely.
Water quality: suspended sediment	The concentration of suspended solids in the water column should be sufficiently low to prevent excessive deposition of fine sediments	In the absence of mitigation, it has been found that likely significant effects from sedimentation cannot be ruled out.
Water quality: nutrients	The concentration of nutrients in the water column should be sufficiently low to prevent changes in species composition or habitat condition	None – the Proposed Development is not likely to alter the nutrients entering the water.
Vegetation composition: typical species	Typical species of the relevant habitat sub-type should be present and in good condition	Typical species of the relevant habitat sub-type are dependent on water quality. In the absence of mitigation there are likely significant effects.
Floodplain connectivity	The area of active floodplain at and upstream of the habitat should be maintained	None. The Proposed Development is proposing 5 turbines in the floodplain which will be set at 1m above the 1-in-100yr flood level. The access tracks within the floodplain have been designed to not be above the flood levels in order to avoid obstructing the floodplain and its storage capacity. Hence, it is considered that there will be no likely significant effects on the area of floodplain.
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, which is defined by the following list of attributes and targets:		
Attribute	**Target**	**Significant Effects**
Habitat distribution	No declines, subject to natural processes	None. It is considered unlikely that the unmitigated effects would result in a change in the current baseline distribution of this habitat within the SAC.
Habitat area	Area stable or increasing, subject to natural processes	None. It is considered unlikely that the unmitigated effects would result in a change in the current baseline distribution of this habitat within the SAC.

Hydrological regime: flooding depth/height of water table	Maintain appropriate hydrological regimes	None. It is considered unlikely that the unmitigated effects will result in significant effects on the hydrological regime.
Vegetation structure: sward height	30-70% of sward is between 40 and 150cm in height	None. It is expected that the pre-mitigated Proposed Development will not result in an likely significant effects on vegetation height.
Vegetation composition: broadleaf herb:grass ratio	Broadleaf herb component of vegetation between 40 and 90%	None. It is expected that the pre-mitigated Proposed Development will not result in any changes in nutrient levels and hence there are no expected likely significant effects on broadleaf:herb ratio.
Vegetation composition: typical species	At least 5 positive indicator species present	Positive indicator species may be influenced by surface water quality. Hence, it is considered that the pre-mitigated Proposed Development will result in likely significant effects.
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 japonica) and giant hogweed (Heracleum mantegazzianum)	Invasive Species Plan will be implemented which will ensure that the Proposed Development will no result in an increase of these negative indicator species within the SAC.
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, which is defined by the following list of attributes and targets:		
Habitat area	Area stable or increasing, subject to natural processes	Due to the sensitivities of this habitat to water quality and quantity, it is considered that the unmitigated Proposed Development will result in likely significant effects on habitat area.
Habitat distribution	No decline. See map 6 for recorded location (in NPWS, 2025).	Due to the sensitivities of this habitat to water quality and quantity, it is considered that the unmitigated Proposed Development will result in likely significant effects on habitat distribution.
Hydrological regime: height of water table; water flow	Maintain appropriate hydrological regimes	Due to the likely slight/moderate effects on groundwater from the Proposed Development during construction, there are short-term, likely significant effects on the hydrological regime of this GWDTE*.
Water quality	Maintain oligotrophic and calcareous conditions	It is considered that the unmitigated Proposed Development will result in likely significant effects on water quality .

Vegetation composition: typical species	Maintain typical species	It is considered that the unmitigated Proposed Development will result in likely significant effects on water quality which could, in turn, impact on the typical species composition.
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, which is defined by the following list of attributes and targets:		
Attribute	**Target**	**Significant Effects**
Habitat area	Area stable or increasing, subject to natural processes, at least 181.54ha for sites surveyed: see map 6 in NPWS (2025)	None. It is considered unlikely that the unmitigated effects would result in a change in the current baseline distribution of this habitat within the SAC.
Habitat distribution	No decline. Surveyed locations shown on map 6 in NPWS (2025)	None. It is considered unlikely that the unmitigated effects would result in a change in the current baseline distribution of this habitat within the SAC.
Woodland size	Area stable of increasing. Where topographically possible, "large" woods at least 25ha in size and "small" woods at least 3ha in size	None. It is considered unlikely that the unmitigated effects would result in a change size of these woodland habitats within the SAC.
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.	None. It is considered unlikely that the unmitigated effects would result in significant change in the woodland structure of these woodland habitats within the SAC.
Woodland structure: Community diversity and extent	Maintain diversity and extent of community types	Community diversity could be impacted by changes in water quality. In the absence of mitigation there are likely significant effects.
Woodland structure: natural regeneration	Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy	Natural regeneration could be impacted by changes in water quality. In the absence of mitigation there are likely significant effects on natural regeneration.
Hydrological regime: flooding depth/height of water table	Appropriate hydrological regime necessary for maintenance of alluvial vegetation	None. It is considered unlikely that the unmitigated effects will result in significant effects on the hydrological regime.
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)	None. It is considered unlikely that the unmitigated effects would result in a change in the occurrence of dead wood within the SAC.
Woodland structure: veteran trees	No decline	None. It is considered unlikely that the unmitigated effects would result in a change in occurrence of veteran trees within the SAC.

