Screening For Appropriate Assessment Report and Natura Impact Statement

Dernacart Wind Farm 110kV Substation and Grid Connection

Noreen Lynch

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1 INTRODUCTION

Bealtaine Ecology has been commissioned by MWP to complete a Screening for Appropriate Assessment Report and, if required, a Natura Impact Statement (NIS) to provide a sufficient level of information to the competent authority on which to base an Appropriate Assessment of the proposed development.

The project is fully described in **Section 3** and includes details on all elements of the project, particularly in relation to the aspects that could interact with the surrounding environment. In **Section 5** the report identifies the impacts that are reasonably foreseeable as potentially ensuing from the project. It is then determined in **Section 6** as to whether these predicted impacts, either alone or in combination with the other plans or projects identified in **Section 4.9**, are likely to have significant effects on the Natura 2000 sites identified in **Section 6.4.2**, in view of those sites' conservation objectives. In **Section 7**, the evidence and data are scientifically examined to identify and classify any implications for Natura 2000 sites likely to have a significant effect in view of the conservation objectives of those sites before, finally, in **Section 8**, mitigation measures to reduce the significance of these impacts are outlined.

1.1 APPROPRIATE ASSESSMENT

An Appropriate Assessment (AA) is an assessment of the potential adverse effects of a plan or project on the integrity of a Natura 2000 site, either alone or in combination with other plans or projects, with respect to the site's ecological structure and function, and in view of the site's conservation objectives.

Natura 2000 sites are designated as either Special Areas of Conservation (SACs) or Special Protection Areas (SPAs) and are protected by National and European Law.

This document has been prepared in accordance with the Assessment of plans and projects in relation to Natura 2000 sites – Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC(2021/C 437/01), the European Commission Guidance 'Managing Natura 2000 Sites' Brussels, 21.11.2018 C (2018) 7621 final (EC, 2019), and Appropriate Assessment of Plans & Projects - Guidance for Planning Authorities prepared by the NPWS (DoEHLG, 2009 (rev. 2010) and the Planning Regulator: Appropriate Assessment Screening for Development Management, OPR Practice Note PN01 Office of the Planning Regulator, 2021.

1.1.1 European Union Directives and Natura 2000 Sites

The European Union Birds and Habitats Directives were introduced in 1979 and 1992, respectively, to halt long-term declines in European biodiversity, and maintain, or where necessary restore, the favourable conservation status of habitats and species. The Habitats Directive (92/43/EEC) seeks to conserve natural habitats and of wild fauna and flora by the designation of Special Areas of Conservation (SACs), whereas the Birds Directive (79/409/EEC) seeks to protect birds of special importance through the designation of Special Protected Areas (SPAs). It is the responsibility of each EU member state to designate SPAs and SACs, both of which will form part of Natura 2000, a network of protected sites throughout the European Community. The Habitats Directive is transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations 2011 as amended, and the obligation to examine the need to undertake Appropriate Assessment (AA) derives from Article 6(3) and 6(4) of this Directive. Article 6(3) of Directive 92/43/EEC stipulates that certain projects and plans must be

subjected to an "appropriate assessment" of their effects on the integrity of Natura 2000 site(s). Article 6(3) provides in full: "Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public." The conservation objectives of a Natura 2000 site are site specific and based on the ecological requirements of the species and habitats present. They define the desired conservation condition of certain species and habitat types for the site. Conservation objectives are defined using attributes and targets that are based on parameters as set out in the Habitats Directive for defining favourable status, namely area, range, structure, and function. The conservation objectives may be either to maintain or restore the favourable conservation condition of a habitat/species.

1.1.2 Stages of Appropriate Assessment

The Appropriate Assessment process is a four-stage process with issues and tests at each stage. The purpose of the screening assessment is to record in a transparent and reasoned manner the likely effects on Natura 2000 sites of a proposed development. An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required. All four stages are set out in Appendix 1, however, since Stages 1 and 2 deal with the main requirements for assessment under Article 6(3), they are each discussed in more detail here.

1.1.2.1 Stage 1 – Screening For Appropriate Assessment

Based on a preliminary assessment and objective criteria, the Appropriate Assessment (AA) Screening process identifies whether a plan or project, either alone or in combination with other projects or plans, and in the absence of mitigation could have any appreciable impacts on a Natura 2000 site in view of the site's conservation objectives. It also considers whether the plan or project is directly connected to or necessary for the management of a Natura 2000 site.

Should impacts be identified that are deemed to be significant or potentially significant, then the process must proceed to Stage 2. Additionally, where there is any doubt or uncertainty about the risk of a significant effect, the precautionary principle should be applied and a Stage 2 Appropriate Assessment carried out.

A Screening for Appropriate Assessment (AA) Report has been undertaken for the proposed 110kV substation and grid connection route and is included in **Section 6**, below.

1.1.2.2 Stage 2 – Appropriate Assessment

In this stage, the Natura 2000 site(s) identified in Stage 1 – those sites where significant or potentially significant impacts to the site's conservation objectives cannot be ruled out – are considered, and a focussed and detailed examination of the implications of the proposed plan or project, either alone or in combination with other plans and projects, on the integrity of the European site(s) in view of that site's structure, function and conservation objectives, and includes any mitigation measures necessary to avoid, reduce or offset negative effects.

The Stage 2 Appropriate Assessment examines the impacts on the integrity of a Natura 2000 site of any plan or project not directly connected with or necessary to the management of that site

but likely to have a significant effect thereon, either individually or in combination with any other plan(s) or project(s) prior to its approval. The AA also considers the cumulative effects that may arise from the combination of that plan or project with other plans or projects (in-combination effects) in view of the European sites' conservation objectives.

The aim of the assessment is to provide a sufficient level of information to the competent authority on which to base their appropriate assessment of the project and therefore, must be prepared by a person or persons with the requisite ecological knowledge, professional experience, and scientific objectivity.

The Screening determined that an Appropriate Assessment of the proposed project was required because, based on objective information, it could not be excluded that the proposed project, either individually or in combination with other plans or projects, would have a significant effect on two components of the Natura 2000 network in view of conservation objectives. Consequently, a Natura Impact Statement (NIS) has been completed for the proposed 110kV substation and grid connection route and is included in **Section 7**, below.

1.1.2.3 Appropriate Assessment Key Indicators

A plan or project can only be authorised by a competent authority if it has made certain that the project will not adversely affect the integrity of the Natura 2000 sites relevant to the project.

The task of establishing whether a plan or project is likely to affect a Natura 2000 site is based on an assessment of potential impacts using available information and data, supplemented as necessary by local site information and ecological surveys (DoEHLG, 2009). This is followed by a determination of whether there is a risk that the effects identified could be significant.

A significant effect is defined in paragraph 49 of the Waddenzee Case C-127/0210 - *"... pursuant to the first sentence of Article 6(3) of the Habitats Directive, where a plan or project not directly connected with or necessary to the management of a site is likely to undermine the site and its conservation objectives, it must be considered likely to have a significant effect on that site. The assessment of that risk must be made in the light inter alia of the characteristics and specific environmental conditions of the site concerned by such a plan or project."*

Once the potential impacts that may arise from the proposal are identified, the significance of these is assessed using the following key indicators:

- Water quality and resource
- Habitat loss/alteration
- Disturbance and/or displacement of species
- Habitat or species fragmentation

1.2 STATEMENT OF COMPETENCY

This Screening for Appropriate Assessment Report and Natura Impact Statement has been prepared by Noreen Lynch (BSc), freelance ecologist.

Noreen has worked as an ecologist for over five years and is an experienced field ecologist. She is familiar with various ecological survey methodologies including terrestrial and aquatic survey types. She has undertaken assessments for a wide variety of projects including renewable energy developments and large infrastructure projects. Noreen has authored several ecological

reports including Screenings for Appropriate Assessment Reports (Stage 1), Natura Impact Statements (Stage 2), and Ecological Impact Assessments.

This report was reviewed by Gerard Hayes. Gerard is a Senior Ecologist with MWP and has over 15 years 'experience in environmental consultancy. He is a member of the Chartered Institute of Ecology and Environmental Management (MCIEEM) and the Freshwater Biological Association (FBA). Gerard has a diverse ecological profile, with Phase 1 habitat, mammal (including bats), bird, amphibian, macroinvertebrate and tree survey experience. He is co-author and/or carried out surveys for NPWS Irish Wildlife Manual Nos. 15, 24, 26, 37, 45.

2 METHODOLOGY

2.1 DESKTOP STUDY

To complete the assessments, certain information on the existing environment is required. A desktop study was carried out to collate information available on the proposed development site's natural environment. This comprised a review of relevant publications, data and datasets from the following sources:

- Ordnance Survey Ireland (OSI) aerial photography, 1:50000 mapping, GeoHive and online satellite imagery sources
- National Parks and Wildlife Service (NPWS)
- Central Statistics Office (CSO) – Census of Agriculture
- BirdWatch Ireland
- Bat Conservation Ireland (BCI)
- Teagasc soil area maps (NBDC website)
- Geological Survey Ireland (GSI) area maps
- Environmental Protection Agency (EPA) water quality data
- Inland Fisheries Ireland (IFI) online fish sampling reports and fish data
- Review of requested records from NPWS Rare and Protected Species database
- Laois County Development Plan 2022 – 2028[1]
- Documents prepared as part of the planning applications for the consented Dernacart Windfarm (Planning Ref 20/78, ABP-310312-21)
- Other sources and research listed in **Section 11**, below, and as footnotes throughout the report.

2.2 DATA REQUESTS

The proposed development area lies within the Ordnance Survey National Grid hectads N41 and N51. Concise and site-specific information on species records available in these hectads was retrieved from the National Biodiversity Data Centre (NBDC) online database and reviewed.

[1] Laois County Development Plan Accessed 03/05/2024

In September 2023, a request was made to NPWS for Sensitive Data Access for hectads N41 and N51. Data for species records within the hectads were received from the NPWS on 11th September 2023 and was used to help inform the impact assessment in relation to the proposal.

2.3 FIELD SURVEYS

Ecological field surveys were undertaken at the proposed development site by MWP ecologists to establish the site's ecological features and resources, particularly any rare/protected species and habitats occurring within or adjacent to the proposed development site. Bealtaine ecology assisted in carrying out a site walkover on November 30th 2023. Multidisciplinary walkover surveys were carried out to assess the habitat of the study area and identify any ecological features and resources that may potentially be impacted by the proposed development. The survey area included the wind farm collector cable and access road, 110kv Substation and 1110kv underground grid connection cable. all of which were deemed to be within the Zone of Influence (ZOI) of the project. Habitats recorded were classified according to Fossitt 'A Guide to Habitats in Ireland' (2000). Bird species observed and/or heard calling were also recorded.

Non-volant mammals and/or evidence of their activity such as prints, faecal pellets/droppings, burrow-holes/dens and food caches, activity trails and disturbed vegetation were looked for during walkover surveys. In general, the Mammal Society publication *'How to Find and Identify Mammals'* by Muir et al. (2013) was followed.

Evidence of otter was looked for at any watercourse/drain crossings encountered and *'Monitoring the Otter Lutra lutra'* (Chanin, 2003a), and *'Ecology of the European Otter'* by Chanin (2003b) was consulted for guidance on identification of otter signs including spraints, footprints, tracks, couches, and holts.

Table 1Terrestrial survey dates and details

Date of site visit	Survey Description
18th, 19th and 20th July 2023	Site walkover of previous proposed substation options and driven survey of grid route. Set up camera traps and static bat units.
3rd August 2023	The watercourses potentially impacted by the proposed development were surveyed.
11th and 12th October 2023	Following the update to the site layout which included the underground wind farm collector cable and access road, and 110kV substation location further surveys were carried out: Site walkover of updated sections, mapping habitats and signs of mammals. Set up camera traps.
30th November 2023	Following amendment of a portion of underground wind farm collector cable and access road being moved northwards to avoid wet grassland habitat: Site walkover of updated route. Collect camera traps left out in October.
11th and 12th, 20th April 2024	Site visit to check bat roost suitability and to deploy static bat units along the underground wind farm collector cable and access road and at 110kV substation area. Set up/collect camera traps. Carryout marsh fritillary survey at wet grassland area. Visit two additional areas for proposed peat/spoil deposition at the consented Dernacart Wind Farm site where Turbines 4 and 5 are to be located.

Invasive alien plant species (IAPS) surveys of the proposed grid route were also carried out.

Aquatic ecology surveys, were surveyed on the 3rd August 2023. Each watercourse was assessed in terms of physical characteristics. Two representative survey locations were selected on the Cottoner's Brook (Site 1 and Site 2), the watercourse that drains the western extent of the proposed development. Other watercourses were examined at/near the proposed grid route (Site 3 – Site 7). Site locations are provided in **Table 2** and illustrated in **Figure 1**.

Table 2 Aquatic survey locations on the Cottoner's Brook and other watercourses examined at/near the proposed grid route

Site	Watercourse	EPA code	EPA segment code	Order	X	Y
1	Cottoner's Brook	14C15	14_1840	2	645433	710989
2	Cottoner's Brook	14C15	14_1024	3	646570	709673
3	Garryhinch	14G17	14_1784	1	648612	710647
4	Clonygowan	14C51	14_1770	3	649274	710975
5	Un-named	-	14_1715	1	649575	711064
6	Rathmore	14R16	14_1514	1	649944	711042
7	River Barrow	14B01	14_1643	5	651286	710728

Figure 1 Aquatic survey locations on the Cottoner's Brook and other watercourses examined at/near the proposed grid route.

Habitat assessment was carried out at survey sites using the methodology given in the Environment Agency's 'River Habitat Survey in Britain and Ireland Field Survey Guidance Manual 2003' (EA, 2003) and the Irish Heritage Council's 'A Guide to Habitats in Ireland' (Fossitt, 2000). Watercourses were photographed at survey site locations. Anthropogenic and livestock influences on fluvial and riparian habitats were noted along the surveyed stretches. Aquatic survey sites were assessed in terms of physical characteristics, including flow type (riffle , glide and pool and channel form.

The results of the aquatic habitat survey were used in conjunction with the document 'Ecology of the Atlantic Salmon' (Hendry and Cragg-Hine, 2003) to assess habitat suitability for salmonids at selected representative sites. An evaluation of lamprey nursery habitat was also carried out based on the habitat requirements of juvenile lampreys as outlined in Maitland (2003). The leaflet '*The Evaluation of habitat for Salmon and Trout*' (DANI, 1995) to assess habitat suitability for salmonids at selected representative sites.

2.4 LIMITAITONS

Best efforts were made to survey as much of the footprint of the proposed development as possible, however, some parts of the proposed collector cable route and the footprint of the 110kV substation were inaccessible due to thick, dense scrub, dense conifer plantations and extremely wet and waterlogged fields.

In regard to aquatic surveys water levels at the time of the surveys were considered much higher than normal. Indeed, the River Barrow was in flood. These conditions affected results as the watercourses examined were not at their normal state.

These survey limitations are not considered to have significantly impacted upon the collection of sufficient data to inform a robust potential impact assessment. No other limitations or difficulties were encountered.

3 DESCRIPTION OF THE PROJECT

3.1 BRIEF PROJECT DESCRIPTION

The proposed development for which permission is being sought consists of the construction and operation of the following elements:

- One (1) 110kV substation with associated compound, including Two (2) single storey control and operational buildings, electrical plant, equipment, cabling, lighting, CCTV, lightning masts, diesel generator and diesel tank, security palisade fencing,
- 2.45km underground electric cabling systems between the wind farm site and the proposed 110kV substation overlain with 5m wide stone access track
- 10.85km of 110kV underground electrical cabling from the proposed 110kV substation to the consented Bracklone 110kV substation including enabling works, services diversions, joint bays, along the grid route
- New entrance and access road to substation site from the R423.
- New clear span and box culvert /piped water crossings
- Peat/spoil deposition areas

- All associated felling, drainage and ancillary works necessary to facilitate the development

The proposed development will also require the erection of one temporary construction compound.

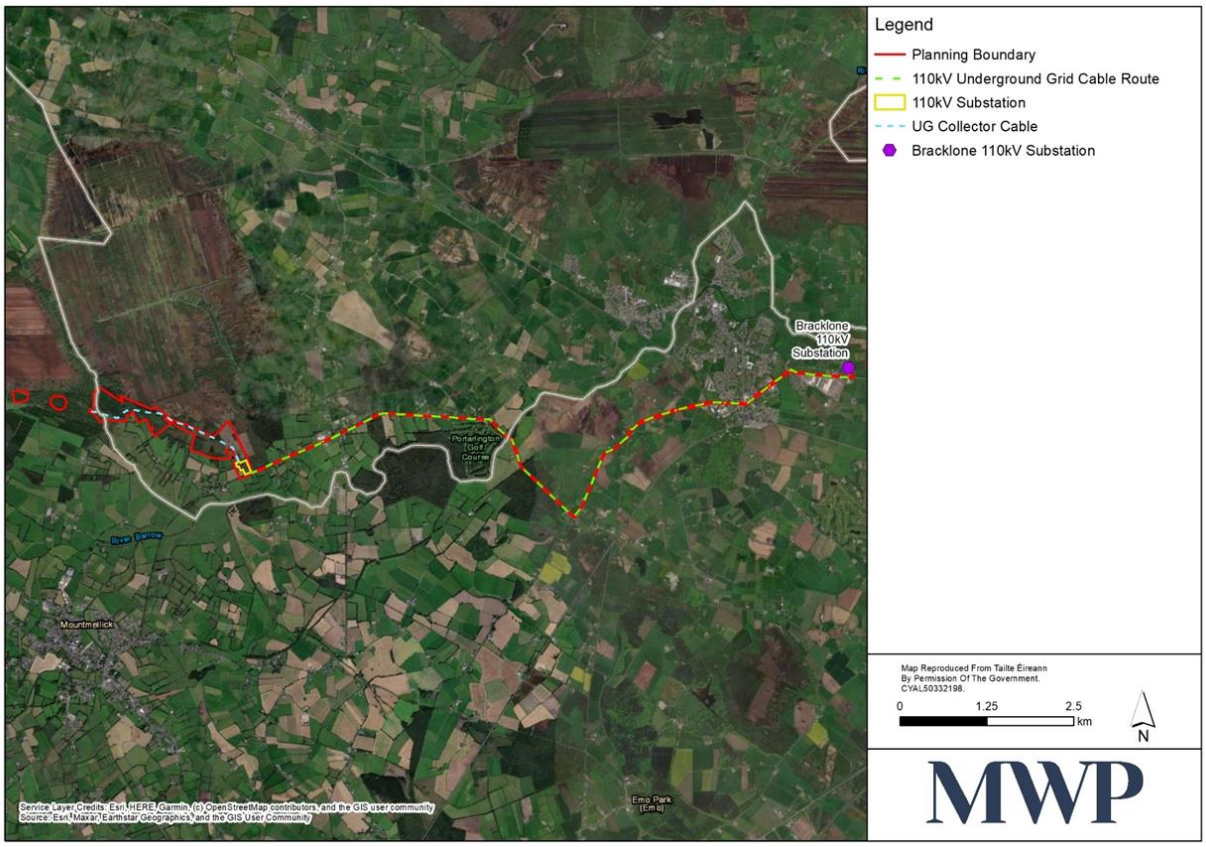

Figure 2 Components of the development

3.2 PURPOSE OF THE PROJECT

The purpose of the development is to facilitate the connection of the consented Dernacart Wind Farm (Laois County Council Planning Reference 20/78, An Bord Pleanála Planning Reference ABP-310312-21) to the National Grid. Dernacart Wind Farm Limited (the Applicant) is therefore applying to An Bord Pleanála for permission to construct a 110kV substation in place of the permitted (but not yet constructed) Dernacart Wind Farm 110kV substation, construct and install associated access track and underground electrical cabling from the Dernacart Wind Farm to the relocated substation, and install a 110kV underground electrical cable from the proposed relocated Dernacart Wind Farm substation to the consented Bracklone 110kV Substation (Planning Ref. 20/638) in Portarlington Co. Laois.

3.3 CHARACTERISTICS OF THE PROJECT

Size, scale, area, land-take	The overall development site will include: Construction of new access road and 110kV substation compound of approximately 2ha to comprise an outdoor electrical yard and a single storey building containing a control room, storeroom, switchgear room, office, and toilet. Installation of approximately 2.45 km of underground collector cable and access road linking Dernacart Wind Farm to new proposed substation. Installation of approximately 10.85 km underground grid connection cable from the proposed 110kV Dernacart Wind Farm substation compound in Barranaghs townland to the consented Bracklone 110kV substation in Portarlington, Co. Laois. One temporary site compound. 3 no. Peat deposition areas
	<u>Preliminary Works</u> Site investigation and establishment of demarcation works and benchmarks prior to commencement of any physical works. Completion of pre-construction ecological surveys, noise surveys and any detailed ground investigations. Installation of suitable protection measures (e.g. silt curtain) around the development site boundaries to control and treat any run-off. Track clearing, grubbing and removal of trees/hedgerows, and surface vegetation/soil removal (topsoil/sub-soil/shrubs) using excavator and dump-truck. Topsoil will be stripped to agreed depths in conjunction with site specifications and design drawings before careful segregation of the material and transportation to an agreed temporary deposition point. <u>Construction Phase Works – Substation</u> Erection of temporary construction compound adjacent to proposed new substation site. The compound will include a bunded storage area and an enclosed wastewater management system with a holding tank. Construction of new entrance and open-graded stone track to facilitate access to the proposed substation site. Construction activities will include vegetation clearing, topsoil stripping, excavation, placement of geogrid/geotextile layer and aggregate, compaction, grading, and landscaping. Some limited removal of hedgerow and scrub (approximately 45m) along the southern boundary of substation field will be required. Topsoil/vegetative removal will be kept to a minimum to minimise silt/sediment runoff during heavy rainfall. The granular fill to be used for the access track will be delivered to the required work area and spread out locally with the use of excavators on top of the geogrid/geotextile material. This will be compacted with the use of a roller which will roll the stone aggregate in maximum 250 mm layers to achieve the required design strength. A drainage system will be installed along all internal site access roads, storage areas, substation hardstand areas and temporary construction compound to attenuate run-off, guard against soil erosion and safeguard downstream water quality. The system will include check dams, settlement ponds, silt traps, and an attenuation pond adjacent to the temporary compound area. Substation compound will be marked out with ranging rods or wooden posts and topsoil stripped and removed to temporary storage area for later use in landscaping. Bulk excavation of the substation site will be carried out using tracked excavators while dump/tipper trucks will transport excavated material to a designated temporary on-site storage area for future use. Imported stone will be placed over the excavated area and compacted to agreed formation level. To facilitate installation of the control building, transformer, transformer bund, HV/LV equipment, lighting and ancillary equipment, it will be necessary to construct concrete bases or plinths. This will involve excavation to correct level and use of in-situ reinforced concrete or precast concrete. Earth mats will be installed within the substation compound which will have earth electrodes buried to between approximately 0.6 m and 1 m below finished ground level. Blockwork walls for the control building will be built up and the floor slab constructed. Roof slabs and timber roof trusses will be lifted into position using an adequately sized mobile crane (or telescopic loader) before the roof trusses are finally felted, battened, tiled and sealed against the weather. Major electrical equipment will then be installed along with palisade fencing around the compound perimeter.

	<u>Construction Phase Works – Wind Farm Collector Cable and Access Road</u> Prior to works commencing the route will be inspected and marked out on the ground. To accommodate the new access road, some limited removal of hedgerow and scrub along the route (approx. 350m) will be necessary. Approximately 2.8ha of coniferous forestry (WD4) will also be felled. During construction works, the trench will be excavated down through the existing ground to the required depth using an excavator machine. The trench is then prepared to receive concrete bedding and surround for the ducts. The ducts are surrounded by concrete with adequate cover over the duct. Once the concrete is suitably set, appropriate imported stone material will be placed over the concrete surround and backfilled to the top of trench. Suitable warning tapes will also be installed in the trench. Electrical cabling will be pulled through the installed ducts. Proper alignment and secure cable installation within the ducts will be ensured. The ground surface and area around the trench will be reinstated with the original topsoil from the excavation and revegetated. <u>Construction Phase Works – Grid Connection and Horizontal Directional Drilling (HDD)</u> Prior to works commencing the route will be inspected and marked out on the ground. Trench excavations will be carried out in the same manner as described above for the collector cable. Once the trench is filled, the trenching and ducting process will move along the road in planned stages. A temporary surface dressing of either spray and chip or macadam will be placed on the trench surface but once overall scheme is completed, the grid connection route and associated road areas will receive new permanent macadam finish as agreed with the local authority. Joint bays are to be installed where required along the connection route of the public road. Once installed they are temporarily reinstated until they are reopened to allow for pulling cables through the ducts and jointing the cables afterwards. The joint bays will then be permanently backfilled and reinstated to the satisfaction of the local authority. The proposed cable route will have 16 watercourse crossings some which will require HDD. See Figure 6, below, for diagrammatic explanation of HDD. The directional drilling machine will set up at a launch and reception pit (a service trench on either side of the crossing point at an appropriate distance back from the watercourse/road) before the drill bores in an arc under the watercourse/road. The drilling head of the boring tool has a series of nozzles that feed a liquid bentonite mix along the bore direction, which provides both lubrication and also seals the cut face of the bore. Once the bore reaches the far side, the duct is then attached to the drill head and the duct is pulled back along the route of the bore to the original drilling point. Any bentonite mix is deposited within the bore shaft and spillage is collected at either end of the bore with dedicated sump; all excavated material and excess bentonite will be removed from site and brought to an authorised waste facility. Once the duct is in place under the watercourse/road, the normal process of trenching can continue from either side of the watercourse/road. Marker posts will be installed along the grid connection route to denote ducting location on the ground. The launch and reception pits will be made in the public road or grass margin will be permanently backfilled and reinstated with the original excavated spoil to the satisfaction of the local authority. <u>Reinstatement of Temporary Construction Compound</u> Upon completion of construction works, the temporary construction compound area(s) will be reinstated with excavated soil and either seeded out with native species or allowed to vegetate naturally and restored to the original condition. This will be carried out with landowner(s) consultation and in line with any relevant measures outlined in the planning application, CEMP and/or planning conditions.
Description of resource requirements for the construction/operation and decommissioning of	<u>Construction Resources</u> The following is a non-exhaustive list of materials, and approximate quantities, that are expected to be used during the construction phase: Imported stone for access road

the proposal (water resources, construction material, human presence etc.	Imported stone for collector cable Imported stone for substation compound Imported stone for grid connection route Imported ready mix concrete for collector cable Concrete Reinforced steel <u>Labour</u> Typically, 20 - 25 construction employees will be present on site daily for the duration of the works. This will fluctuate from time to time as different phases of the construction take place and specialist services such as electricians or landscaping are required. <u>Water Requirements</u> Potable water will be required for the construction personnel with the average requirement estimated at approximately 50 litres per person per day amounting to approximately 1,000 to 1,250 litres per day during peak construction. It is proposed that a water connection to the public main will be made to provide this. During the construction phase, a water supply for dust suppression will also be required. It is proposed that this water will be imported to the site.
Description of timescale for the various activities that will take place as a result of implementation (including likely start and finish date)	It is expected that the development will commence upon receipt of planning permission. It is estimated that the duration of the construction works will be approximately 16 months.
Description of wastes arising and other residues (including quantities) and their disposal	<u>Construction Phase Waste</u> Miscellaneous/incidental waste materials will be generated during construction including concrete, pallets, packaging, spare steel reinforcement, shuttering timber, food waste, unused oil, and building materials. Waste will be collected at regular intervals during the construction phase and taken off site by licenced waste contractor to be reused, recycled and disposed of in accordance with best practice procedures at an approved facility. <u>Spoil</u> Topsoil and excavation spoil will be inert and will be temporarily stockpiled at storage locations adjacent to the works. Topsoil will be reused onsite or, if there is excess, transported to an authorised soil recovery site. Excavation subsoils and peat will be permanently stored in designated material storage locations within the development site All excavated materials from the public road network will be taken by a licenced waste haulier to an authorised waste facility Vegetation, green waste to be disposed of onsite where appropriate or removed by licenced waste contractor. <u>Effluent</u> The project will include an enclosed wastewater management system at the temporary site construction compounds capable of managing demand during the construction phase. Wastewater from on-site welfare facilities will drain to the wastewater holding tanks associated with the toilet units. When required, the stored effluent will be collected by a permitted waste contractor and removed from the site to an appropriately authorised waste facility for treatment and disposal. <u>Other Construction Phase Wastes/Residues</u> Concrete Fuels/oils - Waste oil & waste oil drums will be collected and stored in containers on bunded tray at the temporary construction compounds.

Identification of wastes arising and other residues (including quantities) that may be of particular concern in the context of the Natura 2000 network	Wastewater and effluent from temporary onsite welfare facilities. Fuels/oil/lubricants associated with plant and machinery. Concrete associated with construction and cable laying. Spoil from excavations
Description of any additional services required to implement the project or plan, their location and means of construction	The temporary construction compound will be used for construction phase car parking, a secure storage area for construction materials, waste materials and also contain temporary site accommodation units to provide welfare facilities for site personnel. Facilities will include offices, meeting rooms, a canteen and a drying room. A bunded containment area will be provided within the construction compounds for the storage of lubricants, oils and site generators etc. A designated lined concrete wash-out area will be installed within the temporary compounds to facilitate washing of concrete mixer chutes only. Washing of concrete mixer barrels will not be permitted. A self-contained port-a-loo with an integrated waste holding tank will be used on site for toilet facilities. This will be maintained by the Contractor on a regular basis and will be removed from the site on completion of the construction phase.

3.3.1 Watercourse Crossings

The proposed development includes 16 water crossings. Four are located along the route of the wind farm collector cable and access road, one at the new site entrance to the proposed substation, the remaining eleven are located along the route of the 110kV underground grid cable. No in-stream works will be required. The crossing methodologies for the cables and the location of each crossing are summarised in **Table 3,** below. Crossing No. 1 and No. 5 will be achieved by the addition of new clear span structures so as to leave the natural bed and banks undisturbed.

Table 3 Summary of watercourse crossing locations and methodologies

Crossing Number	ITM (X) easting	ITM (Y) northing	Crossing Type, Diameter and Span	EPA listed river waterbody	Anticipated options for UGC crossing method*
1	645343	711091	New crossing over Cottoners Brook for access track and wind farm collector cable	Yes	New clear span structure
2	646457	710961	New crossing over minor drain for access road and wind farm collector cable	No	Box Culvert or Pipe
3	647178	647405	New crossing over minor drain for access road and wind farm collector cable	No	Box Culvert or Pipe
4	647405	710380	New crossing over minor drain for access road and wind farm collector cable	No	Box Culvert or Pipe
5	647596	710217	New crossing over land drain for access road to substation	No	New clear span structure
6	647878	710339	Minor drain crossing	No	1, 2 or 3
7	649059	710868	Minor drain crossing	No	1, 2 or 3
8	649268	710973	Single stone arch	Yes	3
9	649582	711066	Single stone arch	Yes	3
10	649950	711046	Single stone arch	Yes	3
11	651294	710128	Stone Arch Bridge. Kilnahown Bridge over the river Barrow	Yes	3
12	651480	710296	Minor drain crossing	No	1, 2 or 3
13	651622	710161	Minor drain crossing	No	1, 2 or 3
14	651830	709960	Minor drain crossing	No	1, 2 or 3
15	653082	710849	Minor drain crossing	No	1, 2 or 3
16	656227	711672	900 diameter pipe which links to abandoned canal	No	1, 2 or 3

*Potential Crossing Methods;

1. Standard trefoil/flatbed formation under piped culvert crossings via open trench.
2. Flatbed formation over bridges/culverts or under a pipe. UGC laid in existing road make up above the bridge/culvert or under an existing pipe.
3. Horizontal Directional Drill under the bridge/culvert.

See **Figure 3**, below, for more details on horizontal directional drilling.

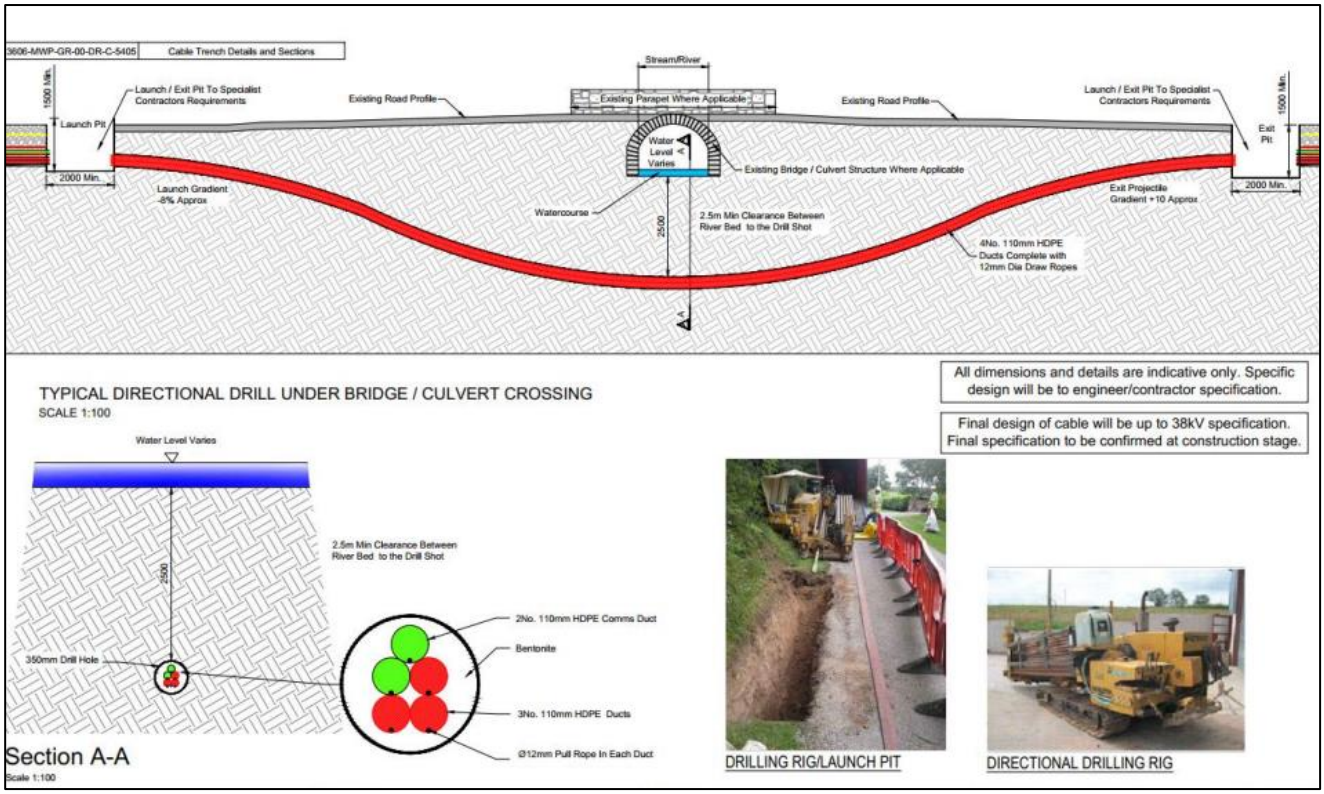

Figure 3 Summary of proposed directional drilling to facilitate installation of new grid route under bridge crossing

3.3.2 Construction Working Hours

Working hours will be.

7:00am – 7:00pm* (Monday – Friday inclusive)

7:00am – 1:00pm* (Saturday)

*The working day may extend occasionally at times when critical elements of work need to be advanced.

4 DESCRIPTION OF THE EXISTING SITE

4.1 SITE LOCATION AND CONTEXT

The proposed substation development site is located in County Offaly within the townland of Barranaghs. The site is approximately 1.3km southwest of Garryhinch village, approximately 3km northeast of Mountmellick town and approximately 6km southwest of Portarlington town. The site of the proposed 110kV substation currently comprises greenfield lands comprising a mix of agricultural grasslands, scrub and marginal lands with mature and semi mature trees. The site is bound on all sides by existing mature hedgerows. Immediately beyond the site to the west is a private access road and agricultural lands. A private access also flanks the eastern boundary with a conifer plantation to its east. A Coillte conifer plantation lies immediately to the north of the site while the R423 runs immediately to the south of the site. The consented Dernacart windfarm is located on lands approximately 2.3km to the northwest of the proposed substation site

The proposed access track and underground electrical cabling from the Dernacart windfarm to the proposed substation is also to be sited entirely within the townland of Barranaghs and traverses through commercial forestry plantation, scrub and peatland.

The proposed underground 110kV grid connection cable will connect the proposed110kV Dernacart Wind Farm substation at Barranaghs to the consented 110kV substation at Brackalone, Co. Laois. The grid connection cable is to be installed solely within the public road network, and will have a length of c. 10.85km that crosses over the administrative areas of Offaly County Council and Laois County Council passing through townlands of Barranaghs, Garryhinch, Annamore in County Offaly and Coolnavarnoga, Coolaghy, Kilbride, Ballymorris, Cooltederry and Bracklone Co. Laois. The physical environment along the majority of the route is characterised with sections of ribbon development and dispersed detached housing before entering the more urban and built up environment of Portarlington town. The landscape along the rural sections of the route primarily consists of patchwork farmland, with fields enclosed by hedgerows, along with boglands and conifer plantations.

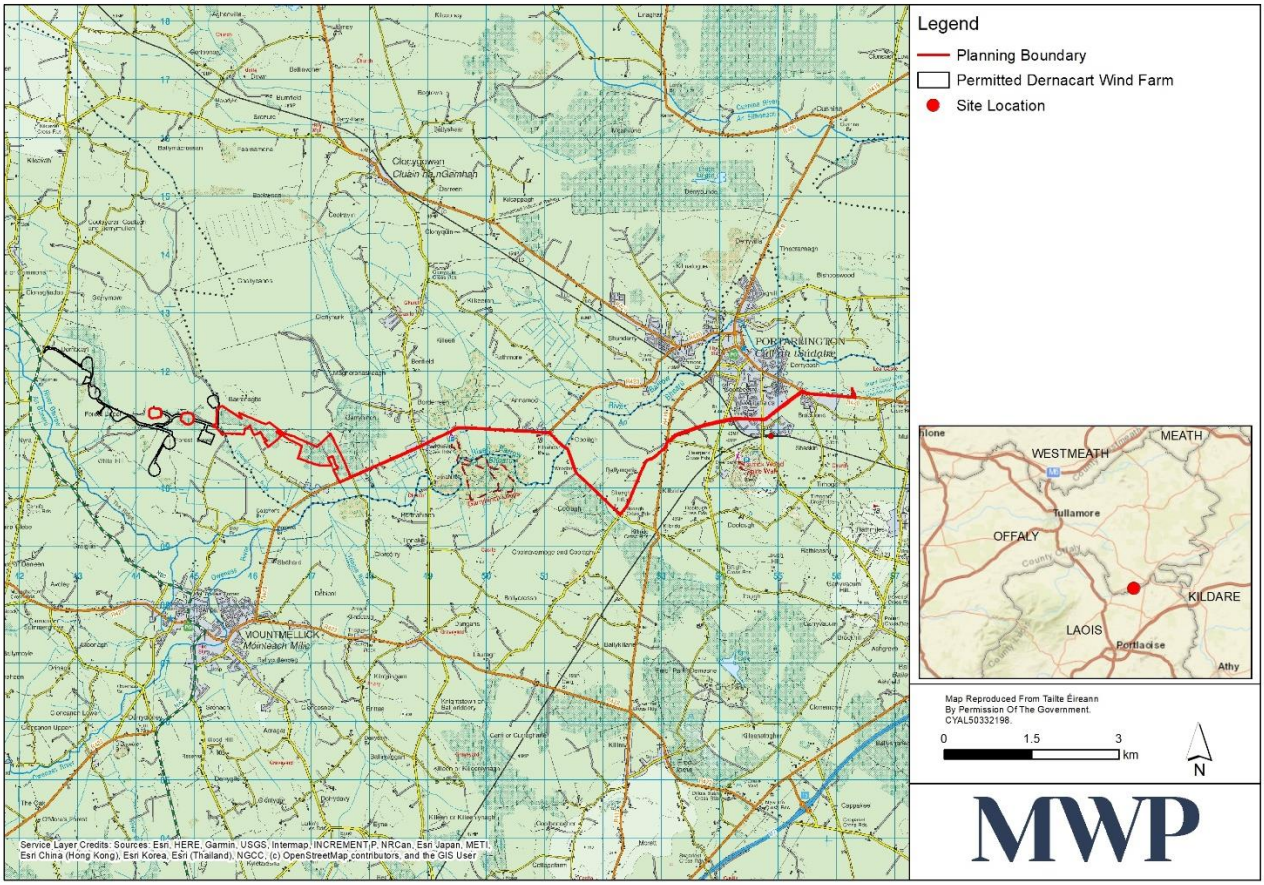

Figure 4 Site location

4.2 GENERAL SITE DESCRIPTION

The proposed development site is in a rural setting with a relatively widely dispersed settlement pattern comprising farms and one-off dwellings.