Woodland structure: indicators of local distinctiveness	No decline	Indicators of local distinctiveness could be impacted by changes in water quality. In the absence of mitigation there are likely significant effects.
Vegetation composition: native tree cover	No decline. Native tree cover not less than 95%	None. Due to the Invasive Species Plan, it is considered unlikely that the unmitigated effects would result in a change in occurrence of native tree cover within the SAC.
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*)	Typical species of this habitat are dependent on water quality. In the absence of mitigation there are likely significant effects.
Vegetation composition: negative indicator species	Negative indicator species, particularly non-native invasive species, absent or under control	None. Due to the Invasive Species Plan, it is considered unlikely that the unmitigated effects would result in a change in occurrence of native tree cover within the SAC.
1092 White-clawed Crayfish *Austropotamobius pallipes*		
To maintain the favourable conservation condition of White-clawed Crayfish in the River Barrow and River Nore SAC, which is defined by the following list of attributes and targets:		
Attribute	**Target**	**Significant Effects**
Distribution	No reduction from baseline. (See map 7 in NPWS, 2025)	In the absence of mitigation, it has been found that likely significant effects on water quality cannot be ruled out. Hence, significant effects on the distribution of this sensitive species are likely.
Population structure: recruitment	Juveniles and/or females with eggs in at least 50% of positive samples	In the absence of mitigation, it has been found that likely significant effects on water quality cannot be ruled out. Hence, significant effects on the population structure of this sensitive species are likely.
Negative indicator species	No alien crayfish species	None. The implementation of the Invasive Species Plan will ensure the Proposed Development will not impact on the occurrence of any alien crayfish species within the SAC.
Disease	No instances of disease	None. Following the Invasive Species Plan and in particular the Clean-Check-Dry biosecurity protocol, the Proposed Development is not likely to introduce disease to the SAC.
Water quality	At least Q3-4 at all sites sampled by EPA	In the absence of mitigation, it has been found that there are likely significant effects on water quality within the SAC.
Habitat quality: heterogeneity	No decline in habitat heterogeneity or habitat quality	In the absence of mitigation, it has been found that there are likely significant effects on water quality, including sedimentation, which could cause a decline in habitat heterogeneity within the SAC.

1096 Brook Lamprey *Lampetra planeri*		
To restore the favourable conservation condition of Brook Lamprey in the River Barrow and River Nore SAC, which is defined by the following list of attributes and targets:		
Attribute	**Target**	**Significant Effects**
Distribution	Access to all water courses down to first order streams	None. The Proposed Development is not likely to cause any barrier effects.
Population structure of juveniles	At least three age/size groups of brook/river lamprey present	In the absence of mitigation, it has been found that there are likely significant effects on water quality, including sedimentation, which could result in a significant effect on population structure of brook lamprey.
Juvenile density in fine sediment	Mean catchment juvenile density of brook/river lamprey at least 2/m²	In the absence of mitigation, it has been found that there are likely significant effects on water quality, which could result in a significant effect on mean juvenile density of brook lamprey.
Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds	In the absence of mitigation, it has been found that there are likely significant effects on water quality, which could result in a significant effect on brook lamprey spawning beds.
Availability of juvenile habitat	Number of positive sites in 2nd order channels (and greater), downstream of spawning areas	In the absence of mitigation, it has been found that there are likely significant effects on water quality, which could result in a significant effect on juvenile habitat.
1099 River Lamprey *Lampetra fluviatilis*		
To restore the favourable conservation condition of River Lamprey in the River Barrow and River Nore SAC, which is defined by the following list of attributes and targets:		
Attribute	**Target**	**Significant Effects**
Distribution: extent of anadromy	Greater than 75% of main stem and major tributaries down to second order accessible from estuary	None. The Proposed Development is not likely to cause any significant barrier effects.
Population structure of juveniles	At least three age/size groups of river/brook lamprey present	In the absence of mitigation, it has been found that there are likely significant effects on water quality, including sedimentation, which could result in a significant effect on population structure of river lamprey.
Juvenile density in fine sediment	Mean catchment juvenile density of brook/river lamprey at least 2/m²	In the absence of mitigation, it has been found that there are likely significant effects on water quality, which could result in a significant effect on mean juvenile density of river lamprey.
Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds	In the absence of mitigation, it has been found that there are likely significant effects on water quality, which could result in a significant effect on river lamprey spawning beds.