The proposed development site and surrounding areas comprise land predominantly used for agricultural purposes in addition to commercial forestry plantations (comprising both Coillte-owned and privately-owned forestry, mainly non-native in nature), bogland, and renewable energy developments interspersed with single residential dwellings.

The CORINE (2018) land cover categories for the development site are dominated by 'Pastures'. The most westerly extent of the proposed development site where the substation is to be located is predominantly 412 'Peat Bogs'. The proposed grid route is primarily surrounded by 231'Pastures' with pockets of 211 'Non Irrigated Land' and 313 'Mixed Forest' also present. To the eastern side of the proposed grid route there is 112'discontinuous Urban fabric'

Soils within the proposed development site are categorised as 'peat', 'fine loamy drift with limestones', 'river alluvium' and a pocket of 'urban' in the centre and to the east of the grid route.

4.3 HYDROLOGY AND HYDROGEOLOGY

Most of the proposed development site is located within the Water Framework Directive (WFD) Barow (14) Catchment and the Barow_SC_030 subcatchment.

A review of the EPA map-viewer determined that there are five mapped watercourses that will be crossed by the proposed grid route – Cottoners Brook, Garryhinch, Clonygowan, Rathmore and River Barrow.

One 110kV substation with associated compound

The proposed substation is located within sub catchment 14_1 (Barrow_SC_030) within the following river sub basin:

- Barrow_050

Underground Collector Cable and Access Track

The windfarm collector cable and access track are located within sub catchment 14_1 (Barrow_SC_030) within the following river sub basins:

- Cottoners Brook_010 and
- Barrow_050

Underground Grid Connection Cable

The eastern end of the 110kV Grid Connection is located within sub catchment 14_1 (Barrow_SC_030) with the remainder falling within sub-catchment 14_11 (Barrow_SC_020). The grid connection passes through the following river sub basins:

- Barrow_060
- Clonygowan_010
- Barrow_070
- Barrow_080

Figure 5 EPA mapped water course crossings

4.4 HABITATS

The proposed development is split in to three sections (A, B & C), a description of each section is presented in **Table 4** and shown in **Figure 6** below.

Table 5 lists each habitat, classified with a photo, short description and where the habitat occurs (section A, B or C). **Figure 7** is a map showing all habitats within sections A and B.

Table 4 Sections of the proposed development

Section	Section of the proposed development	Length (km) or Area (ha) of section
Section A	Two proposed peat/spoil deposition areas and underground collector cable and access track from consented Dernacart Wind Farm to 110kV substation.	Approx. 2.45km
Section B	110kV substation.	Full land 4.157 ha and just substation footprint 2.162 ha
Section C	Grid route with 110kV underground electrical cabling from 110kV substation to the consented Bracklone 110kV substation.	Approx. 10.85km

Figure 6 Sections of the proposed development

Table 5 Habitat descriptions and locations in relation to the sections of the proposed development

Habitat type and code	Location of habitat	Description	
Other artificial lakes and ponds (FL8)	• Section A	This habitat occurs at one of the two peat deposition areas to the west. The area is cutover bog [recolonising] and a total of three ponds are in close proximity to one another.	 *Plate 1 FL8*
Mixed Broadleaved Woodland (WD1)	• Section A	This Ash plantation is located at the most western portion of the grid route boarding the Upper Forest Road. Birch is also present, and an understory consist predominantly bramble, bracken and nettles.	 *Plate 2* WD1

Habitat type and code	Location of habitat	Description	
Depositing/lowland river (FW2)	• Section A • Section C	The watercourses draining the site are classified as 'Low land / depositing rivers (FW2). Cottoner's Brook at Upper Forest Road is situated at the western end of the grid route, it appears to have been modified (deepened). The River Barrow (EPA code 14B01) receives all surface waters draining the site and is a drained river. It is considered that all watercourses in the study area have been modified to some degree.	 *Plate 3* FW2
Conifer plantation (WD4)	• Section A	Conifer plantations are a common habitat within the site and the wider area. These plantations vary in age where some are mature, and others have been replanted. The underground collector cable and access track only passes through this habitat on a few occasions. This habitat is also present at the peat deposition areas	 *Plate 4* WD4

Habitat type and code	Location of habitat	Description	
Scrub (WS1)	• Section A • Section B	Scrub is a common habitat bordering other established habitats as well as forming mosaics with wet grassland, cutover bog and dense bracken. The underground collector cable and access track passes through this habitat on a number of occasions this habitat also occurs alongside a few other habitats at the 110kV substation area. .	 *Plate 5* WS1
Cutover bog (PB4)	• section A	Occurs more outside of the survey area to the north of the site. The underground collector cable and access track only passes through this habitat for a short distance. Mostly bare ground with obvious signs in the distance of peat harvesting.	 *Plate 6* PB4

Habitat type and code	Location of habitat	Description	
Cutover bog [Recolonising] (PB4 [R])	• section A	This habitat is common to the north and east of the site in and also forms mosaics with other habitat type such as scrub and wet grassland. Peat historically cut during peat harvesting but enough time has passed for plants to recolonise. The underground collector cable and access track passes through this habitat on a few occasions. This habitat is also present at the peat deposition areas.	 *Plate 7* PB4 [R]
Mixed broadleaf/conifer woodland (WD2)	• Section A	The underground collector cable and access track collector cable route passes through this habitat on a few occasions in the northwest portion of the site.	 *Plate 8* WD2

Habitat type and code	Location of habitat	Description	
Scrub (WS1)/ Dense bracken (HD1)	• section A • Section B	This habitat of dense bracken and scrub is present along the underground collector cable and access track just north of the110kV substation and within the 110kV substation area.	 *Plate 9* WS1/HD1
Spoil and bare ground (ED2)	• section A	This area in the mid-section of the underground collector cable and access track was formally a wet grassland (GS4) in 2023. Upon a site visit in April 2024 the wet grassland no longer exists as it was in 2023 and is now an area of disturbed ground surrounded by newly dug out drains.	 *Plate 10* ED2

Habitat type and code	Location of habitat	Description	
Mosaic – Cutover bog (PB4)/ Scrub (WS1)/ Wet grassland (GS4)	• section A	This mosaic is present at the mid-section of the underground collector cable and access track. Enough time has passed since peat harvesting for the cutover bog to recolonise and scrub and wet grassland establish. Common species such as gorse, bramble, birch and willow, Molinia grass and crossed leaved heath. The collector cable and access track passes through this habitat on two occasions and a portion of this area will be used for peat deposition.	 *Plate 11* PB4/WS1/GS4
Drainage ditches (FW4)	• section A • Section B	This habitat is a common feature throughout the proposed development site as it is often associated with bogs and commercial forests. The collector cable and access track passes through this habitat on a number of occasions. This habitat also occurs along site hedgerows and treeline and is discussed further down in this table.	 *Plate 12* FW4

Habitat type and code	Location of habitat	Description	
Bog woodland (WN7)/ Scrub (WS1)	• section A	This small fragment of bog woodland occurs alongside scrub in the northeastern corner of the 110kV substation area and small portion of the peat deposition furthest to the west. Parts of this habitat waterlogged and generally wet with heather, Molina grass, Scott's pine and birch all present.	 *Plate 13* WN7/WS1
Scrub (WS1)/ Wet grassland (GS4)	• section A • Section B	This habitat occurs alongside cutover bog in the mid-section of the underground collector cable and access track and alongside bog woodland in the 110kV substation area. Parts are waterlogged with rushes, willow, birch and gorse all present.	 *Plate 14* WS1/GS4

Habitat type and code	Location of habitat	Description	
Improved agricultural grassland (GA1)	• Section B	This habitat occurs at the 110kV substation area and is a common feature in the greater landscape to the south of the proposed development site. This particular field is quite wet at the north and eastern parts.	 *Plate 15* GA1
Treeline/Hedgerow (WL1/WL2)	• section A • Section B • Section C	This habitat is a common feature between field boundaries and bordering tracks and public roads. This habitat also occurs alongside drainage ditches which is discussed in the section below.	 *Plate 16* WL1/WL2

Habitat type and code	Location of habitat	Description	
Drainage ditches/ Treeline/ Hedgerow (FW4/ WL1/WL2)	• section A • Section B	This habitat is a common throughout the underground collector cable and access track and around the perimeter of the 110kV substation area. Water levels may vary depending on the level of rainfall.	 *Plate 17* FW4/WL1/WL2
Stone walls and other stonework (BL1)	• Section C	The habitat is present crossing the River Barrow along the 110kV underground grid cable route.	 *Plate 18* BL1

Habitat type and code	Location of habitat	Description	
Buildings and artificial surfaces (BL3))	• section A • Section C	This habitat is a common throughout the underground collector cable and access track and is the most common habitat along the 110kV underground grid cable route.	 *Plate 19* BL3

Figure 7 Habitat map

4.5 RARE AND PROTECTED FLORA

Records for marsh saxifrage and lesser centaury exist in Hectads N50 and N51. The portion of the proposed development within these hectads is the 110kV underground grid cable route. The proposed 110kV underground grid cable route will follows the exiting road network all the way to Bracklone 110kV substation in Portarlington. The artificial nature of the habitat along 110kV underground grid cable route would not support these two species. Large white-moss can be found in a broad range of habitats such as the ones that occur along the underground wind farm collector cable and access road route and although this species was not observed during site visits it may be present.

4.6 MAMMALS

4.6.1 Otter

No evidence of otter was found during the ecology walkovers. No otter spraint or otter resting places were found within the development area including the cable watercourse crossing points. Apart from Cottoner's Brook and the River Barrow, the watercourses in the study area have little/no potential for salmonids and therefore have limited capacity to support adequate biomass for otter.

4.7 FRESHWATER AQUATIC ECOLOGY

4.7.1 Fish

Visual aquatic surveys were carried out by MWP on 3rd August 2023 along the grid connection route. The salmonid habitat rating at the aquatic survey sites is given in **Table 6**, these ratings are a function of the physical characteristics at the survey sites. Apart from Cottoner's Brook and the River Barrow, the watercourses in the study area have little/no potential for salmonids. Owing to its size Cottoner's Brook likely supports a population of brown trout. The River Barrow is the most important watercourse for salmon as it has some suitable salmonid spawning, nursery and holding areas. The Clonygown and Rathmore Streams may also have a small population of brown trout. The River Barrow, Cottoner's Brook, Clonygown and Rathmore Streams likely support brook lampreys, and possibly European eel. Other species likely present in these channels include three-spine stickleback and minnow.

Table 6 Salmonid habitat rating at the aquatic survey sites

Site	Watercourse	Spawning		Nursery		Holding		Overall evaluation
		Habitat grade[1]	fluvial cover[2] (≈%)	Habitat grade[1]	fluvial cover[2] (≈%)	Habitat grade[1]	fluvial cover[2] (≈%)	
1	Cottoner's Brook	3-4	20	3	30	3-4	5	Poor
2	Cottoner's Brook	3	15	2	20	3	5	Poor
3	Garryhinch	n/a	n/a	n/a	n/a	n/a	n/a	Unsuitable
4	Clonygowan	2-3	15	2-3	40	3	10	Marginal
5	Un-named	n/a	n/a	n/a	n/a	n/a	n/a	Unsuitable
6	Rathmore	4	10	4	5	4	5	Marginal
7	River Barrow	2	15	2-3	15	1-2	35	Suboptimal

4.7.2 Freshwater Pearl Mussel

As part of the assessment carried out for the permitted Dernacart wind farm freshwater pearl mussel surveys were carried out in 2019. Fresh water pearl mussel are not know to be present and none were found during the course of that survey.

4.8 ORNITHOLOGY

A summary of all bird surveys and results for the permitted Dernacart Wind Farm are presented in Table 7 below. Overall, there were three Target species observed to have breeding territories within the study area, namely, kestrel (*Falco tinnunculus*), snipe (*Gallinago gallinago*) and woodcock (*Scolopax rusticola*). Additionally, there were a number of non-target species considered to be breeding within the study area, the majority of these were passerines and are common and widespread.

Table 7 Permitted Dernacart Windfarm Bird Surveys Results Summary

Survey type	Year(s)	Species recorded	Results Summary
Vantage Point	2018 - 2019	Target Species: Grey heron Sparrowhawk Lapwing Golden plover Curlew Woodcock Snipe Kestrel Merlin Peregrine	The same 10 Target Species recorded during the breeding season were also recorded during the winter season. Kestrel was the most frequently recorded species throughout the whole survey period. During the breeding season surveys, two and five breeding pairs were recorded within the survey area in 2018 and 2019 respectively. Of the other remaining Target Species, it was determined there were two breeding territories in the area for Woodcock and two breeding territories in the area for Snipe.
Moorland Breeding Bird	Breeding seasons 2018 & 2019	Target Species: Buzzard Kestrel Snipe Woodcock The remaining species comprise non-target species with the majority being passerines.	A total of 196 and 408 breeding bird territories recorded in 2018 and 2019, respectively. A total of 43 species considered to be breeding within the survey area were recorded across both survey seasons. The majority of these are common and widespread species; the most abundant breeding species was blackbird with an estimated 31 territories in 2018 and 36 territories in 2019. Wren was the next most abundant species with an estimated 26 and 33 territories in 2018 and 2019, respectively. Of the total number of species, 12 (28%) are recognised as being of conservation importance in Ireland. There were no species listed as Annex 1 recorded breeding within the survey area.
Breeding Wader	Breeding seasons 2018 & 2019	Target Species: Snipe Woodcock	The dedicated breeding wader surveys recorded Woodcock and Snipe. Both these species are likely breeding within the proposed site.
Monthly Wintering Wader Census	Winter season 2018/19	Target species: Grey heron Lapwing Snipe	The wader species recorded were Grey Heron, Lapwing and Snipe. The survey in December recorded the highest number of waders (10) with a peak count of five for Lapwing and Snipe.
Hen Harrier Winter Roost Checks	Winter season 2018	N/A	No hen harriers were recorded during the winter roost checks.

4.9 IDENTIFICATION OF OTHER PLANS, PROJECTS AND ACTIVITIES

4.9.1 Introduction

Other projects or plans or activities have been considered in the context of potential cumulative/in-combination impacts. A cumulative impact arises from incremental changes caused by other past, present or reasonably foreseeable actions, together with the project. A review was undertaken of relevant existing and permitted projects, activities and plans occurring in the environs of the proposal site that could act in combination with the proposed development to determine whether any potential significant cumulative effects may arise, and the results are presented in the following sections. In-combination impacts will be considered in **Section 7.4** below.

The surrounding environment is dominated by bog, agricultural land and conifer and mixed plantations. The main pressures that could act in combination with the proposed development relate to land management. The lands at the proposed development site and within the surrounding area are mainly managed for peat/mineral extraction, forestry and agriculture.

4.9.2 Plans

Plans that are relevant to the region encompassing the proposed development site include the Laois County Development Plan 2021-2027 that was adopted on 25th January 2022 and came into effect 8th March 2022. Within the Plan, chapter 3 deals with renewable energy and associated technologies and outlines key objectives including to "Promote and encourage the development of energy from renewable sources such as hydro, bio-energy, wind, solar, geothermal and landfill gas subject to compliance with normal planning and environmental criteria in co-operation with statutory and other energy providers." (Objective CM RE 2)'. It is also stated that during the lifetime of the Plan, LCC intend to 'Prepare a Renewable Energy Strategy (RES) for County Laois including to identify the target which County Laois can contribute in delivering its share of overall Government targets on renewable energy and climate change mitigation over the plan period, and in particular wind energy production and the potential wind energy resource (in megawatts), and commencement of the variation to the County Development Plan within 1 year of adoption of the plan. Once adopted this will be by way of a variation to the Laois County Development Plan. (Objective CM RE 1)'.

The Offaly County Development Plan 2021-2027 was adopted on 10th September 2021 and came into effect 22nd October 2021. Chapter 3 deals with climate action and energy. This chapter states the county has a wind energy target of 466.3MW by the end of the plan period. The plan contains a "County wind Energy Strategy" which aims to guide developments of the county up to 2027. The key objectives of the plan are:

1. Reflect and plan for technological advances in wind farms over the next number of years.

2. Support wind energy as a renewable energy source which can play a vital role in achieving national targets in relation to reductions in fossil fuel dependency and greenhouse gas emissions;

3. Identify key areas within the county that are 'Open for Consideration for Wind Energy Developments' or 'Unsuitable for Wind Energy Developments' based on wind speed, access to the electricity grid and substations, and avoidance of adverse impacts on the landscape and designated sites.

4. Consider the potential for micro-generation (generation that is less than 11 kW) wind energy developments and for small community based proposals outside key areas within the county that are 'Open for Consideration for Wind Energy Developments'

5. Ensure full compliance with the requirements of EU SEA Directive 2001/42/EC and Statutory Instrument 436 /2004 [Planning and Development (Strategic Environmental Assessment) Regulations 2004] on the assessment of the effects of certain plans and programmes on the Environment, and the Planning and Development Act 2000 (as amended), the EU Habitats Directive (92/43/EEC) and EU Birds Directive (2009/147/EC).

4.9.3 Other Permitted and Proposed Developments in the Locality

A search of Laois County Council's online planning enquiry system for granted or on-going planning applications for the townlands encompassed within the site boundary comprising Kilbride, Coolagh, Ballymorrris, Cooltdery and Bracklone was undertaken on 3rd May 2024. The results of this search showed any applications in the last five years are for one off housing or small scale housing developments. This is with the exception of the permitted Dernacart windfarm. The effects of the Dernacart Wind Farm on the receiving water environment were assessed as part of the EIAR undertaken for the permitted wind farm. The EIAR concluded that, with the implementation of appropriate mitigation, there would be no significant effects on hydrology and geohydrology. T1-T4, T7 and T8 are located in a separate catchment area (Barrow_SC_010) to the proposed development being assessed here. Two turbines (T5 and T6) are located within the Barrow_SC_030 catchment area where the underground collector cable, access track and substation are to be located.

The consented Bracklone 110kV substation is to be located at the end of the grid connection route in the Barrow_SC_020 sub-catchment. The only portion of the proposed development that falls within this catchment area is a portion of the underground grid connection cable. An NIS was undertaken as part of the planning application for the Bracklone substation. The NIS concluded that following the implementation of mitigation measures, the construction and operation of the Bracklone 110kV substation would not have any adverse effects to the integrity of any European site (i.e. the hydrological connection to the River Barrow And River Nore SAC). A drainage plan was also compiled as part of Bracklone substation project to prevent any significant impacts on hydrology and hydrogeology.

A search of Offaly County Council's online planning enquiry system for granted or on-going planning applications for the townlands encompassed within the site boundary comprising the townlands of Barrnaghs and Garryhinch. As with the previous search the results were one off housing developments or updates to existing housing developments such as the addition of a porch or retention of a shed.

4.9.4 Environmental Protection Agency (EPA) Facilities

A review of the EPA online mapping tool determined that there are 3 no IPPC facilities within the immediate vicinity of the subject site. P0330, P0274 and P0518. P0274 and P0518 are no longer in operation. P0330 is a builders merchant.

4.9.5 Existing Land-Use and On-Going Activities

The proposed development is in an area that is primarily used for agricultural. There are several one off dwellings along the route of the underground cable which passes through the urban area of Portarlington. The wider area contains areas used for peat extraction and areas of coniferous forestry.

4.9.6 Hydromorphology and Drainage

Hydromorphology is noted as the second highest significant pressure within the Barrow catchment. Of the 16 water crossings as part of the proposed project all water courses are considered highly modified.