Availability of juvenile habitat	More than 50% sample sites positive	In the absence of mitigation, it has been found that there are likely significant effects on water quality, which could result in a significant effect on juvenile habitat.
1106 Salmon *Salmo salar*		
To restore the favourable conservation condition of Atlantic Salmon in the River Barrow and River Nore SAC, which is defined by the following list of attributes and targets:		
Attribute	**Target**	**Significant Effects**
Distribution: extent of anadromy	100% of river channels down to second order accessible from estuary	None. The Proposed Development is not likely to cause any barrier effects.
Adult spawning fish	Conservation limit (CL) for each system consistently exceeded	In the absence of mitigation, it has been found that there are likely significant effects on water quality, including sedimentation, which could result in a significant effect on adult spawning fish.
Salmon fry abundance	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 minutes sampling	In the absence of mitigation, it has been found that there are likely significant effects on water quality, which could result in a significant effect on mean salmon fry abundance
Out-migrating smolt abundance	No significant decline	In the absence of mitigation, it has been found that there are likely significant effects on water quality, which could result in a significant effect on out-migrating smolt abundance.
Number and distribution of redds	No decline in number and distribution of spawning redds due to anthropogenic causes	In the absence of mitigation, it has been found that there are likely significant effects on water quality, including sedimentation, which could result in a significant effect on juvenile habitat.
Water quality	At least Q4 at all sites sampled by EPA	In the absence of mitigation, it has been found that there are likely significant effects on water quality.
1355 Otter *Lutra lutra*		
To maintain the favourable conservation condition of Otter in the River Barrow and River Nore SAC, which is defined by the following list of attributes and targets:		
Attribute	**Target**	**Significant Effects**
Distribution	No significant decline	In the absence of mitigation, it has been found there will be likely significant effects on water quality, which could impact on the distribution of this species.
Extent of terrestrial habitats	No significant decline. Area mapped and calculated as 122.8ha above high water mark (HWM) and 1136.0ha along river banks/around ponds	None. Significant declines in terrestrial habitat for Otter are not likely.

Extent of marine habitat	No significant decline. Area mapped and calculated as 857.7ha	None. The Proposed Development will not result in any likely significant effects on any marine habitats due to the relatively local effects that are likely and the distance (>99rkm) to marine habitats.
Extent of freshwater (river) habitat	No significant decline. Length mapped and calculated as 616.6km	In the absence of mitigation, it has been found there will be likely significant effects on water quality, which could impact on the availability of suitable habitat for Otter.
Extent of freshwater (lake) habitat	No significant decline. Area mapped and calculated as 2.6ha	None. The Proposed Development will not result in any likely significant effects on lake habitats.
Couching sites and holts	No significant decline	The Proposed Development will not result in a decline in any couches or holts. No likely, significant effects.
Fish biomass available	No significant decline	In the absence of mitigation, it has been found there will be likely significant effects on water quality, which could impact on the availability of fish biomass.

*GWDTE: Ground-water dependent terrestrial ecosystem

4.3 MITIGATION

As outlined above, in the absence of suitable mitigation, the Proposed Wind Farm has the potential to give rise to some significant adverse effects on the conservation objectives of the River Barrow and River Nore SAC. Potential impacts identified relate to downstream water quality during the construction phase of the proposed development. Mitigation has been proposed with the aim of avoiding likely adverse effects. Mitigation relating to water quality is presented below. Following the effective implementation of appropriate mitigation measures, it is concluded that the proposed development will not have an adverse effect on the conservation objectives, or the favourable conservation condition, of the Qualifying Interests of the SAC, in view of the site's Conservation Objectives (see Table 16).

4.3.1 Mitigation by Avoidance

A process of 'mitigation by avoidance', as informed by constraints assessment and consultation, was undertaken by the EIA team during the design of the wind farm layout and selection of grid connection with the objective of avoiding / minimising the potential for significant effects on water quality and hydrology. The Proposed Development Site layout and drainage infrastructure has been designed such that it is sympathetic to the existing topography and aims to maintain the existing hydrological regime of the Site, such that it does not create a changed hydrological response to precipitation. The design has been informed by a detailed flood risk assessment for the Site (Appendix 14).

Mitigation measures for the proposed development are largely to manage surface water emanating from the proposed development during the construction phase and eliminate any risk to downstream water quality and by corollary adverse effects on QIs of European sites which fall within its zone of influence. It is necessary to ensure that water discharging from the proposed development site is regulated in relation to quality and quantity to ensure that it does not present a risk to downstream waterbodies nor Qis/SCIs that are reliant upon it.

The following is a summary of the measures which have been incorporated into the project design to eliminate risk of significant effects on the aquatic ecology of downstream of the proposed development. In this instance, these measures will also have the effect of mitigating for likely significant effects on downstream European sites and their surface water dependent QI habitats and species:

- All infrastructure has been located outside of the setback zones applied by the Proposed Development: a minimum 50m setback zone from all mapped surface waters and a minimum 10m setback from non-mapped streams and drainage features (except for water crossing points and HDD points).
- A Construction Environmental Management Plan (CEMP) has been prepared by the contractor and will be implemented.
- A Surface Water Management Plan (SWMP) for the construction, operation and decommissioning of the Proposed Development (Appendix 8) has been developed and will be implemented.
- The following mitigation measures will be applied to protect water quality:
    - Settlement ponds will collect surface water runoff from the footprint of the Proposed Development (during construction, operation and decommissioning).
    - Settlement ponds will not discharge directly to any drain or watercourse, rather they will allow for dispersal via diffuse overland flow and percolation within the catchment;
    - Surface water runoff upgradient of the Proposed Development will be collected via interceptor drains and this 'clean' water will be redistributed downstream of the Proposed Development via diffuse outfalls to vegetated areas or into the existing network serving the catchment;

- Swales and silt traps will be used to intercept surface water runoff and prevent the ingress of silt and suspended solids;
- Foul flows from welfare units, will be retained in holding tanks and removed from site by a licenced contractor to a facility licenced to accept such waste material.
- The following measures will be implemented for the storage and use of hydrocarbons on site:
    - Diesel tanks, used to store fuel for the various items of machinery, will be self-contained and double-walled.
    - Refuelling will be carried out from these tanks or from delivery vehicles and will not be left unattended.
    - There will be no refuelling within 50m of the watercourse. Onsite re-fuelling of machinery will be carried out a minimum of 50 m from watercourses using a mobile double skinned fuel bowser.
    - Fuels, lubricants and hydraulic fluids for equipment used on the construction site will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment according to best codes of practice - (Enterprise Ireland BPGCS005).
    - Drip trays and spill kits will be kept available on site, to ensure that any spills from vehicles are contained and removed off site.
    - A fuel spill emergency response team will be set up on site before commencement of construction on-site.
    - Any spillage of fuels, lubricants or hydraulic oils will be immediately contained and the contaminated soil removed from the site as per the emergency response procedure outlined in the SWMP (Appendix 8) and properly disposed of.
    - Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the site for disposal or re-cycling.

- All relevant personnel will be fully trained in the use of spill kits and hydrocarbon absorbent packs. Guidelines such as "*Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors*" (CIRIA 532, 2001) will be referred to.
- Settlement ponds will provide containment capacity in the event of a spill or leak within the drained area and the outflow can be closed off by a penstock device or similar to contain any potential pollutants within the settlement ponds. In the event of contaminated runoff being contained in a settlement pond, the incident will be reported in accordance with the CEMP (Appendix 7), samples taken of the contaminated liquid for classification, as required, and the liquid pumped out of the pond using a suitable vacuum truck and disposed of at a licensed waste facility off-site.
- Works will be carried out in accordance with standard best international practice and will be in accordance with the latest guidance (e.g. *Environmental good practice on site guide (fifth edition) C811 2023*).
- All construction related activity will be confined to the footprint of the proposed development.
- Material stockpiles will be covered with plastic sheeting to protect from washout during periods of rain.
- A Peat and Spoil Management Plan (Appendix 10) will be implemented throughout the construction, operation and decommissioning of the Proposed Development.
- Use of weather forecasting to plan dry days for concrete pouring.
- The cable trenches will be excavated in dry weather where possible and infilled and revegetated if required to prevent soil erosion or generation of silt pollution of nearby surface water.
- Works will occur adjacent to the Cushina River and Philipstown River at the two new watercourse crossings. These will be clear-span structures to avoid in-stream works. The proposed crossing designs have been designed in line with Inland Fisheries Ireland (IFI)

requirements for salmonid watercourses as included in their 2016 *'Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters'* and NRA (now TII) 2008 *'Guidelines for the Crossing of Watercourses During the Construction of Road Schemes'*.

- The excavations will be set back 2.5m from the riverbanks. There will be no works conducted closer than this to the banks
- Should soil / material be required to be taken off site, it will be disposed of by contractors licensed under the Waste Management Act of 1996 (as amended 2001), the Waste Management (Facility Permit & Registration) Regulations of 2007 and the Waste Management (Collection Permit) Regulations of 2016 as amended *OR* notified to the EPA and treated as a byproduct.
- The key features of the surface water drainage scheme which was largely informed by SuDS include; rainwater harvesting, filter drains and swales.
- Concrete trucks will not be washed out on Site. Where chutes, hoppers/skips and equipment (e.g. vibrating wands) associated with concrete works need to be washed down this will be done into a sealed mortar bin / skip with the appropriate capacity and which has been examined in advance for any defects.
- The location of wash down areas will be set back as far as practically possible from any drain or watercourse, and at a minimum of 50m distance.

4.3.1.1 Best Practices

Best practice construction methods will be used to avoid potential for effects on water quality and hydrology following the documents and guidelines listed below:

- Water Run-Off from Construction Sites - SEPA - (WAT-SG-75)
- The SUDS Manual - CIRIA C753.
- Site Handbook for the Construction of SUDS - CIRIA C698 ISBN 0 86017 698 3.
- Works and maintenance in or near water - PPG5 - (October 2007)
- Environmental good practice on site guide (fourth edition) (C741)
- Guidance for Pollution Prevention, dealing with spills: GPP 22-(October 2018)
- Temporary Construction Methods - SEPA -(WAT-SG-29)
- Guidelines on protection of Fisheries During Construction Works in and Adjacent to Waters - Inland Fisheries Ireland - (IFI 2016)
- Guidelines for the Crossing of Watercourses During the Construction of National Road Schemes - TII Publications (2008)

4.3.1.2 Monitoring

A comprehensive suite of monitoring has been developed as part of the mitigation of the Proposed Development. Such monitoring will ensure that any unexpected effects are picked up quickly and corrective action is taken.