4.9.7 Potential For Significant In-Combination Effects

It is considered that construction activities at the permitted Dernacart Windfarm, on-going agriculture, forestry, peat extraction and to a lesser extent one-off rural residential developments comprise the land-uses and activities could potentially interact synergistically with the proposed development to result in significant cumulative or in-combination effects with the proposed development, in light of the potential effect of the project as outlined in **Section 5**, below.

The potential in-combination effects are discussed further in **Section 7.4**, below.

5 IDENTIFICATION OF POTENTIAL EFFECTS OF THE PROJECT

Potential likely ecological effects arising from the project are listed in **Table 8** below.

Table 8 Direct, indirect and secondary ecological impacts of the construction, operational and decommissioning phase (either alone or in combination with other plans or projects) which have the potential to cause significant effects

Description of elements of the project likely to give rise to potential ecological impacts	Run-off discharges during construction could enter the Cottoners Brook or the River Barrow leading to downstream Natura 2000 network.
Describe any likely direct, indirect or secondary ecological impacts of the project (either alone or in combination with other plans or projects) by virtue of: **Size and scale; Land-take;** **Distance from Natura 2000 Site or key features of the Site;** **Resource requirements;** **Emissions;** **Excavation requirements;** **Transportation requirements;** **Duration of construction, operation etc.; and** **Other**	Size, scale and land-take The size and scale of the proposed development are as follows: One (1) 110kV substation of approximately 5.3 acres with associated compound 2.45km underground electric cabling systems between the wind farm site and the proposed 110kV substation overlain with 5.5m wide stone access track 10.85km of 110kV underground electrical cabling from the proposed 110kV substation to the consented Bracklone 110kV substation including enabling works, services diversions, joint bays, along the grid route New entrance and access road to substation site from the R423. Peat/spoil deposition areas The proposed development is not located within any Natura 2000 site. The land-take associated with the proposed project is the direct footprint of the proposed project as outlined above. This includes the felling of approximately 2.8ha of coniferous forestry. Distance from Natura 2000 site or key features of the site The proposed development is not located within any Natura 2000 Site. The distance of the proposed development site in relation to each of the Natura 2000 sites is detailed in Table 9. Resource requirements Construction of the project will entail the use of soil, steel, stone and water, all of which are typical and readily available construction materials. Emissions The main source of waste associated with the project will be during the construction phase. Emissions to water will occur during the construction phase in the form of run-off to adjacent water courses. This has the potential to release silt and sediment into the

	Natura 2000 sites downstream from the proposed development. Operational phase emissions include the collection and treatment of foul emissions from the site which will connect into an underground holding tank. There will be noise associated with site clearance and construction. This will be localised to the development site and immediate surrounds. Emissions in the form of dust are the most likely emissions to air occurring during the construction phase. Excavations Minor excavations will occur during the construction phase. Transportation requirements The transport of materials will, in parts be adjacent to the River Nore and River Barrow SAC, however this will be on existing infrastructure. Duration of operation, etc. Construction of the proposed development will beundertaken over a 16month period. . The operational phase will be permanent.

6 STAGE 1: SCREENING FOR APPROPRIATE ASSESSMENT

6.1 ZONE OF IMPACT INFLUENCE

The screening stage of AA involves compiling the Natura 2000 sites within a likely zone of impact for analysis as to whether they may be significantly impacted by the proposed development. All Natura 2000 sites within 15 kilometres of the proposed development will be characterised in the context of the rationale for designation and qualifying features. In line with the precautionary principle, during the preparation of this report any Natura 2000 sites located outside the 15-kilometre radius that may be significantly impacted because of the proposed development are also considered.

Following this, potential effects associated with the proposal will be identified before an assessment is made of the likely significance of these effects. As described above, the test for the screening for Appropriate Assessment is to assess, in view of best scientific knowledge, if the development, individually or in combination with other plans/projects, is likely to have a significant effect on a Natura 2000 site. If there are any significant, potentially significant, or uncertain effects, it will be necessary to proceed to Appropriate Assessment and submit an NIS.

6.2 APPROPRIATE ASSESMENT GUIDANCE

This section considers the list of sites identified in **Section 6.3** below together with the potential ecological impacts identified in the previous section and determines whether the project is likely to have significant effects on a Natura 2000 site.

When assessing impact, Natura 2000 sites are only considered relevant where a credible or tangible source-pathway-receptor link exists between the proposed development and a protected species or habitat type. In order for an impact to occur there must be a risk initiated by having a 'source' (e.g. instream works during the proposed rehabilitation works), a 'receptor' (e.g. a protected habitat/species and/or the habitats on which they depend), and an impact pathway between the source and the receptor (e.g. a waterbody which connects the proposed development site to the protected species or habitats). An evaluation based on these factors to determine which Natura 2000 sites are the plausible ecological receptors for potential impacts

of the proposed development is conducted in **Table 8** below. The evaluation takes cognisance of the scope, scale, nature and size of the project, its location relative to Natura 2000 sites, and the degree of connectedness that exists between the project and each potential ecological receptor.

The likelihood of significant effects to a Natura 2000 site from the proposed development is determined based on a number of indicators:

- Water quality and resource
- Habitat loss
- Habitat alteration
- Habitat or species fragmentation
- Disturbance and/or displacement of species

The likelihood of significant cumulative/in-combination effects is assessed in **Section 4.9**.

6.3 IDENTIFICATION OF NATURA 2000 SITES

A map showing all designated sites identified within 15km of the proposed development site is shown in **Figure 8**.

Table 9 below lists designated SACs and SPAs within the anticipated zone of influence (ZOI) of the proposed development site including their proximity and any source-pathway-receptor link.

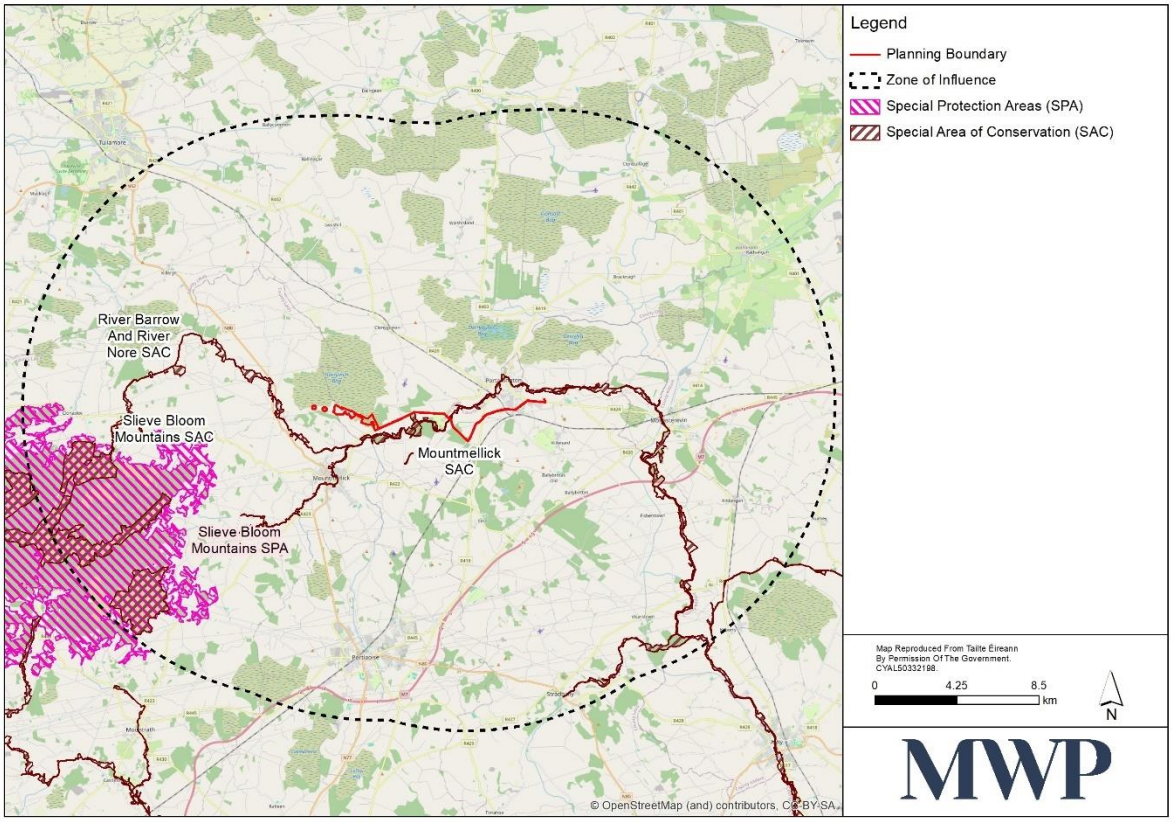

Figure 8 Natura 2000 sites within 15km of the proposed development

Table 9 Natura 2000 sites within 15km of the proposed development

Site Name and Code	Distance from designated site to Proposed Development	Qualifying Features of Conservation Interest	Hydrological/Ecological connection?
River Barrow and River Nore SAC (002162)	0.2	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [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] European dry heaths [4030] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Petrifying springs with tufa formation (*Cratoneurion*) [7220] 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] *Vertigo moulinsiana* (Desmoulin's whorl snail) [1016] *Margaritifera margaritifera* (Freshwater pearl mussel) [1029] *Austropotamobius pallipes* (White-clawed crayfish) [1092] P*etromyzon marinus* (Sea lamprey) [1095] *Lampetra planeri* (Brook lamprey) [1096] *Lampetra fluviatilis* (River lamprey) [1099] *Alosa fallax fallax* (Twaite shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney fern) [1421] *Margaritifera durrovensis* (Nore pearl mussel) [1990]	There is a tenuous hydrological connection linking the proposed project site to this SAC via the drains/watercourses that drain the study area or watercourses the proposed grid route crosses as these watercourses ultimately flow into the River Barrow which is associated with the SAC. While there will be no in stream works this SAC will be carried forward to assessment on the basis of the precautionary principle
Mountmellick SAC	1.85	*Vertigo moulinsiana* (Desmoulin's whorl snail) [1016]	There is no source pathway receptor connection between the proposed development and the SAC
Slieve Bloom Mountains SAC	6.6	Northern Atlantic wet heaths with *Erica tetralix* [4010] Blanket bogs (* if active bog) [7130] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)* [91E0]	There is no source pathway receptor connection between the proposed development and the SAC
Slieve Bloom Mountains SPA	9.7	*Circus cyaneus* (Hen harrier) [A082]	This species was not recorded during the site visits.

Site Name and Code	Distance from designated site to Proposed Development	Qualifying Features of Conservation Interest	Hydrological/Ecological connection?
			This species was not recorded during survey carried out for the now permitted Dernacart Wind Farm in 2018 and 2019. NPWS: there were no records of known nests received from the data request. NBDC: This species is present in one of the three Hectads (N41) during winter. No breeding records exist from NBDC data set. Core foraging range from nest site during breeding season for hen harrier is 2km and the distance between alternative nest sites is generally within 1km. As this SPA is situated 9km away from the proposed development site it is outside the core foraging range for Hen harrier and therefore no source pathway receptor connectivity exists between the proposed development and the SPA.

6.3.1 Characteristics of Natura 2000 Sites With A Hydrological/Ecological Connection To The Proposed Development Site

Table 10 lists the features of interest and conservation objectives for the designated site with which there is a potential source-pathway-receptor link identified in **Table 9**. Information pertaining to designated sites is from site synopses, conservation objectives and other information available on www.npws.ie.

The information below is taken from:
NPWS (2011) Conservation Objectives: River Barrow and River Nore SAC 002162. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

Table 10 Features of interest and conservation objectives for the designated site

Qualifying feature and code		Conservation objectives
Desmoulins whorl snail (*Vertigo moulinsiana)*	1016	To maintain the favourable conservation condition of Desmoulin's whorl snail in the River Barrow and River Nore SAC, which is defined by the following list of attributes and targe ts: Distribution - Maintain at two known sites At least 5 snails in at least 50% of samples Adult snails present in at least 60% of samples per site Minimum of 1ha of suitable habitat per site 90% of samples in habitat classes I and II as defined in Moorkens & Killeen (2011) 90% of samples in moisture class 3-4 as defined in Moorkens & Killeen (2011)
Nore Freshwater Pearl Mussel (*Margaritifera durrovensis*)	1029	To restore the favourable conservation condition of the Nore Freshwater Pearl Mussel in River Nore and River Barrow SAC, which is defined by the following list of attributes and targets Distribution - Maintain at 15.5km Restore population to at least 5000 adult mussels Restore to at least 20% of population no more than 65mm in length; and at least 5% of population no more than 30mm in length No more than 5% decline from previous number of live adults counted; dead shells less than 1% of the adult population and scattered in distribution No more than 5% decline from previous number of live adults counted; dead shells less than 1% of the adult population and scattered in distribution Restore condition of suitable habitat Restore water quality - macroinvertebrates: EQR greater than 0.90 (Q4-5 or Q5); phytobenthos: EQR greater than 0.93 Restore substratum quality - filamentous algae: absent or trace (less than 5%); macrophytes: absent or trace (less than 5%) Restore substratum quality - stable cobble and gravel substrate with very little fine material; no artificially elevated levels of fine sediment Restore to no more than 20% decline from water column to 5cm depth in substrate Restore appropriate hydrological regimes Maintain sufficient juvenile salmonids to host glochidial larvae
White-clawed crayfish (Au stropotamobius pall ipes)	1092	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: Distribution - No reduction from baseline Juveniles and/or females with eggs in at least 50% of positive samples No alien crayfish species No instances of disease At least Q3-4 at all sites sampled by EPA No decline in heterogeneity or habitat quality
Sea Lamprey (*Petromyzon marinus*)	1095	To restore the favourable conservation condition of Sea lamprey in the River Barrow and River Nore SAC, which is defined by the following list of attributes and targets: Extent of Anadromy: Greater than 75% of main stem length of rivers accessible from estuary At least three age/size groups present Mean catchment juvenile density at least 1/sqmetres No decline in extent and distribution of spawning beds

Qualifying feature and code		Conservation objectives
		More than 50% of sample sites positive
Brook lamprey (*Lampetra planeri*)	1096	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: Access to all watercourses down to first order streams At least three age/size groups of brook/river lamprey present Mean catchment ammocoete density of brook/river lamprey at least 2/sqmetres No decline in extent and distribution of spawning beds More than 50% of sample sites positive
River lamprey (*Lampetra fluviatilis)*	1099	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: At least three age/size groups present Mean catchment juvenile density at least 2/sqmetres No decline in extent and distribution of spawning beds More than 50% of sample sites positive
Twaite shad (Alosa fallax)	1103	To restore the favourable conservation condition of Twaite shad in the River Barrow and River Nore SAC, which is defined by the following list of attributes and targets: Distribution – Greater than 75% of main stem length of rivers accessible from estuary More than one age class present No decline in extent and distribution of spawning habitats Water oxygen levels no lower than 5mg/l Maintain stable gravel substrate with very little fine material, free of filamentous algal (macroalgae) growth and macrophyte (rooted higher plants) growth
Atlantic salmon (*Salmo salar*) (only in fresh water)	1106	To restore the favourable conservation condition of Salmon in the River Barrow and River Nore SAC, which is defined by the following list of attributes and targets: Distribution – 100% of river channels down to second order accessible form estuary Adult spawning fish conservation limit for each system consistently exceeded Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 min sampling No significant decline in out migrating smolt abundance Water quality at least Q4 at all sites sampled by EPA
Estuaries	1130	To maintain the favourable conservation condition of Estuaries in the River Barrow and River Nore SAC, which is defined by the following list of attributes and targets: The permanent habitat area is stable or increasing, subject to natural processes The following sediment communities should be maintained in a natural condition: Muddy estuarine community complex; Sand to muddy fine sand community complex; Fine sand with Fabulina fabula community Maintain the natural extent of the Sabellaria alveolata reef, subject to natural process
Mudflats and sandflats not covered by seawater at low tide	1140	To maintain the favourable conservation condition of the Mudflats and sandflats not covered by seawater at low tide in the River Barrow and River Nore SAC, which is defined by the following list of attributes and targets: The permanent habitat area is stable or increasing, subject to natural processes The following sediment communities should be maintained in a natural condition: Muddy estuarine community complex; Sand to muddy fine sand community complex

Qualifying feature and code		Conservation objectives
***Salicornia* and other annuals colonizing mud and sand**	1310	To maintain the favourable conservation condition of Salicornia and other annuals colonizing mud and sand in the River Barrow and River Nore SAC, which is defined by the following list of attributes and targets: Area stable or increasing, subject to natural processes, including erosion and succession. For the one subsite mapped: Ringville 0.03ha. No decline in habitat distribution, subject to natural processes Maintain or where necessary restore natural circulation of sediments and organic matter, without any physical obstructions Maintain natural tidal regime Maintain range of saltmarsh habitat zonations including transitional zones, subject to natural processes including erosion and succession Maintain structural variation within sward Maintain more than 90% of area outside creeks vegetated Maintain range of subcommunities with typical species listed in Saltmarsh Monitoring Project (McCorry & Ryle, 2009) No significant expansion of *Spartina*. No new sites for this species and an annual spread of less than 1% where it is already known to occur
Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	1330	To restore the favourable conservation condition of Atlantic salt meadows in the River Barrow and River Nore SAC, which is defined by the following list of attributes and targets: Habitat area stable or increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: Dunbrody Abbey 1.25ha, Killowen - 2.59ha, Rochestown - 17.50ha, Ringville - 6.70ha. No decline in habitat distribution, subject to natural processes Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions Maintain natural tidal regime Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession Maintain range of saltmarsh habitat zonations including transitional zones, subject to natural processes including erosion and succession. Maintain structural variation within sward Maintain more than 90% of area outside creeks vegetated Maintain range of subcommunities with typical species listed in Saltmarsh Monitoring Project (McCorry & Ryle, 2009) No significant expansion of *Spartina*. No new sites for this species and an annual spread of less than 1% where it is already known to occur
Otter (*Lutra lutra*)	1355	To restore 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: No significant decline in distribution No significant decline in extent of terrestrial habitat. Area mapped and calculated as 122.8ha above high water mark (HWM); 1136.0ha along river banks / around ponds No significant decline in extent of marine habitat. Area mapped and calculated as 857.7ha No significant decline in extent of river habitat. Length mapped and calculated as 616.6km No significant decline in extent of lake habitat. Area mapped and calculated as 2.6ha No significant decline in number of couching sites and holts No significant decline in fish biomass available
Mediterranean salt meadows (*Juncetalia maritimi*)	1410	To restore the favourable conservation condition of Mediterranean salt meadows in the River Barrow and River Nore SAC, which is defined by the following list of attributes and targets: Habitat area stable or increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: Dunbrody Abbey 0.08ha, Rochestown - 0.04ha, Ringville - 6.70ha. No decline in habitat distribution, subject to natural processes

Qualifying feature and code		Conservation objectives
		Maintain or where necessary restore natural circulation of sediments and organic matter, without any physical obstructions Maintain natural tidal regime Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession Maintain range of saltmarsh habitat zonations including transitional zones, subject to natural processes including erosion and succession. Maintain structural variation within sward Maintain more than 90% of area outside creeks vegetated. Maintain range of subcommunities with typical species listed in Saltmarsh Monitoring Project (McCorry & Ryle, 2009) No significant expansion of Spartina. No new sites for this species and an annual spread of less than 1% where it is already known to occur
Killarney fern *Trichomanes speciosum*	1421	To maintain the favourable conservation condition of Killarney Fern in the River Barrow and River Nore SAC, which is defined by the following list of attributes and targets: No decline in distribution. Three locations known, with three colonies of gametophyte and one sporophyte colony. Maintain at least three colonies of gametophyte, and at least one sporophyte colony of over 35 fronds At least one of the locations to have a population structure comprising sporophyte, unfurling fronds, 'juvenile' sporophyte and gametophyte generations No loss of suitable habitat, such as shaded rock crevices, caves or gullies in or near to, known colonies. No loss of woodland canopy at or near to known locations Maintain hydrological conditions at the locations so that all colonies are in dripping or damp seeping habitats, and water is visible at all locations No increase in number of desiccated fronds. Presence of dessicated sporophyte fronds or gametophyte mats indicates conditions are unsuitable No changes in light levels:shading, due to anthropogenic impacts Invasive species absent or under control
Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation	3260	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: No decline in habitat distribution subject to natural processes Habitat area stable or increasing, subject to natural processes Maintain appropriate hydrological regime for river flow The groundwater flow to the habitat should be permanent and sufficient to maintain tufa formation The substratum should be dominated by large particles and free from fine sediments The groundwater and surface water should have sufficient concentrations of minerals to allow deposition and persistence of tufa deposits The concentration of suspended solids in the water column should be sufficiently low to prevent excessive deposition of fine sediments The concentration of nutrients in the water column should be sufficiently low to prevent changes in species composition or habitat condition Typical species of the relevant habitat sub-type should be present and in good condition The area of active floodplain at and upstream of the habitat should be maintained
European dry heath	4030	To maintain the favourable conservation condition of European dry heaths in the River Barrow and River Nore SAC, which is defined by the following list of attributes and targets: No decline in habitat distribution subject to natural processes Habitat area stable or increasing, subject to natural processes. Habitat area is not known but estimated as less than 400ha of the area of the SAC, occurring in dispersed locations No significant change in soil nutrient status, subject to natural processes. No increase or decrease in area of natural rock outcrop Cover of characteristic subshrub indicator species at least 25%: gorse (*Ulex europaeus*) and where rocky outcrops occur bilberry (*Vaccinium myrtillus*) and woodrush (*Luzula sylvatica*). Some rock outcrops support English stonecrop (Sedum anglicum), sheep's bit (*Jasione montana*) and wild madder (*Rubia peregrina*) as well as important moss and lichen assemblages

Qualifying feature and code		Conservation objectives
		Cover of senescent gorse less than 50% Long shoots of bilberry with signs of browsing collectively less than 33% Cover of scattered native trees and shrub less than 20% Number of positive indicator species at least 2 e.g. gorse and associated dry heath/ acid grassland flora Cover of positive indicator species at least 60%. This should include plant species characterisitic of dry heath in this SAC including gorse, bilberry and associated acid grassland flor a Number of bryophyte or noncrustose lichen species present at least 2 Cover of bracken less than 10% - however Bracken appears to be quite dense in places and before any management action is considered its rate of spread needs to be established as well as its threat, if any, to ot her dry heath species and its potential value to important fauna (e.g. Twite) Cover of agricultural weed species (negative indicator species) less than 1% Cover of non-native species less than 1%. No decline in distribution or population sizes of rare, threatened or scarce species, including Greater Broomrape (Orobanche rapum-genistae) and the legally protected clustered clover (Trifolium glomeratum) Cover of disturbed bare ground less than 10% (but if peat soil less than 5%) No signs of burning within sensitive areas
Hydrophilous tall h erb fringe communi ties of plains and of the montane to alpi ne levels	6430	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 S AC, which is defined by the following list of attributes and targets: No decline in habitat distribution subject to natural processes Habitat area stable or increasing, subject to natural processes Maintain appropriate hydrological regimes – flooding depth/height of water table 30%-70% of sward is between 40cm and 150cm Broadleaf herb component of vegetation between 40% and 90% At least 5 positive indicator species present 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*)
*** Petrifying springs with tufa formation (*Cratoneurion*)**	7220	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 followi ng list of attributes and targets: No decline in habitat distribution subject to natural processes Habitat area stable or increasing, subject to natural processes Maintain appropriate hydrological regimes – flooding depth/height of water table Maintain oligotrophic and calcareous water conditions Maintain typical species in vegetation composition
Old sessile oak woo ds with Ilex and Ble chnum in the Britis h Isles	91A0	To restore the favourable conservation condition of Old oak woodland with Ilex and Blechnum in the River Barrow and River Nore SAC, which is defined by the following list of attr ibutes and targets: Habitat area stable or increasing, subject to natural processes, at least 85.08ha for sub-sites surveyed No decline in habitat distribution

Qualifying feature and code		Conservation objectives
		Woodland size area stable of increasing. Where topographically possible, "large" woods at least 25ha in size and "small" woods at least 3ha in size Woodland structure is diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semimature trees and shrubs; and well-developed herb layer Maintain diversity and extent of community types Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy At least 30m³/ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter No decline in veteran trees No decline in indicators of local distinctiveness No decline in native tree cover - not less than 95% Typical species - A variety of typical native species present, depending on woodland type, including oak (*Quercus petraea*) and birch (*Betula pubescens*) Negative indicator species, particularly non-native invasive species, absent or under control
*** Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)***	91E0	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: Habitat area stable or increasing, subject to natural processes, at least 181.54ha for sites surveyed No decline in habitat distribution Woodland size area stable of increasing. Where topographically possible, "large" woods at least 25ha in size and "small" woods at least 3ha in size Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semimature trees and shrubs; and well-developed herb layer Maintain diversity and extent of community types Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy Appropriate hydrological regime necessary for maintenance of alluvial vegetation At least 30m³/ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter (greater than 20cm diameter in the case of alder) No decline in veteran trees No decline in indicators of local distinctiveness No decline in native tree cover - not less than 95% 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*)

6.4 ASSESSMENT OF SIGNIFICANCE OF POTENTIAL IMPACTS

This section considers the list of sites identified in **Section 6.3**, above, together with the potential ecological impacts identified in **Table 8**, above, and determines whether the project is likely to have any significant effects on a Natura 2000 site. When assessing impact, Natura 2000 sites are only considered relevant where a credible or tangible source-pathway-receptor link exists between the proposed development and a protected species or habitat type. In order for an impact to occur there must be a risk initiated by having a 'source' (e.g. excavation), and an impact pathway between the source and the receptor (e.g. a waterbody which connects the proposal site to the protected species or habitats). An evaluation based on these factors to determine which (if any) Natura 2000 site(s) are the plausible ecological receptors for potential impacts of the proposed development will be conducted in **Sections 6.4.1** and **6.4.2**, below. The evaluation takes cognisance of the scope, scale, nature and size of the project, its location relative to the Natura 2000 sites listed in **Table 9**, above, and the degree of connectedness that exists between the project and each Natura 2000 site's potential ecological receptors

6.4.1 Natura 2000 Sites Outside the Likely Zone of Impact (ZOI)

With regards to the proposal, it is considered that the works do not include any element that has the potential to significantly affect the conservation objectives for which certain Natura 2000 sites are designated. It is considered that these Natura 2000 sites are outside the zone of potential impact influence of the proposal due to the absence of plausible impact pathways and/or the attenuating effect of the distance intervening. Therefore, it is objectively concluded that significant effects on the conservation objectives of these sites are not reasonably foreseeable because of the proposed development described at **Section 3**, above. These sites are listed in **Table 11** , below, along with their approximate distances from the subject site and the rationale for their exclusion from further consideration within this report.

Table 11 Natura 2000 sites excluded from further assessment including rationale for exclusion

Designated site	Approximate distance from subject site	Rationale for exclusion from further assessment
Mountmellick SAC (002141)	1.85	The proposed development does not overlap with the SAC There is no source pathway receptor connection between the proposed development and the SAC
Slieve Bloom Mountains SAC (00412)	6.6	The SAC is designated for habitat type qualifying interests. The proposed development is wholly outside the boundary of the SAC There is no source pathway receptor connection between the proposed development and the SAC
Slieve Bloom Mountains SPA (004160)	9.7	This species was not recorded during the site visits. This species was not recorded during survey carried out for the now permitted Dernacart Wind Farm in 2018 and 2019. NPWS: there were no records of known nests received from the data request. NBDC: This species is present in one of the three Hectads (N41) during winter. No breeding records exist from NBDC data set. Core foraging range from nest site during breeding season for hen harrier is 2km and the distance between alternative nest sites is generally within 1km. As this SPA is situated 9km away from the proposed development site it is outside the core foraging range for Hen harrier and therefore no source pathway receptor connectivity exists between the proposed development and the SPA.

6.4.2 Natura 2000 Sites Within The Likely Zone of Impact

The assessment of significance of potential impacts that follows will focus on the remaining Natura 2000 site identified in **Table 12** , below, as it is considered that these sites have the potential to be impacted by the proposal.

Table 12 Natura 2000 sites within the likely zone of impact and rationale for inclusion

Designated site	Approximate distance from subject site	Rationale for inclusion for further assessment
River Barrow and River Nore SAC (002162)	0.2	Designated for wide variety of aquatic and terrestrial habitats and species. There is a tenuous hydrological connection linking the proposed project site to this SAC via the drains/watercourses that drain the study area or watercourses the proposed grid route crosses as these watercourses ultimately flow into the River Barrow which is associated with the SAC. While there will be no in stream works this SAC will be carried forward to assessment on the basis of the precautionary principle

6.5 CONCLUSION OF SCREENING STAGE

In conclusion, to determine any potential impacts of the proposed project on nearby Natura 2000 sites, a screening process for Appropriate Assessment was undertaken. The proposed development site is located within 15 kilometres of four Natura 2000 sites. It has been objectively concluded during this screening process that the proposed construction, operation and eventual decommissioning of:

One (1) 110kV substation with associated compound, including Two (2) single storey control and operational buildings, electrical plant, equipment, cabling, lighting, CCTV, lightning masts, diesel generator and diesel tank, security palisade fencing,

2.45km underground electric cabling systems between the wind farm site and the proposed 110kV substation overlain with 5.5m wide stone access track,

10.85km of 110kV underground electrical cabling from the proposed 110kV substation to the consented Bracklone 110kV substation including enabling works, services diversions, joint bays, along the grid route,

Entrance and access road to substation site from the R423,

A clear span and box culvert /piped water crossings,

Peat/spoil deposition areas &

All associated felling, drainage and ancillary works necessary to facilitate the development

either individually or in combination with other plans or projects, is not likely to have significant effects on the following three Natura 2000 sites located within 15 kilometres of the proposed development in view of those sites' Conservation Objectives and further assessment is deemed unnecessary:

- Mountmellick SAC (002141)
- Slieve Bloom Mountains SAC (000412)
- Slieve Bloom Mountains SPA (004160)

It cannot be objectively concluded at this stage that without mitigation measures the proposed development will not result in significant effects on the following designated Natura 2000 sites due to the potential impacts identified in **Sections 5 and 6.4.2**, above:

- River Barrow and River Nore SAC (002162)

Therefore, it has been concluded that, in respect of these European sites, the project should proceed to Stage 2 of the Appropriate Assessment process and as such, a Natura Impact Statement has been completed (see **Section 7**, below). It is concluded that all other European sites have been correctly screened out or excluded from further consideration based on objective information that the project, individually or in-combination with other plans or projects, will have no, or no appreciable, effects on those sites.

7 STAGE 2: NATURA IMPACT STATEMENT

7.1 INTRODUCTION

It has been concluded in **Section 6,** above, in Stage 1 of the Screening for Appropriate assessment that the proposed construction, operation and decommissioning of 110kV substation, windfarm collector cable and new access road in County Offaly and underground grid connection in County Laois are likely to have a significant effect, or significant effects cannot be ruled out at this stage, on the Natura 2000 site listed in **Table 12** above.

Identifying a risk that could, in theory, cause an impact does not automatically mean that the risk event will occur or that it will cause or create an adverse impact. However, identification of the risk does mean that there is a latent possibility of ecological or environmental damage occurring, with the level and significance of the impact depending upon the nature of the risk, the extent of the exposure to the risk and the characteristics of the receptor. Therefore, bearing in mind the scope, scale, nature and size of the project, its location relative to the distribution of the species and habitats listed, and the degree of connectedness that exists between the project and potential receptors, it is considered that not all are within the zone of potential impact of the proposal.

An evaluation based on these factors to determine which species and habitats are the plausible ecological receptors for potential impacts of the unmitigated proposal has been conducted in **Section 7.1.3** below, for the proposed development in County Laois. This evaluation determined the specific qualifying features of the SAC that should be selected for further assessment as plausible ecological receptors.

7.1.1 RIVER BARROW AND RIVER NORE SAC (002162)

The following text is taken from the Natura 2000 Standard Data form for the River Barrow and River Nore SAC[2].

“This site consists of most of the freshwater stretches of the Barrow/Nore River catchments. The Barrow is tidal as far upriver as Graiguenamanagh while the Nore is tidal as far upriver as Inishtioge. The site also includes the extreme lower reaches of the River Suir and all of the estuarine component of Waterford Harbour extending to Creadan Head. 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. Both rivers rise in the Old Red Sandstone of the Slieve Bloom Mountains. They traverse limestone bedrock for a good proportion of their routes, though the middle reaches of the Barrow and many of the eastern tributaries run through Leinster Granite. A wide

[2] https://natura2000.eea.europa.eu/Natura2000/SDF.aspx?site=IE0002162#4 (Accessed 1st May 2024)

range of habitats associated with the rivers are included within the site, including substantial areas of woodland (deciduous, mixed), dry heath, wet grassland, swamp and marsh vegetation, salt marshes, a small dune system, biogenic reefs and intertidal sand and mud flats. Areas of improved grassland, arable land and coniferous plantations are included in the site for water quality reasons.

The site supports many Annexed habitats including the priority habitats of alluvial woodland and petrifying springs. Quality of habitat is generally good. The site also supports a number of Annex II animal species - *Salmo salar, Margaritifera margaritifera, M.m. durrovensis, Alosa fallax fallax, Austropotamobius pallipes, Petromyzon marinus, Lutra lutra, Lampetra fluviatilis and L. planeri.* Annex I Bird species include *Anser albifrons flavirostris, Falco peregrinus, Cygnus cygnus, Cygnus columbianus bewickii, Limosa lapponica, Pluvialis apricaria* and *Alcedo atthis*. A range of rare plants and invertebrates are found in the woods along these rivers and rare plants are also associated with the saltmarsh."

7.1.2 Description Of The Natura 2000 Site

Habitats

Petrifying springs with tufa formation (*Cratoneurion*) (7220)
Estuaries (1130)
Mudflats and sandflats not covered by seawater at low tide (1140)
Reefs (1170)
Salicornia and other annuals colonizing mud and sand (1310)
Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) (1330)
Mediterranean salt meadows (*Juncetalia maritimi*) (1410)
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)
Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation (3260)
Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels (6430)
European dry heaths (4030)

Species

Margaritifera durovensis (Nore Freshwater Pearl Mussel) [1029]
Petromyzon marinus (Sea Lamprey) [1095]
Lampetra planeri (Brook Lamprey) [1096]
Lampetra fluviatilis (River Lamprey) [1099]
Salmo salar (Salmon) [1106] (QI status pertains only to freshwater phases of life cycle)
Lutra lutra (Otter) [1355]
Vertigo moulinsiana (Desmoulins whorl snail) [1016]
*Austropotamobius pallipes (*White-clawed crayfish*)* [1092]

7.1.3 Identification Of Potentially Significant Impacts To Qualifying Features

Table 13 Selection of qualifying features of the River Barrow and River Nore SAC (002162) for further assessment

Qualifying Feature	Source Pathway Receptor Connectivity	Potential for significant Impacts
Desmoulins whorl snail (*Vertigo moulinsiana)* [1016]	The presence of Demoulins whorl snail is mapped in two areas within the SAC. According to Moorkens and Killeen (2011) Desmoulins whorl snail may be found in rich fen and flush, reed and large sedge swamps, tall herb swamps, marsh, canals and riparian zone habitats. The footprint of the proposed development does not overlap with any of these habitats, nor does it overlap with the mapped areas in the conservation objectives document. Given there is no supporting habitat for the qualifying interest within the proposed development footprint is concluded there is no likelihood of a potential significant effect of the qualifying interest.	No
Nore Freshwater Pearl Mussel (*Margaritifera durrovensis*) [1029]	While the exact distribution of the Nore freshwater pearl mussel is not mapped in the conservation objectives document, the aquatic surveys carried out by MWP in August 2023 did not note any populations of the species present in the vicinity of any of the water crossings associated with the proposed project. Furthermore aquatic surveys carried out for the permitted Dernacart windfarm in 2018 similarly did not note the presence of the species in the waters draining the proposed development.	No
White-clawed crayfish (*Austropotamobius pallipes*) [1092]	This species was not recorded at the proposed development site or at any of the water crossings associated with the UGC or grid connection, but records do exist of this species within all three hectads encompassing the site. This species is most likely limited to the Cottoners brook and the River Barrow.	Yes
Sea lamprey (*Petromyzon marinus*) [1095] **River lamprey (Lampetra fluviatilis) [1099]**	The life cycles of sea lamprey and river lamprey contain both a marine phase and a freshwater phase. Both species spend their adult life in marine and estuarine waters, living as external parasites on other fish species before migrating up rivers in spring to spawn in areas of clean gravel, after which they die. Sea lamprey and river lamprey are poor swimmers (Reinhardt et al., 2009) that are generally considered unable to navigate past weirs and other barriers. Therefore, they often spawn in the lower reaches of rivers but can also migrate up to 50 miles upstream if necessary (Kurz & Costello, 1999). The existing drainage network at the proposed development site empties into watercourses that ultimately merge with the SAC, thereby creating a hydrological connection between the proposal site and the SAC through which there is potential for water quality impacts to occur, particularly during the construction phase of the proposed development. Therefore, based on this and the precautionary principle, it is deemed that there is potential for significant impacts to the conservation objectives for 'Sea lamprey' and/or 'River lamprey'so both species will be considered further in the NIS.	Yes
Brook lamprey (*Lampetra planeri*) [1096]	Brook lamprey is the smallest of the three lamprey species native to Ireland. Unlike sea and river lamprey, it is not parasitic and is non-migratory, spending its entire life in freshwater.	Yes

Qualifying Feature	Source Pathway Receptor Connectivity	Potential for significant Impacts
	Species distribution within river catchments is dependent on the availability of suitable habitat; adults require fine sand/gravel areas in which to spawn while the juvenile form needs clean, fine sediment into which to burrow (King et al., 2011). The existing drainage network at the site drains into watercourses that merge with the SAC thereby creating a hydrological connection between the proposal site and the SAC through which there is potential for water quality impacts to occur, particularly during the construction phase of the proposed development. Based on this and the precautionary principle, it is deemed that there is potential for significant impacts to the conservation objectives for Brook lamprey so the species will be considered further in the NIS.	
Twaite shad (*Alosa fallax*) [1103]	The existing drainage network at the site drains into watercourses that merge with the SAC thereby creating a hydrological connection between the proposal site and the SAC through which there is potential for water quality impacts to occur, particularly during the construction phase of the proposed development. Based on this and the precautionary principle, it is deemed that there is potential for significant impacts to the conservation objectives for Twaite Shad so the species will be considered further in the NIS.	Yes
Atlantic salmon (*Salmo salar*) (only in fresh water) [1106]	Salmon is an anadromous species, living in freshwater for at least the first two or three years of life before migrating to sea. Most Irish salmon spend one winter at sea before returning to their natal rivers. Adult salmon occur in the River Barrow prior to returning to natal streams to spawn, and smolts occur in the estuary on their journey from influent rivers to the sea (NPWS, 2012b). The existing drainage network at the site drains into watercourses that merge with the SAC thereby creating a hydrological connection between the proposal site and the SAC through which there is potential for water quality impacts to occur, particularly during the construction phase of the proposed development. Based on this and the precautionary principle, it is deemed that there is potential for significant impacts to the conservation objectives for Atlantic salmon so the species will be considered further in the NIS.	Yes
Otter (*Lutra lutra*) [1355]	Otter has a widespread distribution throughout Ireland and can be found in a wide variety of aquatic habitats such as lakes, rivers, streams, estuaries, marshland, canals and along the coast. They are mainly solitary animals which prey on a wide variety of vertebrate and invertebrate species, although their diet primarily comprises fish. The amount of time spent within different parts of an individual's home range is related to prey abundance. Safe refuges where they can rest are also essential and they are highly territorial. No evidence of otter was recorded during the ecological field surveys and there are no documented records of otter held by the NBDC for the proposed development site. However, the existing surface drainage network of the proposal site drains into watercourses that ultimately merge with the SAC, thereby creating an indirect hydrological connection between the proposal site and the SAC through which there is potential for water quality impacts to occur, particularly during the construction phase of the proposed development. This creates the potential for otter to be indirectly affected through a reduction in prey source and habitat availability. Therefore, it is	Yes