- The EnCoW / ECoW will continually monitor the pH of any watercourse during concrete works in or adjacent to a watercourse or drain. Should any change in pH +/-0.5 be detected, concrete works will immediately be ceased. Steps will then be taken to identify the entry point to the drain or watercourse and appropriate measures will be implemented to prevent further escape to the environment. The ECoW will choose the most appropriate measure with regard to CIRIA C532 (*Control of Water Pollution from Construction Sites: Guidance for consultants and Contractors*).
- Monthly water quality grab samples will be taken from the Cushina River and Philipstown River at locations approximately 10m downstream of the proposed watercourse crossings. Water quality sampling will be undertaken in accordance with BS EN ISO 5667 - Water Quality Sampling. The samples will be checked in situ for:
    - pH;
    - Temperature;
    - Turbidity;

- Conductivity; and
- Dissolved Oxygen

using a fully calibrated portable pH/temperature/conductivity meter (with pH resolution of 0.01 pH), turbidity probe and a flow impellor.

The samples will then be submitted to an appropriately certified laboratory (ILAB or similar) in accordance with the laboratory custody protocol for assessment of the following parameters:

- Biological Oxygen Demand;
- Chemical Oxygen Demand;
- Total Hardness;
- Total Suspended Solids;
- Total Dissolved Solids;
- Nitrate;
- Nitrite;
- Ammoniacal Nitrogen;
- Molybdate Reactive Phosphorus;
- Total Coliforms; and
- Faecal Coliforms (E.coli).

A record of monthly meteorological conditions (as a minimum precipitation and temperature) will be maintained. Biological water quality assessment using the EPA Q-value methodology will be carried out once prior to the commencement of construction and on a six-month basis during the monitoring period.

If any of the monitoring results show deviation beyond the 95%ile in comparison to baseline data, the ECoW/EnCoW will take action to determine the source of the changes (e.g. take samples upstream of the Proposed Development). If the source determined to be from within the Site, the EnCoW/EcoW will ensure that emergency control measures (set out in the Surface Water Management Plan and CEMP) are put in place to return the levels to the baseline.

- During the construction and commissioning phase, daily inspection of environmental protection measures e.g. silt traps, check dams, ponds and outfalls and drainage channels will be carried out and any improvement works deemed necessary will be carried out promptly. If deemed necessary, works will cease until the improvement works are complete.

4.3.2 Mitigation for Risk of Pollution at Water Crossings

A 50m set-back from watercourses for all works has been applied across the site, except at proposed water-crossing sites. Works will occur adjacent to the Cushina River and Philipstown River at the two new watercourse crossings. These will be clear-span structures to avoid in-stream works. The proposed crossing designs have been designed in line with Inland Fisheries Ireland (IFI) requirements for salmonid watercourses as included in their 2016 *'Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters'* and NRA (now TII) 2008 *'Guidelines for the Crossing of Watercourses During the Construction of Road Schemes'*. Details of proposed crossing structures are presented in 0500-Series planning application drawings. Drainage design and watercourse crossing details can be found on the 100 series and 500 series planning drawings.

The excavations will be set back 2.5m from the riverbanks. There will be no works conducted closer than this to the banks. Ducts for the later pulling of power and communication cables for the wind farm will be pre-cast into the bridge deck sections. Construction of the water crossings

will be scheduled to align with fisheries seasonal restrictions and will not be undertaken during a period of flooding. All drainage measures, including check-dams and /or silt traps, along the proposed access track will be installed in advance of the works along with the first layer of access track construction.

In addition, some of the previously outlined mitigation is relevant here:

- Diesel tanks, used to store fuel for the various items of machinery, will be self-contained and double-walled.
- Refuelling will be carried out from these tanks or from delivery vehicles and will not be left unattended.
- There will be no refuelling within 50m of the watercourse. Onsite re-fuelling of machinery will be carried out a minimum of 50 m from watercourses using a mobile double skinned fuel bowser

4.3.2.1 Invasive Species

Mitigation to reduce the likelihood of spreading invasive species as a result of the construction works at the Site has been detailed for this Project in the Invasive Species Plan presented in Appendix 5. This is relevant to the River Nore and River Barrow SAC due to the hydrological link between the Proposed Development Site and the SAC and the risk of spreading downstream to the SAC. Much of this mitigation is relevant here and will serve to protect the SAC from an increased risk of spread of invasives. Of relevance to the Conservation Objectives is the presence of Giant Hogweed onsite. However, as outlined above, the risk of spread to the SAC is not considered likely due to the distance to the River Cushina (172m from the Cushina River and 220m from any planned construction / felling works). The Invasive Species Plan includes a detailed plan to eradicate this species and details are outlined within Appendix 5. This will involve following a detailed procedure and protective measures to ensure this species will be eradicated from the Site and that construction works (or eradication works) will not result in the spread of this species.

4.3.3 Pre-Construction Surveys

The risk of disturbance to QI species has been ruled out as unlikely and insignificant based on the baseline. However, as a precautionary measure and given the time that can elapse between the baseline surveys and the construction phase, pre-construction surveys for Otter, Salmon and Lamprey will be carried out to determine whether any change from the baseline has occurred. If the pre-construction surveys indicate that there is a change from the baseline that would bring any of these QI species within the zone of impact of the construction footprint (e.g. within 200m of a breeding Otter holt or within 30m set-back from a non-breeding Otter holt as per NatureScot 2024b). If, for any reason, the exclusion zone cannot be implemented, a derogation licence will be sought from the NPWS.

In addition, as a precautionary measures, a pre-construction Invasive Species survey will be undertaken across the Site, particularly at locations of works adjacent to drains and watercourses in order to ensure the baseline hasn't changed. If any invasive species are found within the construction or felling footprint, appropriate action will be taken as per the guidance in the Invasive Species Plan in Appendix 5.

4.3.4 Methods for Horizontal Directional Drilling

In-stream works will be avoided in natural watercourses through the use of HDD under the bed of the watercourse (and/or through the construction of clear-span bridges). HDD will be carried out under the River Barrow at Baylough Bridge to accommodate the crossing of the grid cable. A set-back of a minimum of 50m from the River Barrow and River Nore SAC to the launch and receiving pits for the HDD will be strictly adhered to and has been inbuilt into the design to protect water quality. In order to mitigate for likely significant effects, the HDD will be employed along the GCR in accordance with the following methodology:

- A specialist contractor will be appointed to prepare Method Statements of works.
- Fuels, lubricants and hydraulic fluids for equipment use on Site will be carefully handled to avoid spillage, properly secured and provided with spill containment kits in case of incident.
- The depth of the bore should be at least 3m below the level of the stream bed so as not to conflict with the watercourse;
- Fluid return lines used in HDD process will be tested for leaks prior to use to check their reliability;
- Inert, biodegradable drilling fluid will be used;
- All practices involving bentonite will be monitored closely, that is: pumping pressure,
- drilling mud formulation i.e., drilling fluid volume and the volume of mud returns.
- A comprehensive monitoring system will be established to closely oversee any procedures involving bentonite, encompassing the careful observation of pumping pressure, the precise formulation of drilling mud (including drilling fluid volume), and the accurate measurement of mud returns.

4.3.5 River Habitat Enhancement

A Biodiversity Enhancement and Management Plan (BEMP) has been prepared for the Proposed Development. A number of habitat enhancement measures will be undertaken as part of the Biodiversity Enhancement and Management Plan (BEMP) which will have a positive impact on the freshwater aquatic habitat. The entire length of 2.4km of riparian zone and riverbank of the Cushina River as it flows through the Site will be protected as part of the BEMP. This will involve ensuring stock-proof fencing is in place along both banks of the river and that no stock can access the river. New fencing will be installed at least 2m back from the top of the river bank for 1.4km, which will create a narrow riparian zone where native vegetation will grow, stabilise the river bank and provide a buffer for the river habitat. For the last 1km in the east of the Site, the fencing will be approximately 30m back from the top of the riverbank. This is to allow for the natural succession of the existing scrub/woodland habitat to continue to native woodland development. This will create an area of approximately 2.7ha of native habitat in the riparian zone of the river which will also contribute to the protection and enhancement of water quality in the Cushina River.

The final measure which will contribute to habitat enhancement within the Cushina is the creation of in-ditch wetlands within the main drains flowing into the Cushina from the north. Some of these drains were noted to currently have a heavy peat sediment load and the creation of the in-ditch wetlands will allow for sediment deposition to occur before the water reaches the Cushina. These wetlands will also increase the aquatic biodiversity within the Site. The final design of these in-ditch wetlands will be based on existing best practices and will be agreed with the Project Ecologist. It is expected that one in-ditch wetland will be created per drain.

- Each in-ditch wetland will be installed along a minimum 10m length of drain. The depth of water across the majority of the ditch should be around 50 cm deep and approximately 75 cm deep.
- The aim of the in-ditch wetland is to slow the flow of water, allowing excess sediment to fall out of the water column, thereby enhancing the quality of the water that reaches the Cushina River.
- At the in-ditch wetland location, ditches should also be widened to enable water flow to slow and allow sediments to settle out.

- As part of the in-ditch wetland creation, small barriers are usually installed in the drain to slow the flow of water in the drain and allow sediments to settle out.
- Barriers can be either solid structures such as earth bunds with an outlet pipe, or simple wooden barriers to slow the flow of water and allow it to escape slowly.
- The barriers need to be carefully designed so that storm flows can be accommodated.
- At least one of the banks of the drain along this length of drain will be reprofiled, creating a graded bank and increasing the width of the drain.
- The graded bank allows for different depths of water and for the development of a variety of wetland vegetation along the bank, thus enhancing biodiversity and contributing to water quality enhancement.
- Both banks of each of the drains with in-ditch wetlands will be fenced with stock-proof fencing to prevent stock access.
- It is important not to create the in-ditch wetland too close to the discharge point to the Cushina River.
- Regular maintenance will be required throughout the lifetime of these in-ditch wetlands to remove the trapped sediment. The removal of sediment will be carried out according to existing best practices. It is possible to include a sediment trap in the design of the in-ditch wetland to allow for ease of sediment removal.
- It is recommended when removing wetland vegetation during maintenance, not to remove all vegetation at the same time as this would impair the effectiveness of the wetland and remove valuable habitat.