Qualifying Feature	Source Pathway Receptor Connectivity	Potential for significant Impacts
	considered that there is potential for significant impacts to the conservation objectives for 'Otter' so the species will be considered further in the NIS.	
Killarney fern *Trichomanes speciosum* [1421]	No Killarney fern was noted during the course of the field surveys for the proposed development. Given the characteristics and location of the project including the nature, extent and scale of the proposed works, the distribution of Killarney fern, it is not considered that the proposal has the potential to significantly impact on this species. Thus, the project will not affect the conservation objectives for the habitat is not considered further.	No
Estuaries [1130]	Given the characteristics and location of the project including the nature, extent and scale of the proposed works, the dilution potential of the River Barrow, the distribution of estuary habitat, it is not considered that the proposal has the potential to significantly impact on this habitat. Thus, the project will not affect the conservation objectives for the habitat is not considered further.	No
Mudflats and sandflats not covered by seawater at low tide [1140]	Given the characteristics and location of the project including the nature, extent and scale of the proposed works, the dilution potential of the River Barrow, the distribution of mudflats and sandflats not covered by seawater at low tide habitat, it is not considered that the proposal has the potential to significantly impact on this habitat. Thus, the project will not affect the conservation objectives for the habitat is not considered further.	No
***Salicornia* and other annuals colonising mud and sand [1310]**	Given the characteristics and location of the project including the nature, extent and scale of the proposed works, the dilution potential of the River Barrow, the distribution of *Salicornia* and other annuals colonising mud and sand habitat, it is not considered that the proposal has the potential to significantly impact on this habitat. Thus, the project will not affect the conservation objectives for the habitat is not considered further.	No
***Atlantic salt meadows (Glauco-Puccinellietalia maritimae)* [1330]**	Given the characteristics and location of the project including the nature, extent and scale of the proposed works, the dilution potential of the River Barrow, the distribution of Atlantic salt meadows habitat, it is not considered that the proposal has the potential to significantly impact on this habitat. Thus, the project will not affect the conservation objectives for the habitat is not considered further.	No
Mediterranean salt meadows (*Juncetalia maritimi*) [1410]	Given the characteristics and location of the project including the nature, extent and scale of the proposed works, the dilution potential of the River Barrow, the distribution of Mediterranean salt meadows habitat, it is not considered that the proposal has the potential to significantly impact on this habitat. Thus, the project will not affect the conservation objectives for the habitat is not considered further.	No
Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]	The existing drainage network at the site drains into watercourses that merge with the SAC thereby creating a hydrological connection between the proposal site and the SAC through which there is potential for water quality impacts to occur, particularly during the construction phase of the proposed development. Based on this and the precautionary principle, it is deemed that there is potential for significant impacts to the conservation objectives for Water	Yes

Qualifying Feature	Source Pathway Receptor Connectivity	Potential for significant Impacts
	courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation so the habitat will be considered further in the NIS.	
European dry heath [4030]	No European dry heath was noted during the course of the field surveys for the proposed development. Given the characteristics and location of the project including the nature, extent and scale of the proposed works, the distribution of European heath habitat, it is not considered that the proposal has the potential to significantly impact on this habitat. Thus, the project will not affect the conservation objectives for the habitat is not considered further.	No
Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]	No hydrophilous tall herb fringe communities of plains and of the montane to alpine levels was noted during the course of the field surveys for the proposed development. Given the characteristics and location of the project including the nature, extent and scale of the proposed works, the distribution of hydrophilous tall herb fringe communities of plains and of the montane to alpine levels habitat, it is not considered that the proposal has the potential to significantly impact on this habitat. Thus, the project will not affect the conservation objectives for the habitat is not considered further.	No
*** Petrifying springs with tufa formation (*Cratoneurion*) [7220]**	No petrifying spring with tufa formation was noted during the course of the field surveys for the proposed development. Given the characteristics and location of the project including the nature, extent and scale of the proposed works, the distribution of petrifying springs with tufa formation habitat, it is not considered that the proposal has the potential to significantly impact on this habitat. Thus, the project will not affect the conservation objectives for the habitat is not considered further.	No
Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	No old sessile oak woods was noted during the course of the field surveys for the proposed development. Given the characteristics and location of the project including the nature, extent and scale of the proposed works, the distribution of old sessile oak woods with Ilex and Blechnum habitat, it is not considered that the proposal has the potential to significantly impact on this habitat. Thus, the project will not affect the conservation objectives for the habitat is not considered further.	No
*** Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)* [91E0]**	No European dry heath was noted during the course of the field surveys for the proposed development. Given the characteristics and location of the project including the nature, extent and scale of the proposed works, the distribution of Alluvial forests with *Alnus glutinosa and Fraxinus excelsior* habitat, it is not considered that the proposal has the potential to significantly impact on this habitat. Thus, the project will not affect the conservation objectives for the habitat is not considered further.	No

As can be seen in **Table 13** above, it has been found that the proposed development has the potential to result in significant effects to the conservation objectives of the following qualifying interests of the River Barrow and River Nore SAC:

- White-clawed crayfish (*Austropotamobius pallipes*) [1092]
- Sea lamprey (*Petromyzon marinus*) [1095]
- River lamprey (*Lampetra fluviatilis*) [1099]
- Brook lamprey (*Lampetra planeri*) [1096]
- Twaite shad (*Alosa fallax*) [1103]
- Atlantic salmon (*Salmo salar*) (only in fresh water) [1106]
- Otter (*Lutra lutra*) [1355]
- Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]

7.2 ASSESSMENT OF POTENTIALLY SIGNIFICANT EFFECTS

The likelihood of adverse effects to a Natura 2000 site from the proposed development has been determined based on the following indicators:

- Water quality
- Habitat loss or alteration
- Disturbance and/or displacement of species
- Habitat or species fragmentation

7.2.1 Water Quality

There are several watercourses draining the proposed development site and surrounding areas that ultimately drain into the Natura 2000 sites downstream, namely the River Barrow and River Nore SAC. The existing drainage network within the proposed development site, together with the network of drains in the surrounding area, create the potential for a hydrological link between the proposed development site and the SAC downstream.

During the proposed development's construction phase, and in the absence of any pollution prevention controls, earthworks (namely the construction of the wind farm collector cable and access track which will involve excavation in peat soils and the felling of circa 2.8ha of conifer forestry) have the potential to adversely impact water quality due to soil erosion. The subsequent suspension of soil sediment particles in site run-off and overland flow can eventually reach the natural watercourses draining the site. Nutrients such as phosphorous can be bound to soil from past fertilisation of forestry crop, for example, and can become transported in overland flow. The presence of any felled trees and brash at a site can increase the risk of this phosphorous release to local drains and watercourses. Potential also exists for accidental ingress of fuel and oils, concrete and cementitious material and other such substances considered harmful to the aquatic environment that could enter the streams draining the proposed development site, via run-off, overland flow or the existing forestry drainage network and tributary streams. Water quality is a key environmental factor underpinning the conservation condition of the complex of wetland habitats and aquatic species the River Barrow and River Nore SAC are selected for.

Several watercourses drain the study area and their proximity to the proposed development site boundary provides a hydrological pathway between the proposed development site and the Natura 2000 sites located downstream. Given the pollution risk associated with the

construction phase of the works and the identified hydrological pathways, it is considered that there is potential for some localised reduction in water quality of theRiver Barrow and river Nore SAC. Potential sedimentation, nutrient-enrichment, or other aquatic pollution, that could arise in the absence of effective water quality protection measures has the potential to affect the freshwater ecology of watercourses within the vicinity of the works. There is also potential for significant water quality impacts within the River barrow and River Nore SAC in the absence of appropriate mitigation measures as these sites include waterbodies that are downstream receptors with respect to the streams draining the site. Based on the characteristics and scale of the proposed development, no significant impacts to water quality are foreseen during the operational phase; however, based on the precautionary principle, mitigation measures are recommended. In conclusion, there is a risk that without a programme of mitigation measures the proposed development may potentially result in adverse water quality impacts within the River Barrow and River Nore SAC during construction, with the potential for operational impacts also possible, though highly unlikely. Adverse water quality impacts, should they arise, could then exert indirect impacts on aquatic/water-dependant habitats and species protected within the SAC and may adversely affect the integrity of these sites.

Section 8, below, outlines a programme of mitigation measures designed to control and eliminate the point and diffuse pollution sources identified and to ameliorate the potential adverse water quality impacts that might ensue because of the proposed development. Mitigation measures for the decommissioning phase will be similar to those of the construction phase but will be of a considerably lesser scale since excavations will not be required. Residual impacts are assessed in **Section 9**, below.

7.2.2 Habitat Loss/Alteration

There is no spatial overlap between the proposed development and either of the Natura 2000 sites located downstream, so there will be no direct habitat loss within either. However, as has already been stated in Section 7.2.1, above, there is potential for significant water quality effects to both the SAC and SPA during the construction phase of the project via the hydrological links provided by watercourses draining the area. This creates potential for significant indirect alteration/loss of the aquatic habitats within the designated sites in the absence of mitigation.

If contaminated water were to enter the SAC, it would create the potential for habitat alteration (or indirect habitat loss) of riverbeds downstream from sediments suspended in overland flows that may clog up gravels suitable for spawning salmon and/or lamprey and/or twaite shad, in the absence of mitigation. Otter habitat may be indirectly affected by a reduction in water quality which can significantly alter the suitability of a site for otters and their requirements. Furthermore, the construction works may temporarily displace commuting or foraging otters. However, this impact is deemed to be limited given the localised and temporary nature of the works and the wide availability of similar suitable habitat in the vicinity of the works and the fact that the site is of relatively little ecological value to otter. ‘Watercourses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation’ also has the potential to be indirectly affected by a decrease in water quality. In conclusion, there is a risk that without a programme of mitigation measures, the proposed development may potentially result in indirect alteration of the habitats listed above within the River Barrow and River Nore SAC during construction, with the potential for operational impacts also possible, though highly unlikely. This could adversely affect the integrity of the River Barrow and River Nore SAC and

thus, mitigation measures in relation to protection of water quality are recommended and are discussed in **Section 8**, below.

7.2.3 Disturbance and/or Displacement of Species

The River Barrow and River Nore SAC is designated for the protection of several aquatic species, and the semi-aquatic species, otter.

As established in **Section 7.2.1**, above, the proposed development may result in adverse water quality impacts from potential pollutants entering watercourses during the construction phase of the proposal. Consequently, there is potential for indirect disturbance or displacement of salmon, twaite shad, white clawed crayfish and lamprey arising from potential water contamination. These species need a clean, well-aerated riverbed substrate to survive. Siltation of the substrate and eutrophication leading to increased biomass of filamentous algae could reduce the availability of suitable habitat. A reduction in water quality in the water column can reduce the suitability of the river habitat resulting in disturbance/displacement of the species. There is potential for significant indirect effects to the species due to a reduction in water quality. Regarding otter and the potential for disturbance or displacement impacts because of noise and/or human activity associated with construction of the development, it is noted that the drains in the vicinity of the proposed development site are considered to comprise marginal/sub-optimal foraging habitat for otter. No evidence of otter was recorded during the ecological site surveys. Although there is some potential for otter to occur, any disturbance or displacement impacts that arise due to fugitive noise from machinery and/or human activity during site preparation and construction will be temporary and will be restricted to the immediate vicinity of the proposed development site. Furthermore, much of the proposed development site consists of disturbed areas of agricultural land and a busy public road network where human activity level is already high and, therefore, construction is not expected to produce excessive noise levels significantly above existing background levels.

Additionally, otter is unlikely to use the 1 st order streams within the surrounding area given the small size and relatively low biomass of suitable prey species within the streams. However, larger watercourses downstream from the proposed development site can provide otter with a potential food source due to the wide variety of aquatic species present. Therefore, while the proposed development is unlikely to result in any direct displacement of otter, there is potential for indirect displacement of the species through a reduction in water quality and suitability of the main channel for aquatic fauna and, consequently, reducing the available prey biomass for otter. It has been determined above, that there is a risk, without a programme of mitigation measures to control any potential emissions from site preparation works and construction activity, point or diffuse sources of pollution that may ensue from the proposed development could exert an impact on water quality. **Section 8**, below, outlines a programme of mitigation measures designed to ameliorate potential adverse water quality impacts and thus indirect disturbance or displacement of aquatic species that might ensue because of the proposed development. Residual impacts are assessed in **Section 9**, below.

7.2.4 Habitat Or Species Fragmentation

Habitat fragmentation has been defined as ‘reduction and isolation of patches of natural environment’ (Franklin et al., 2002; Morrison et al., 2012) usually due to an external disturbance that alters the habitat and ‘create[s] isolated or tenuously connected patches of the original habitat’ (Wiens, 1989). This results in spatial separation of habitat units which had previously been in a state of greater continuity. Negative effects of habitat fragmentation on species or

populations can include increased isolation of populations or species which can detrimentally impact on the resilience or robustness of the populations reducing overall species diversity and altering species abundance. The proposed development will not result in any habitat loss within the relevant Natura 2000 site, the River Barrow and River Nore SAC, and significant habitat or species fragmentation impacts are not envisaged. However, a programme of mitigation measures pertaining to protection of water quality is recommended (see **Section 8**, below). Residual impacts are assessed in **Section 9**, below.

7.3 ASSESSMENT OF EFFECTS ON THE CONSERVATION OBJECTIVES OF THE RIVER BARROW AND RIVER NORE SAC (002162)

An evaluation was undertaken to determine which of the Qualifying Interests (QIs) of the River Barrow and River Nore SAC potentially lie within the zone of influence of the proposed development and required further assessment in the NIS. This was done through a scientific examination of ecological evidence and data listed above in **Section 2**, above, or referenced in the text, as well as the results of the ecological field surveys (**Section 4**, above). In this case, certain qualifying aquatic habitats and certain qualifying aquatic/water-dependant species were selected for further assessment. The remaining QI habitats and species were deemed to be outside of the zone of influence of the proposed development and were not selected for further assessment in the NIS. The effects of the project on the qualifying interests potentially within the zone of influence of the proposed development have been assessed against the measures designed to achieve the conservation objectives of the site. The outcome of the assessment has been presented in the following sections.

7.3.1 White-clawed crayfish (*Austropotamobius pallipes*) [1092]

Table 14 Attributes and Targets for 'White-Clawed Crayfish [1092]' within the River Barrow and River Nore SAC

Attribute/Measure	Target	Assessment of Potentially Significant Effect	Mitigation Required
Distribution/Occurrence	No reduction from baseline	The proposed development will not result in any change in distribution or accessibility of rivers from the estuary for sea lamprey. Thus, this attribute will not be negatively affected by the project.	No
Population structure: Recruitment/Percentage occurrence of juveniles and females with eggs	Juveniles and/or females with eggs in at least 50% of positive samples	Potential adverse water quality effects which may arise because of the proposed development could impact on the population structure of juveniles within the SAC in the ZOI.	Yes
Negative indicator species/occurrence	No alien crayfish species	The proposed development will not result in any change in distribution or accessibility of rivers from the estuary for sea lamprey. Thus, this attribute will not be negatively affected by the project.	No
Disease/Occurrence	No instances of disease	There are no in stream works associated with the proposed development. However, there are water crossings and as such works will be carried out in the vicinity of the riparian zone. Best practice to prevent the occurrence of disease should be followed in line with the precautionary principle.	Yes
Water Quality/EPA Q Value	At least Q3/Q4 at all sites sample by EPA	Potential adverse water quality effects which may arise because of the proposed development could impact on river water quality in the ZOI as measured by the Q-value	Yes
Habitat Quality: Heterogeneity/Occurrence of positive habitat features	No decline in heterogeneity or habitat quality	Site preparation and construction activity could adversely affect water quality and in turn habitat condition and typical vegetation composition.	Yes

7.3.2 Sea lamprey (*Petromyzon marinus*) [1095]

Table 15 Attributes and Targets for 'Sea Lamprey [1095]' within the River Barrow and River Nore SAC

Attribute/Measure	Target	Assessment of Potentially Significant Effect	Mitigation Required
Distribution: Extent of anadromy/% of river accessible	Greater than 75% of main stem length of rivers accessible from estuary	The proposed development will not result in any change in distribution or accessibility of rivers from the estuary for sea lamprey. Thus, this attribute will not be negatively affected by the project.	No
Population structure of juveniles/Number of age/size groups	At least three age/size groups present	Potential adverse water quality effects which may arise because of the proposed development could impact on the population structure of juveniles within the SAC in the ZOI.	Yes
Juvenile density in fine sediment/Juvenile/m2	Juvenile density at least 1/m2	Potential adverse water quality effects which may arise because of the proposed development could impact on juvenile sea lamprey habitat condition and juvenile population structure within the SAC in the ZOI.	Yes
Extent and distribution of spawning habitat/m2 and occurrence	No decline in extent and distribution of spawning beds	Lampreys require areas of clean gravels to spawn. Potential adverse water quality effects which may arise because of the proposed development could impact on spawning habitat potentially located downstream of the site and could result in a decline in spawning habitat extent within the SAC in the ZOI.	Yes
Availability of juvenile habitat/Number of positive sites in 3rd order channels (and greater), downstream of spawning areas	More than 50% of sample sites positive	Juvenile lampreys require areas of clean sand and silt in which to develop and mature. Potential adverse water quality effects which may arise because of the proposed development could impact on juvenile lamprey habitat condition and availability in watercourses downstream of the site within the SAC in the ZOI.	Yes

7.3.3 River lamprey (*Lampetra fluviatilis*) [1099]/ Brook lamprey (*Lampetra planeri*) [1096]

Table 16 Attributes and Targets for 'River lamprey [1099]/ Brook lamprey [1096]' within the River Barrow and River Nore SAC

Attribute/Measure	Target	Assessment of Potentially Significant Effect	Mitigation Required
Distribution/% of river accessible	Greater than 75% of main stem and major tributaries down to second order accessible from estuary	The proposed development will not result in any change in distribution or accessibility of watercourses for river/brook lamprey. Thus, this attribute will not be negatively affected by the project	No
Population structure of juveniles/Number of age/size groups	At least three age/size groups of river/brook lamprey present	Potential adverse water quality effects which may arise as a result of the proposed development could impact on the population structure of juvenile river or brook lamprey within the SAC in the ZOI.	Yes
Juvenile density in fine sediment/Juveniles/m2	Mean catchment juvenile density of brook/river lamprey at least 2/m2	Potential adverse water quality effects which may arise as a result of the proposed development could impact on juvenile lamprey habitat condition and mean catchment juvenile density within the SAC in the ZOI.	Yes
Extent and distribution of spawning habitat/m2 and occurrence	No decline in extent and distribution of spawning beds	Lampreys require areas of clean gravels to spawn. Potential adverse water quality effects which may arise as a result of the proposed development could impact on spawning habitat potentially located downstream of the site and could result in a decline in spawning habitat extent within the SAC in the ZOI.	Yes
Availability of juvenile habitat/Number of positive sites in 2nd order channels (and greater), downstream of spawning areas	More than 50% of sample sites positive	Juvenile lampreys require areas of clean sand and silt in which to develop and mature. Potential adverse water quality effects which may arise because of the proposed development could impact on juvenile lamprey habitat condition and availability in watercourses downstream of the site within the SAC in the ZOI.	Yes

7.3.4 Twaite shad (*Alosa fallax*) [1103]

Table 17 Attributes and Targets for 'Twaite shad [1103]' within the River Barrow and River Nore SAC

Attribute/Measure	Target	Assessment of Potentially Significant Effect	Mitigation Required
Distribution: Extent of anadromy/% of river accessible	Greater than 75% of main stem length of river accessible from estuary	The proposed development will not result in any change in distribution or accessibility of watercourses for river/brook lamprey. Thus, this attribute will not be negatively affected by the project	No
Population structure: age classes/Number of age classes	More than one age class present	Potential adverse water quality effects which may arise because of the proposed development could impact adult twaite shad, fry, or smolts in the ZOI.	Yes
Extent and distribution of spawning habitat/m2 and occurrence	No decline in extent and distribution of spawning habitats	Twaite shad require areas of clean gravel and cobble to spawn. Potential adverse water quality effects which may arise because of the proposed development could impact on spawning habitat potentially located downstream of the site and could result in a decline in spawning habitat within the SAC in the ZOI	Yes
Water quality: Oxygen levels/Mg per litre	No lower than 5mg/l	Potential adverse water quality effects which may arise because of the proposed development could impact on river water quality in the ZOI	Yes
Spawning habitat quality: Filamentous algae; macrophytes; sediment/Occurrence	Maintain stable gravel substrate with very little fine material, free of filamentous algal growth and macrophyte growth	Potential adverse water quality effects which may arise because of the proposed development could impact on spawning habitat potentially located downstream of the site and could result in a decline in spawning habitat within the SAC in the ZOI	Yes

7.3.5 Atlantic salmon (*Salmo salar*) (only in fresh water) [1106]

Table 18 Attributes and Targets for 'Atlantic salmon (only in fresh water) [1106]' within the River Barrow and River Nore SAC

Attribute/Measure	Target	Assessment of Potentially Significant Effect	Mitigation Required
Distribution: Extent of anadromy/% of river accessible	100% of river channels down to second order accessible from estuary	The proposed development will not result in any change in distribution or accessibility of rivers for salmon. Thus, this attribute will not be negatively affected by the project.	No
Adult spawning fish/Number	Conservation Limit (CL) for each system consistently exceeded	Potential adverse water quality effects which may arise because of the proposed development could impact adult salmon, fry, or smolts in the ZOI.	Yes
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 min 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	Salmon require areas of clean gravel and cobble to spawn. Potential adverse water quality effects which may arise because of the proposed development could impact on spawning habitat potentially located downstream of the site and could result in a decline in spawning habitat within the SAC in the ZOI	Yes
Water quality/EPA Q value	At least Q4 at all sites sampled by EPA	Potential adverse water quality effects which may arise because of the proposed development could impact on river water quality in the ZOI as measured by the Q-value	Yes

7.3.6 Otter (*Lutra lutra*) [1355]

Table 19 Attributes and Targets for 'Otter [1355]' within the River Barrow and River Nore SAC

Attribute/Measure	Target	Assessment of Potentially Significant Effect	Mitigation Required
Distribution/Percentage positive survey sites	No significant decline	The proposed development site features some small streams which are evaluated as marginal/sub-optimal potential foraging habitats for otter. Due to the nature, location and scale of the proposed development, a significant decline in distribution of otter is not likely. Thus, this attribute will not be negatively affected by the project.	No
Extent of terrestrial habitat/Hectares	No significant decline. Area mapped and calculated as 122.8ha above high water mark (HWM); 1136.0ha along river banks / around ponds	The proposed development will not result in any significant decline in the extent of terrestrial/ marine/freshwater (river) or freshwater (lake/lagoon) habitat for otter. Thus, this attribute will not be negatively affected.	No
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	Field surveys did not identify any suitable couching sites or breeding habitat. The proposed development will not result in any decline in the number of couching sites and holts for otter. Any otter using the proposed development site are considered transient i.e. only passing through from one catchment to another. Thus, this attribute will not be negatively affected.	No
Fish biomass available/Kilograms	No significant decline	Potential adverse water quality effects that may arise because of the proposed development could impact on water quality within downstream watercourses and therefore the fish biomass available to otter.	Yes

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

Table 20 Attributes and Targets for 'Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]' within the River Barrow and River Nore SAC

Attribute/Measure	Target	Assessment of Potentially Significant Effect	Mitigation Required
Habitat distribution/Occurrence	No decline, subject to natural processes	There will be no reduction in habitat area within the SAC. Thus, this attribute will not be negatively affected by the project.	No
Habitat area/Kilometres	Area stable or increasing, subject to natural processes	There will be no decline in habitat distribution within the SAC. Thus, this attribute will not be negatively affected by the project.	No
Hydrological regime: river flow/Meters per second	Maintain appropriate hydrological regimes	A natural flow regime is required for both plant communities and channel geomorphology to be in favourable condition. There will be no alteration of hydrological regime within the habitat within the SAC. Thus, this attribute will not be negatively affected by the project	No
Hydrological regime: groundwater discharge/Meters per second	The groundwater flow to the habitat should be permanent and sufficient to maintain tufa formation	There will be no alteration of hydrological regime or natural tidal influence within the habitat within the SAC. Thus, this attribute will not be negatively affected by the project.	No
Substratum composition: particle size range/Millimetres	The substratum should be dominated by large particles and free from fine sediments	Sediment laden run-off may arise from disturbed areas during groundworks or from construction vehicles/plant. When combined with heavy rainfall these activities pose a risk of silt runoff into waterways, downslope of the site and within the SAC. Such impacts may occur via the existing drainage network in the absence of appropriate controls.	Yes
Water chemistry: minerals/ Milligrams per litre	The groundwater and surface water should have sufficient concentrations of minerals to allow deposition and persistence of tufa deposits	Sediment laden run-off may arise from disturbed areas during groundworks or from construction vehicles/plant. When combined with heavy rainfall these activities pose a risk of silt runoff into waterways, downslope of the site and within the SAC. Such impacts may occur via the existing drainage network in the absence of appropriate controls.	Yes
Water quality: suspended sediment/Milligrams per litre	The concentration of suspended solids in the water column should be sufficiently low to prevent excessive deposition of fine sediments	Sediment laden run-off may arise from disturbed areas during groundworks or from construction vehicles/plant. When combined with heavy rainfall these activities pose a risk of silt runoff into waterways, downslope of the site and within the SAC. Such impacts may occur via the existing drainage network in the absence of appropriate controls.	Yes
Water quality: nutrients/Milligrams per litre	The concentration of nutrients in the water column should be sufficiently low to prevent changes in species composition or habitat condition	Nutrient enrichment typically leads to increased filamentous algal biomass and consequent changes in algae, bryophyte and macrophyte species composition and abundance. Excess algal growth can lead to oxygen depletion in aquatic environments. Sediment-laden run-off may arise from exposed areas during groundworks or from construction vehicles/plant. These are potential sources of nutrients to watercourses. Accidental fuel/oil spills or uncontrolled emissions of cementitious material/wastewater or other harmful substances also pose a risk to water quality and habitat condition.	Yes

Vegetation composition: typical species/Occurrence	Typical species of the relevant habitat sub-type should be present and in good condition	The sub-types of this habitat include higher plants, bryophytes and microalgae. Site preparation and construction activity could adversely affect water quality and in turn habitat condition and typical vegetation composition.	Yes
Floodplain connectivity/Area	The area of active floodplain at and upstream of the habitat should be m aintained	River connectivity with the floodplain is essential for the functioning of this habitat and is particularly important in terms of sediment sorting and nutrient deposition. The proposed development will not affect floodplain connectivity within the catchment. Thus, this attribute will not be negatively affected by the project.	No

7.4 ASSESSMENT OF POTENTIALLY SIGNIFICANT CUMULATIVE EFFECTS

When in-combination impacts are assessed, it is necessary to identify the types of impacts that may ensue from the project under consideration and from other sources in the existing environment that cumulatively are likely to affect aspects of the structure and function of the relevant Natura 2000 sites (EC, 2001).

The EC (2021) guidelines on the provision of Article 6 of the Habitats' Directive state that the phrase 'in combination with other plans or projects' in Article 3(3) of the Habitats Directive refers to the cumulative effects due to plans or projects 'that are currently under consideration together with the effects of any existing or proposed projects or plans.' Relevant plans and projects have been identified in **Section 4.9**, above.

Irish waterbodies are frequently subjected to various anthropogenic activities and pressures that can adversely impact upon water quality. Indeed, more than half of affected waterbodies are impacted upon by more than one pressure type. Agriculture is the dominant pressure source in the country, effecting 53% of Irish waterbodies from 2013 to 2018 (O'Boyle et al., 2019), mainly through nutrient pollution (nitrogen and phosphorus) which can cause excessive plant growth and increase the likelihood of harmful algal blooms. Significant issues in waterbodies classified as 'At Risk' of not meeting surface waterbody environmental objectives within the Barrow (14) Catchment by 2027 are identified in EPA (2021a), respectively. The most significant pressure on waterbodies within both catchments is agricultural pressure due mainly to the release of excess nutrients (elevated phosphate and ammonia). Other pressures include hydromorphological changes, peat extraction, urban wastewater, urban run-off, domestic wastewater, industry, forestry, mines, quarries, and other impacts[3] . Many watercourses in both catchments are also subject to significantly increased levels of sediment-loading due to forestry activities, mineral/peat harvesting and bank erosion. Forestry and peat extraction can cause ecological problems through increased erosion rates, siltation and nutrient loss. Phosphorus losses come primarily from wastewater discharges, and from runoff losses from agriculture on poorly draining soils (O'Boyle et al., 2019). Habitat condition in the catchment is compromised due to hydrological and morphological modifications to the waterbodies including channelisation, land drainage, and extensive bank alterations. As can be seen in **Table 21** below the high ranking threats to the River Barrow and River Nore SAC are; modifying structures of inland water courses, dykes and flooding defence in inland water systems and pollution to surface waters and erosion.

Table 21 Most important impacts and activities with high effect on the River Barrow SAC as defined in the associated Nature 2000 Data Form

Rank	Threats and pressures [code]	INSIDE/OUTSIDE [I|O|B]	Reference
L	D03.01	I	Port areas
M	A04.01.01	I	Intensive cattle grazing
L	C01.01.01	B	Sand and gravel extraction
L	F02.01.02	I	Netting
M	B05	B	Use of fertilisers (forestry)

[3] chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://catchments.ie/wp-content/files/catchmentassessments/14%20Barrow%20Catchment%20Summary%20WFD%20Cycle%203.pdf (Accessed 10/05/2024)

Rank	Threats and pressures [code]	INSIDE/OUTSIDE [I|O|B]	Reference
L	A10.01	I	Removal of hedges and copses or scrub
L	F01.01	I	Intensive fish farming
M	J02	B	Human induced changes in hydraulic conditions
M	M01	I	Changes in abiotic conditions
H	J02.05.02	I	Modifying structures of inland water courses
M	J02.06	I	Water abstraction from surface waters
L	E02	O	Industrial or commercial areas
L	F02.03	I	Leisure fishing
H	J02.12.02	I	Dykes and flooding defence in inland water systems
M	F02	O	Fishing and harvesting aquatic resources
H	H01	B	Pollution to surface waters
M	I01	I	Invasive non-native species
H	A02.01	B	Agricultural intensification
M	B07	B	Forestry activities
M	C01.03	O	Peat extraction
M	B02	B	Forest plantation management and use
M	J02.02.01	I	Dredging/removal of limnic sediments
M	J03.02.01	I	Reduction in migration/migration barriers
H	K01.01	I	Erosion

Laois County Development Plan 2021 – 2027 sets out strategies and objectives to provide sustainable development within Co. Laois. The Plan identifies the need for flood defence works or river channel maintenance to be assessed according to Article 6 of the Habitats Directive, i.e. Appropriate Assessment. The Plan also contains a number of Biodiversity objectives, which includes the maintenance and protection of the River Barrow and River Nore SAC and to preserve ecological linkages or stepping stone habitats and landscape features. A Natura Impact Report was prepared for the Plan, which assessed the Plan regarding its potential to adversely affect the integrity of Natura 2000 sites. The findings of the AA were integrated into the Plan, ensuring that potential adverse effects have been and will be avoided, reduced or offset (CAAS, 2017a). Thus, an AA determination was made by Laois County Council that the Plan is not foreseen to have any likely significant effects on the ecological integrity of any European Site (CAAS, 2017a). As outlined in the Plan, this NIS is being prepared to ensure that the proposed works will not have an adverse impact on Natura 2000 sites. Given the elements outlined above, the Laois County Development Plan 2021 – 2027 is not anticipated to act in-combination with the proposed project.

Similarly, the Offaly County Development Plan 2021 – 2027 also sets out strategies and objectives to provide sustainable development in County Offlay. The Appropriate Assessment conclusion addresses:

- Summary of how the findings of the AA were factored into the Plan;
- Reasons for choosing the Plan as adopted, in the light of other reasonable alternatives considered as part of the AA process;
- A declaration that the Plan as adopted will not have an adverse effect on the integrity of European Sites (provided at Section 4) and
- the Natura Impact Report

As outlined in the Plan, this NIS is being prepared to ensure that the proposed works will not have an adverse impact on Natura 2000 sites. Given the elements outlined above, the Offaly County Development Plan 2021 – 2027 is not anticipated to act in-combination with the proposed project.

7.4.1 Ongoing Activities

Climate is an important environmental influence on ecosystems. Changing climate affects ecosystems in a variety of ways. For instance, warming may force species to migrate to higher latitudes or higher elevations where temperatures are more conducive to their survival. Climate change not only affects ecosystems and species directly, but it also interacts with other human stressors such as development. Although some stressors cause only minor impacts when acting alone, their cumulative impact may lead to dramatic ecological changes (Settele et al., 2015). Since species differ in their ability to adjust, asynchronies can develop that increase the vulnerability of species and ecosystems. These asynchronies can include mismatches in the timing of migration, breeding, pest avoidance, and food availability. Growth and survival are reduced when migrants arrive at a location before or after food sources are present (Horton et al. 2014). Ecosystems can serve as natural buffers from extreme events such as wildfires, flooding, and drought. Climate change and human modification may restrict an ecosystems' ability to temper the impacts of extreme conditions, and thus may increase vulnerability to damage. An example of a biotope is the riparian areas that act as buffer zones protecting riverine ecosystems from runoff of silt/nutrient-laden waters via overland/pluvial flow by absorbing or attenuating surface floodwaters.

Lands along the Barrow Catchment, as well as land 'improvement' along other watercourses within both catchments, may become vulnerable to erosion if climate change leads to increases in heavy rainstorms. This could lead to uncontrolled erosion of riverbanks and riparian areas, and loss of soil from fields resulting in unnatural sediment loads and subsequent siltation of rivers.

A Natura Impact Statement (NIS) is required under Regulation 9 if it is likely to have a significant effect on a European designated site. Each activity is assessed and safeguards are put in place in the respective NIS which mitigates any likely potential significant effect of a proposed project. Therefore, the incombination effects of forestry and agricultural operations and the proposed works, having also gone through this process are not likely to be significant.

7.4.2 Other Permitted Developments

The proposed development will facilitate the export of electricity from the permitted Dernacart Wind Farm (Planning Ref ABP-310312-21) to the Bracklone 110kV substation (Planning Ref. 20/638).

The permitted Dernacart Wind Farm is located to the west of the proposed development and has not yet been constructed. The effects of the Dernacart Wind Farm on the receiving water environment were assessed as part of the EIAR and NIS undertaken for the permitted wind farm. The EIAR and NIS concluded that, with the implementation of appropriate mitigation, there would be no significant effects on hydrology and geohydrology. The majority of the wind farm (T1-T4, T7 and T8) is located in a separate catchment area (Barrow_SC_010) to the proposed development assessed in this chapter. Only two turbines (T5 and T6) are located within the Barrow_SC_030 catchment area where the underground collector cable, access track and substation are to be located.

The consented Bracklone 110kV substation is to be located at the end of the grid connection route in the Barrow_SC_020 sub-catchment. The only portion of the proposed development that falls within this catchment area is a portion of the underground grid connection cable. An NIS was undertaken as part of the planning application for the Bracklone substation. The NIS concluded that following the implementation of mitigation measures, the construction and operation of the Bracklone 110kV substation would not have any adverse effects to the integrity of any European site (i.e. the hydrological connection to the River Barrow And River Nore SAC). A drainage plan was also compiled as part of Bracklone substation project to prevent any significant impacts on hydrology and hydrogeology.

With exception of the Dernacart Wind Farm and the Bracklone substation, for which the cumulative impacts have already been assessed, there are no other known planned projects in close proximity to cumulatively impact hydrology and hydrogeology. The potential cumulative water quality and quantity effects of the proposed development during the construction and operational phase will not have significant effects on downstream watercourses. This is due to the fact the proposed development is mainly located in a separate sub catchment area (Barrow_SC_030) to these two projects. In addition, the implementation of environmental protection measures and drainage design of the proposed development and the measures in the EIAR and NIS for the Dernacart Wind Farm and the Bracklone substation mitigation measures will prevent any significant cumulative effects

8 MITIGATION

Construction of the proposed substation and grid connection route may potentially cause temporary indirect and significant impacts to several of the QI species and habitats of the River Barrow and River Nore SAC as outlined in the impact assessment in the preceding sections. Several planned mitigation measures detailed below will reduce the significance of these impacts.

The following sections detail the mitigation management for the proposed development.

Table 22 Mitigation Measures– Construction Phase

<table>
<tr><th>Potential effects identified</th><th colspan="5">Description of the measures, details on implementation, effectiveness, monitoring</th></tr>
<tr><td rowspan="3">During the construction phase of the proposed development, surface water runoff has the potential to deteriorate water quality in the River Barrow and River Nore SAC. This may result in habitat loss and fragmentation, species fragmentation, disturbance, and displacement of species for which this Natura 2000 has been selected, as listed in Table 25 below.

Moreover, it could affect the feeding opportunities, distribution, population structure, density, and spawning habitat availability of sensitive qualifying species of the SAC.</td><td colspan="5">Measure # 1 Protection of Water Quality / Run-off and Sediment Control
The drainage system will be implemented along all internal site access roads, storage areas, substation hardstand areas and site construction temporary compounds.
Following measures will be implemented:
Implementation of erosion control to prevent runoff flowing across exposed ground and becoming laden with sediments.
To avoid cross-contamination of clean water and soiled water, interception and diversion of clean water runoff away from construction site should be ensured.
Implement sediment control to slow down runoff allowing suspended sediments to settle in situ particularly on roads.
Minimise area of exposed ground by maintaining existing vegetation that would otherwise be subject to erosion in the vicinity of the compound and keeping excavated areas to a minimum.
Avoid working near drains during or after prolonged rainfall or an intense rainfall event and cease work entirely near drains when it is evident that pollution is occurring.
Install a series of silt fences or other appropriate silt retention measure where there is a risk of erosion runoff to watercourses from construction related activity particularly if working during prolonged wet weather period or if working during intense rainfall event
Install and maintain appropriate silt control measures such as silt-traps, check dams and sedimentation ponds and implement sediment control measures that includes prevention of runoff from adjacent intact ground that is for the separation of clean and ‘dirty’ water.
Provide recommendations for public road cleaning where needed particularly in the vicinity of drains
Controls need to be regularly inspected and maintained otherwise a failure may result, such as a build-up of silt or tear in a fence, which will lead to water pollution so controls must work well until the vegetation has re-established; inspection and maintenance is critical after prolonged or intense rainfall.</td></tr>
<tr><td>How will the measure contribute to avoiding/reducing the effects on the integrity of the site?</td><td>How will the measure be implemented and by whom?</td><td>Effectiveness of the measure</td><td>Timescale of implementation</td><td>Proposed monitoring scheme and reporting requirements</td></tr>
<tr><td>The habitats and species of the SAC are sensitive to changes in siltation loads, pollutants and water levels. By utilising a proper drainage system, erosion control measures, proper interception and diversion of clean water away from the construction site,</td><td>The measure will be required as part of planning approval, included in the CEMP and will be implemented at the outset of the construction phase by the appointed Construction Contractor. A competent Environmental</td><td>Proven engineered systems.</td><td>Measures to be implemented at the outset of the construction phase and to remain in place until construction</td><td>Mitigation procedures will be managed by the appointed contractor and Environmental Manager, daily inspection of all erosion, sediment and silt control and retention facilities shall be undertaken and recorded, and documentation will be retained to ensure implementation and compliance. Issues raised will be addressed by the appointed contractor.</td></tr>
</table>

Potential effects identified	Description of the measures, details on implementation, effectiveness, monitoring				
	and maintaining existing vegetation, the risk of contamination of watercourses is minimised. The source and pathway to receptors have been controlled, managed and/or removed by the measure.	Manager will be appointed for the duration of the works and will report to the Project Manager. The Construction Manager will communicate regularly with the Environmental Manager to ensure mitigation measures are applied to specific works.		works are complete.	
	Measure # 2 Protection of Water Quality / Waste Management • A Construction Phase Waste Management Plan will be developed to control all site-generated construction waste and the storage and disposal of same. • Any introduced semi-natural (road building materials) or artificial (PVC piping, cement materials, electrical wiring) materials will be taken off site at the end of the construction phase. • Any accidental spillage of solid state introduced materials will be removed from the site by the appropriate means. • Temporary toilet facilities will be managed by the appointed Contractor during the construction phase.				
	How will the measure contribute to avoiding/reducing the effects on the integrity of the site?	**How will the measure be implemented and by whom?**	**Effectiveness of the measure**	**Timescale of implementation**	**Proposed monitoring scheme and reporting requirements**
	The source and pathway to receptors will be controlled, managed and/or removed by the measures. By removing semi-natural and artificial materials form the construction site and handling the wastewater from the temporary toilets away from watercourses, the risk of contamination of surface water is minimised to a level that will not cause deterioration in water	The measure will be required as part of planning approval, included in the CEMP and will be implemented by the appointed Construction Contractor and Environmental Manager.	Standard best practices for the management of waste for the protection of water quality and prevention of ground contamination. Identification, segregation and	Measures to be implemented at the outset of the construction phase and to remain in place until construction works are complete.	Mitigation procedures will be managed by the appointed contractor, daily checks of all material leaving the construction site, and handling of the wastewater from temporary toilets shall be undertaken and recorded, and documentation will be retained to ensure implementation and compliance. Issues raised will be addressed by the appointed contractor.