Figure 11 In-ditch wetland under construction. Note reprofiled drain with shelves of different depths creating different depths and widening the drain. Earth bunds are also visible as barrier to slow the flow of water within the drain. (source: Pearl Mussel Project)

Regular maintenance will be required to remove sediment as it builds up within the wetlands. (see Appendix 2 for further details).

Table 16: Assessment of impacts on attributes of relevant Qualifying Interests when mitigation measures are considered

Attribute	Relevant Qualifying Interest	Relevant mitigation measure(s)	Pre-Mitigation	Post-Mitigation
Water Quality (including pollution, suspended sediment and sedimentation on substratum)	Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]	All mitigation to protect water quality as described in detail above including elements of mitigation by avoidance, monitoring (and corrective action if necessary) and enhancement will ensure that no adverse, likely significant effects will occur due to water quality degradation.	Short-term, adverse likely significant effects.	Short-term, adverse, imperceptible effects.
	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]			
	Alluvial forests with *Alnus glutinosa and Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]			
	Austropotamobius pallipes (White-clawed Crayfish) [1092]			
	Lampetra planeri (Brook Lamprey) [1096]			
	Lampetra fluviatilis (River Lamprey) [1099]			
	Salmo salar (Salmon) [1106]			
	Lutra lutra (Otter) [1355]			
Attributes impacted by Water Quality such as: • Vegetation composition (typical species) • Natural regeneration • Habitat heterogeneity • Annex II species distribution • Life-cycle stages of aquatic species • Spawning habitats • juvenile habitats	Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]	All mitigation to protect water quality as described in detail above including elements of mitigation by avoidance, monitoring (and corrective action if necessary) and enhancement measures will ensure that no adverse, likely significant effects will occur on water quality and therefore on any attribute depending on water quality.	Short-term, adverse likely significant effects	Short-term, adverse, imperceptible effects.
	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]			
	Petrifying Springs with tufa formation (Cratoneurion)* [7220]			
	Alluvial forests with *Alnus glutinosa and Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]			
	Austropotamobius pallipes (White-clawed Crayfish) [1092]			
	Lampetra planeri (Brook Lamprey) [1096]			
	Lampetra fluviatilis (River Lamprey) [1099]			

Attribute	Relevant Qualifying Interest	Relevant mitigation measure(s)	Pre-Mitigation	Post-Mitigation
• availability of prey species	*Salmo salar* (Salmon) [1106]			
	Lutra lutra (Otter) [1355]			
Groundwater	Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]	Mitigation outlined above, including the use of Sustainable Drainage Systems (SuDS) will result in no likely significant effects on groundwater.	Short-term, adverse slight/moderate effects.	Short-term, adverse, imperceptible effects.
	Petrifying Springs with tufa formation (Cratoneurion)* [7220]			

Conclusion of Assessment for River Barrow and River Nore SAC and proposed development in isolation

Following an examination, analysis and evaluation in light of best scientific knowledge, of all relevant information in respect of the Qualifying Interests of River Barrow and River Nore SAC, the potential impacts and mitigation measures, and whether or not the predicted impacts would affect the conservation objectives that support the conservation condition of the Qualifying Interests, it has been concluded that the proposed development does not pose a risk of adversely affecting (either directly or indirectly) the integrity of River Barrow and River Nore SAC.

4.4 IN COMBINATION ASSESSMENT

It is a requirement of Appropriate Assessment that the combined effects of the proposed development together with other plans or projects be considered.

As the potential effects are related to the water quality of the River Barrow and River Nore SAC, this in combination assessment only considers other developments that occur in the same catchment as the proposed development.

A cumulative effect arises from the incremental changes caused by other past, present or reasonably foreseeable actions together with the Proposed Development. Climate change and agriculture are other considerations. The landscape surrounding the Proposed Development is dominated by agriculture, degraded bog and conifer plantation. The projects considered in relation to the potential for cumulative effects are listed below:

- Cloncreen Wind Farm (operational)
- Mount Lucas Wind Farm (operational)
- Cushaling Wind Farm (under construction)
- Moanvane Wind Farm (under construction)
- Yellow River Wind Farm (under construction)
- Dernacart Wind Farm (High Court ruled in favour of this development June 2025)
- Clonarrow Wind Farm (currently in Planning and awaiting decision)
- Ballydermott Wind Farm (Pre-Application stage)
- Cushina Wind Farm (Pre-Application stage).
- Peat Extraction
- Water Supply Project – Eastern and Midlands Region (Pre-Application stage)

4.4.1 Climate Change

Climate change can cause negative effects on ecologically sensitive features including species and habitats. Increased occurrence of extremes in terms of rainfall events, heat or cold, storms and floods can all add to existing pressures on the environment such as increasing erosion of riverbanks and sediment loads of rivers. Climate change can also exacerbate the problems arising from non-native invasive species if it results in conditions favourable to the further spread of existing, or the introduction of new, non-native invasive species. There is potential for climate change to exacerbate potential effects of the Proposed Development. However, taking into account the degraded nature of the landscape in which the Site located (degraded Cushina River, degraded Figile River, degraded bogs and conifer plantations) and given that the mitigated impact of the Proposed Development will not result in any likely, significant effects, the potential for cumulative impacts are considered unlikely to be significant. The Proposed Wind Farm will reduce the need for fossil fuels to be used to generate electricity and hence will have a positive impact on CO_2 emissions. In this regard, the long-term cumulative effect of Climate Change and the Proposed Development is assessed as beneficial. Therefore, there are no likely significant in-combination effects between the Proposed Development and climate change.

4.4.2 Peat Extraction

Peat extraction has been ongoing in the region for many decades. The expected ecological impacts from peat extraction are habitat loss and alteration of raised bog habitat, sedimentation of water-courses and an increase in carbon emissions. Peatland habitats are not qualifying interests of the identified European Site (River Barrow and River Nore SAC) and neither are the quality of the raised bog or degraded bog habitats onsite of Annex I quality. In terms of sedimentation, the Proposed Project will contribute to improving the water quality draining from the site due to the extensive mitigation that will be applied during construction and the biodiversity enhancement measures designed to trap and reduce sediment loads within the drains draining to the Cushina.

In relation to carbon emissions, the Proposed Development is expected to contribute to a reduction in the reliance on fossil-fuel to generate electricity and hence will have a positive impact on CO_2 emissions. Hence, it is not foreseen that the Proposed Development will contribute to any significant cumulative effects with Peat Extraction. Therefore, there are no likely significant in-combination effects between the Proposed Development and peat extraction.

4.4.3 Wind Farm Developments

A number of wind energy developments have taken place or are planned in the surrounding area. Many of those listed above are located within the same catchment as the Proposed Development. It is possible that each of these developments will contribute imperceptible, negative effects on water quality and hence there is potential for the Proposed Development to contribute to cumulative effects on water quality within the same catchment. However, with the mitigation and biodiversity enhancement measures planned for water quality as part of this Proposed Development, the likely effects on water quality and river habitat are considered to be imperceptible over the short-term and beneficial over the long-term. It is considered that the Proposed Development will not contribute to any significant cumulative effects with Wind Farm Developments. Therefore, there are no likely significant in-combination effects between the Proposed Development and other Wind Farm Developments.

4.4.4 Agriculture

There is a mix of extensive and intensive agriculture in the wider landscape. There is potential for the Proposed Development to contribute to cumulative effects on water quality in drains within the Site and in the Cushina River. Impacts from agricultural practices can result in sedimentation and pollution, for instance from the occurrent of unexpected wet weather after slurry spreading, run-off from areas of bare soil or run-off containing organic matter, herbicide or other chemical residues. However, with the mitigation and biodiversity enhancement measures planned for water quality as part of this Proposed Development, it is considered that there will be no likely significant in-combination effects with Agriculture.

4.4.5 Water Supply Project – Eastern and Midlands Region

This project is in the pre-planning phase and is in the process of public consultation. The aim of the project is to provide a new supply of drinking water to address the projected need and to increase the reliability of supplies in the Eastern and Midlands Region. The proposed project will abstract water from the Parteen Basin on the Lower River Shannon in County Tipperary and treat the water to drinking water standards before being transferred, via a 172km pipeline to Peamount in County Dublin. The pipeline will, at its closest point, pass approximately 10km to the north-east of the Proposed Wind Farm Site and will most likely need to cross the Figile River in that area. As with any construction project near waterways, there will be potential for effects on water quality such as sedimentation and pollution. The Proposed Water Supply Project has the potential to contribute to cumulative effects on water quality of the watercourses downstream of the Cushina, including the Figile River. However, with the mitigation and biodiversity enhancement measures planned for water quality as part of this Proposed Development, it is considered that there will be no likely significant in-combination effects with the Water Supply Project.

Considering the sensitive design of the Wind Farm, the planned mitigation and best practices, the Proposed Development is not expected to contribute to in combination effects on the River Barrow and River Nore SAC or other European sites. The implementation of the proposed mitigation and best practice measures during all phases of the proposed development - construction, operation and decommissioning will ensure that no significant adverse effects on the integrity of European sites will arise as a result of the project in isolation or in combination with other plans and projects.

4.5 CONCLUSION

This NIS assessment was informed by a desktop review and a series of field surveys. It has examined and analysed, in light of the best scientific knowledge, with respect to those European sites within the zone of influence of the proposed development, the potential impact sources and pathways, the manner in which these could potentially impact on the European sites' Qualifying Interest (and Special Conservation Interests) and whether the predicted impacts would adversely affect the integrity of any European sites.

Following this examination, analysis and evaluation, it has been determined in the Screening for Appropriate Assessment (Section 3 of this report) that the Proposed Development does, in the absence of mitigation measures, pose a risk of adversely affecting (either directly or indirectly) the integrity of effects on the River Barrow and River Nore SAC, which occurs 6rkm downstream of the proposed development site, being hydrologically connected via the Cushina River which flows through the wind farm site.

Avoidance, design requirements and embedded mitigation measures are set out within this NIS (and its appendices) and the effective implementation of these mitigation measures will ensure that any impacts on the conservation objectives of European sites will be avoided during the construction, operation and decommissioning phases of the proposed development, such that there will be no adverse effects on any European sites.

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.

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