<table>
<tr><th>Potential effects identified</th><th colspan="5">Description of the measures, details on implementation, effectiveness, monitoring</th></tr>
<tr><td></td><td>quality in the Natura 2000 network.</td><td></td><td>containment of wastes is achievable through proper site management.</td><td></td><td>The project Environmental Manager shall oversee all waste handling activities and shall monitor and regularly inspect the wastewater holding tank during the construction phase.</td></tr>
<tr><td></td><td colspan="5">Measure # 3 Protection of Water Quality / Surface Water Monitoring
• If waters laden with suspended solids are entering surface waters beyond the pollution prevention installations, any damage, blockages or overspills will be repaired/rectified promptly, and measures may have to be upgraded in consultation with the resident engineer.
• Biological water quality monitoring will take place prior to, during and after the construction phase on all EPA registered watercourses crossed by the proposed development.
• Weather forecasts will be monitored during the construction phase and the 24-hour advance meteorological forecasting service from Met Éireann will be used.</td></tr>
<tr><td></td><td>How will the measure contribute to avoiding/reducing the effects on the integrity of the site?</td><td>How will the measure be implemented and by whom?</td><td>Effectiveness of the measure</td><td>Timescale of implementation</td><td>Proposed monitoring scheme and reporting requirements</td></tr>
<tr><td></td><td>Ensuring that the water pollution prevention controls are maintained.</td><td>The measures will be required as part of planning approval, included in the CEMP and will be implemented at the outset of the construction phase by the appointed Construction Contractor and appointed Environmental Manager.</td><td>The effectivity of this measure is proportional to the frequency of monitoring. These measures will be effective given that pollution controls will be checked</td><td>Measures to be implemented at the outset of the construction phase and to remain in place until construction works are complete.</td><td>The appointed Environmental Manager is responsible for ensuring that appropriate water pollution prevention measures are put in place and that water monitoring is carried out.
The Environmental Manager will visually monitor the general level of suspended solids at designated sampling points in the rivers/streams downslope of active construction areas. He/she will walk the site each day and check the cross-drain pipes, dirty water drains and outlets, settlement ponds, interceptor drains and silt fences for any</td></tr>
</table>

<table>
<tr><th>Potential effects identified</th><th colspan="5">Description of the measures, details on implementation, effectiveness, monitoring</th></tr>
<tr><td></td><td></td><td></td><td>daily and after significant rainfall events.</td><td></td><td>damage or blockages, or overspills during periods of heavy rainfall.
Reporting will be undertaken and recorded, and documentation will be retained to ensure implementation and compliance. Issues raised will be addressed by the appointed contractor.</td></tr>
<tr><td rowspan="3">The use of fuels and oils during construction of the proposed development, poses the risk of pollutants entering watercourses, potentially degrading water quality in the River Barrow and River Nore SAC. This may result in habitat loss and fragmentation, species fragmentation, disturbance, and displacement, of species of this SAC, as listed in Table 25 below.

Moreover, it could affect the feeding opportunities, distribution, population structure, density, and spawning habitat availability species for which the SAC has been selected.</td><td colspan="5">Measure # 4 Protection of Water Quality / Management of Fuels/Oils
• Construction pollutants such as oil or fuel will be stored in secure bunded impermeable construction compounds away from drains and open water and inspected regularly for leaks or signs of damage.
• Fuelling and lubrication of construction machinery and vehicles will be carried out by fully trained personnel under controlled conditions in designated refuelling areas using a prescribed re-fuelling procedure.
• Prior to any work, it will be ensured that all construction equipment is mechanically sound to avoid leaks of oil, fuel, hydraulic fluids and grease. Only mechanically sound plant will be permitted to gain access to the site.
• Controls will be regularly inspected and maintained. Regular cleaning and servicing of bunds, gullies, pipe work, oil interceptors will be carried out to ensure this system is operating at its optimum.
• Procedures and contingency plans will be set up to deal with emergency accidents or spills. An emergency spill kit with oil boom and absorbers will be kept on site in the event of an accidental spill. The contents of the spill kit will be replenished if used and they will be checked on a scheduled basis during environmental inspections and audits. All crews will be trained in the use of spill kit equipment.
• All emergency procedures and equipment will be in place prior to the commencement of any works.
• Any spillage of fuels, lubricants or hydraulic oils will be immediately contained using oil spill kits stored onsite. Any nearby dirty water drain outlets will be blocked with an oil absorbent boom until the fuel/oil spill has been cleaned up and contaminated soil removed from the site for proper disposal.
• Waste oils and hydraulic fluids will be collected in leak-proof containers, stored on a bunded tray and removed from the site for disposal or recycling.
• Drainage within the temporary site compound will be directed to an oil interceptor to prevent pollution should any spillage occurs.</td></tr>
<tr><td>How will the measure contribute to avoiding/reducing the effects on the integrity of the site?</td><td>How will the measure be implemented and by whom?</td><td>Effectiveness of the measure</td><td>Timescale of implementation</td><td>Proposed monitoring scheme and reporting requirements</td></tr>
<tr><td>The source and pathway to receptors will be controlled,</td><td>The measure will be required as part of planning approval,</td><td>Standard best practices for</td><td>Measures to be implemented at</td><td>The project Environmental Manager shall oversee all fuel/oil handling activities and shall</td></tr>
</table>

Potential effects identified	Description of the measures, details on implementation, effectiveness, monitoring				
	managed and/or removed by the measures. By utilising secure storage, designated refuelling areas, spill kits and trained personnel, the risk of oil and fuel spills is minimised to a degree that will not affect sensitive aquatic and/or marine life in the Natura 2000 network.	included in the CEMP and will be implemented by the appointed Construction Contractor. Machinery operators and designated staff members will be responsible for adhering to the protocols, spill containment procedures, and emergency response plans. The Environmental Manager will conduct regular training sessions to ensure all employees are proficient in these measures.	the management of fuels and oils for the protection of water quality and prevention of ground contaminatio n are known to reduce and/or eliminate significant water pollution.	the outset of the construction phase and to remain in place until construction works are complete	monitor and ensure that all fuel/oil storage facilities, will be regularly inspected and maintained during the construction phase. Emergency/incidents, if any, should be reported to Offaly/Laois County Council and Inland Fisheries Ireland, and corrective actions will be documented in the subsequent reports.
The use of concrete during the construction phase of the proposed development, has the potential to deteriorate water quality in the River Barrow and River Nore SAC. This may result in habitat loss and fragmentation, species fragmentation, disturbance, and displacement of species for which this SAC has been selected, as listed in Table 25 below. Moreover, it could affect the feeding opportunities, distribution, population structure, density, and	**Measure # 5 Protection of Water Quality / Management of Concrete** • There shall be the requirement for some concrete works at the site. It is important to prevent concrete from entering surface water drains within or around the site. Wet concrete is silty and very alkaline (high pH) and can have a serious effect on watercourses and aquatic life if ingress occurs. • The following measures will be implemented during concrete works at the site: • A designated trained operator, experienced in working with concrete, will be employed during the concrete-pouring phase and pouring will be supervised by the Construction Manager, a suitably qualified Engineer and/or the Environmental Manager. • There shall be no pouring of concrete during extreme/prolonged rainfall or forecasted heavy rainfall. • The use of concrete close to drainage features will be carefully controlled to avoid spillage. • To reduce the volume of cementitious water, only concrete truck chutes will be washed down on site. The concrete trucks will wash down their chutes at a designated chute wash down area in the site compound. The wash down area will consist of a polythene lined bunded area. • Temporary storage of cement bound granular mixtures will be on hardcore areas. Cement products are hazardous and should always be stored in a COSHH store or similar (shipping container), and only be in the open when in use. • Any small volumes of incidental wash generated from cleaning hand tools, cement mixers or other plant, as required, will be trapped on-site to allow sediment to settle out and reach neutral pH before clarified water is released to the surface water drains or allowed to percolate to ground. Settled solids will need to be appropriately disposed of off-site.				

<table>
<tr><th>Potential effects identified</th><th colspan="5">Description of the measures, details on implementation, effectiveness, monitoring</th></tr>
<tr><td rowspan="3">spawning habitat availability of sensitive qualifying species of this SAC.</td><td colspan="5">• For the cable trench construction, temporary storage of Cement Bound Granular Mixtures will be on areas where there is no direct drainage to surface waters and where the area has been appropriately isolated with bunds</td></tr>
<tr><td>How will the measure contribute to avoiding/reducing the effects on the integrity of the site?</td><td>How will the measure be implemented and by whom?</td><td>Effectiveness of the measure</td><td>Timescale of implementation</td><td>Proposed monitoring scheme and reporting requirements</td></tr>
<tr><td>The source and pathway to receptors will be controlled, managed and/or removed by the measures to a degree that will not affect sensitive aquatic and/or marine life in the Natura 2000 network.</td><td>The measure will be required as part of planning approval, included in the CEMP and will be implemented by the appointed Construction Contractor and Environmental Manager.</td><td>Standard best practices for the management of concrete for the protection of water quality and prevention of ground contaminatio n are known to reduce and/or eliminate significant water pollution.</td><td>Measures to be implemented at the outset of the construction phase and to remain enforce until construction works are complete.</td><td>The project construction manager/ engineer/Environmental Manager shall oversee all concrete pours.
The project Environmental Manager shall monitor and ensure that concrete washout areas, will be regularly inspected and maintained during the construction phase.
Emergency/incidents, if any, should be reported to Offaly/Laois County Council and Inland Fisheries Ireland, and corrective actions will be documented in the subsequent reports.</td></tr>
<tr><td>The excavation and storage of excavated material during the construction phase of the proposed development, has the potential to deteriorate water quality in the River Barrow and River Nore SAC. This may result in habitat loss and fragmentation, species</td><td colspan="5">Measure # 6 Protection of Water Quality / Management of Excavated Materials
• All site excavations and construction should be supervised by a suitably qualified and experienced engineer. The Contractor’s method statements for each element of work should be reviewed and approved by the engineer prior to site operations.
• Drainage will be constructed in parallel with the substation facility and underground grid connection construction. This approach will be used in combination with installation of other drainage protection measures in advance of construction, such as the installation of silt fencing.
• Prior to excavation, drains should be established to effectively intercept overland flow prior to earthworks. The existing network of drainage within the site should be used whenever possible.</td></tr>
</table>

<table>
<tr><th>Potential effects identified</th><th colspan="5">Description of the measures, details on implementation, effectiveness, monitoring</th></tr>
<tr><td rowspan="3">fragmentation, disturbance, and displacement of species for which this SAC has been selected, as listed in Table 25 below.

Moreover, it could affect the feeding opportunities, distribution, population structure, density, and spawning habitat availability of sensitive qualifying species of the SAC.</td><td colspan="5">• All temporary cuts/excavations will be carried out such that they are stable or adequately supported. Where appropriate and necessary, cuts and excavations will be protected against ingress of water or erosion by the use of field drains around the excavation works. Temporary works will be such that they do not adversely interfere with existing drainage channels/regimes.
• Plant and materials will be stored in approved locations only (such as the proposed site compound) and will not be positioned or trafficked in a manner that would surcharge existing or newly formed slopes.
• Excavated topsoil and subsoil will be stored onsite for reuse or removed off site to an appropriate facility. Temporary stockpiles of soils will not be permitted within 50 metres of any watercourse.
• Bulk excavations will be done during periods of dry weather to avoid run off from exposed excavation areas. Weather will be monitored during the project and no excavation works will be allowed during severe or heavy rainfall events.
• Vehicular movements will be restricted to the footprint of the permitted development, particularly with respect to the newly constructed access roads. This implies that machinery must be restricted to use on existing roads/hardstands/yard areas and, aside from advancing excavations, will not move onto areas that are not permitted for the development.</td></tr>
<tr><td>How will the measure contribute to avoiding/reducing the effects on the integrity of the site?</td><td>How will the measure be implemented and by whom?</td><td>Effectiveness of the measure</td><td>Timescale of implementation</td><td>Proposed monitoring scheme and reporting requirements</td></tr>
<tr><td>The source and pathway to receptors will be controlled, managed and/or removed by the measures. The measures serve as barriers, preventing soil erosion and contaminated run-off to a degree that will not affect sensitive aquatic and/or marine life in the Natura 2000 network.</td><td>The measure will be required as part of planning approval, included in the CEMP and will be implemented by the appointed Construction Contractor and Environmental Manager.</td><td>Standard best practices for the management of excavation works will help protect water quality and eliminate significant water pollution.</td><td>The implementation of these measures will commence at the onset of the excavation phase and remain in effect throughout the construction period.</td><td>The project construction manager/ engineer/Environmental Manager shall oversee all excavation works. The project Environmental Manager shall monitor and ensure that all erosion, sediment and silt control and retention facilities will be regularly inspected and maintained during the construction phase. Emergency/incidents, if any, should be reported to Offaly/Laois County Council and Inland Fisheries Ireland, and corrective actions will be documented in the subsequent reports.</td></tr>
</table>

<table>
<tr><th>Potential effects identified</th><th>Description of the measures, details on implementation, effectiveness, monitoring</th></tr>
<tr><td>During the construction phase of the proposed development, storage of material and stockpiling may contaminate soil and water due to discharged pollutants and deteriorate water quality of the River Barrow and River Nore SAC. This may result in habitat loss and fragmentation, species fragmentation, disturbance, and displacement, of species for which this Natura 2000 site has been selected, as listed in Table 25 below.

Moreover, it could affect the feeding opportunities, distribution, population structure, density, and spawning habitat availability of sensitive qualifying species of the SAC.</td><td>
Measure # 7 Protection of Water Quality / Storage and Stockpiles

The storage of materials, containers, stockpiles and waste, however temporary, will follow best practice at all times and be stored at designated areas. Material stockpiles should be kept to a minimum size and should be stored on an impermeable base. Drainage and siltation control measures will be put in place in all spoil storage areas. This will include a dedicated drainage network, temporary silt fences and settlement ponds designed to cater for the size of each storage area. The plan, outlined in the CEMP, will have regard to the following elements:
Storage of excessive material will be avoided. Site management should include the checking of equipment, materials storage and transfer areas, drainage structures and their attenuation ability on a regular basis during the construction phase of the project. The purpose of this management control is to ensure that the measures in place are operating effectively, prevent accidental leakages, and identify potential breaches in the protective retention and attenuation network during earthworks operations.
Materials required for construction should be handled and stored in a manner which reduces unnecessary wasting. Stone and any other quarry materials should be imported from local quarries where possible and stored neatly in segregated areas.
No permanent waste or stockpiles will be left on site, other than those materials required for designed landscaping and construction generally. The topsoil removal and excavations for the proposed development will be slight and all excavated materials will be re-used on site as fill or for landscaping. Excavated material that is not reused on site for landscaping will be removed from site by the appropriate permitted contractors and taken to an authorised facility.
A traffic management plan has been developed as part of the CEMP. This is to manage and control vehicular movement onsite. Measures include the scheduling of HGVs during the construction phase to reduce the number of vehicles move in, through and off site. This in turn will reduce the impact of soil compaction and erosion. Unscheduled vehicles will not have access to the site.

<table>
<tr><th>How will the measure contribute to avoiding/reducing the effects on the integrity of the site?</th><th>How will the measure be implemented and by whom?</th><th>Effectiveness of the measure</th><th>Timescale of implementation</th><th>Proposed monitoring scheme and reporting requirements</th></tr>
<tr><td>The source and pathway to receptors will be controlled, managed and/or removed by the measures. The measures serve as barriers, preventing uncontrolled contaminated runoff, siltation, and soil erosion to a degree that will not affect sensitive aquatic and/or marine life in the Natura 2000 network.</td><td>The measure will be required as part of planning approval, included in the CEMP and will be implemented by the appointed Construction Contractor and Environmental Manager.</td><td>Standard best practices for the management of storage of material and stockpiling activities will help protect water quality</td><td>Measures to be implemented at the outset of the construction phase and to remain enforce until construction works are complete.</td><td>The project construction manager/ engineer/Environmental Manager shall oversee all storing and stockpiling activities.

Emergency/incidents, if any, should be reported to Offaly/Laois County Council and Inland Fisheries Ireland, and corrective actions will be documented in the subsequent reports.</td></tr>
</table>
</td></tr>
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<table>
<tr><th>Potential effects identified</th><th colspan="5">Description of the measures, details on implementation, effectiveness, monitoring</th></tr>
<tr><td></td><td></td><td></td><td>and eliminate significant water pollution.</td><td></td><td></td></tr>
<tr><td rowspan="3">During the construction phase of proposed development, mammals protected within the River Barrow and River Nore SAC may face indirect impacts from temporary fugitive noise, human activity, machinery and alterations in water quality.</td><td colspan="5">Measure # 8 Protection of Mammals/ Pre-Construction Monitoring
In accordance with NRA Guidance (NRA, 2006; 2005a; 2005b), it is recommended that a programme of preconstruction monitoring of bats and terrestrial mammals be conducted in the period preceding the commencement of works to ensure adequate protection of these species during the construction phase.
Pre-construction mammal surveys are recommended, including:
• Terrestrial mammal surveys to determine whether their use of the site has altered.
• Pre-construction bat roost survey to determine whether bats have begun to roost within the site or in areas nearby.</td></tr>
<tr><td>How will the measure contribute to avoiding/reducing the effects on the integrity of the site?</td><td>How will the measure be implemented and by whom?</td><td>Effectiveness of the measure</td><td>Timescale of implementation</td><td>Proposed monitoring scheme and reporting requirements</td></tr>
<tr><td>By identifying locations used by mammals, potential disturbances will be avoided.</td><td>The project ecologist will conduct the surveys before construction. Water quality mitigation will be required as part of planning approval, included in the CEMP and will be implemented by the appointed Construction Contractor and Environmental Manager.</td><td>Measure is in accordance with ‘NRA Guidance (NRA, 2006; 2005a; 2005b). Standard best practices will help protect water quality and eliminate significant water pollution.</td><td>Mammal surveys will be conducted immediately prior to the commencement of construction activities. Water quality protection measures to be implemented at the outset of the construction phase and to remain enforce until construction</td><td>Pre-construction mammal surveys will be undertaken prior to the commencement of any works in order to identify any changes in mammals activity.

Regular site inspections will be conducted by the ecologist to ensure the proper implementation of measures.

The project construction manager/ engineer/Environmental Manager shall oversee all works that have the potential to cause water pollution in downstream areas.</td></tr>
</table>

<table>
<tr><th>Potential effects identified</th><th colspan="5">Description of the measures, details on implementation, effectiveness, monitoring</th></tr>
<tr><td></td><td></td><td></td><td></td><td>works are complete.</td><td></td></tr>
<tr><td rowspan="3">During the construction phase of the proposed development, sensitive species and habitats protected within the River Barrow and River Nore SAC may face indirect impacts due to the introduction of Invasive Alien Plant Species (IAPS) in waterbodies.

This may lead to habitat loss and fragmentation, disturbance, and displacement of species for which the Natura 2000 sit has been selected, as listed in Table 25 below.

Moreover, it could affect the feeding opportunities, distribution, population structure, density, and spawning habitat availability of sensitive qualifying species of this SAC.</td><td colspan="5">Measure # 9 Management of Invasive Species during Construction Phase
• All management and control measures implemented on-site during the construction phase are to be carried out strictly in accordance with best practice guidance as set out in ‘The Management of Noxious Weeds and Non-native Invasive Species on National Roads’ (NRA, 2010) and best practice management guidelines for various species published by Invasive Species Ireland[4].
• Prior to being brought onto the site, all plant and equipment will be cleaned and free of soil/mud/debris or any attached plant or animal material.
• Prior to entering the site, all plant/equipment will be visually inspected by the Environmental Officer to ensure all adherent material and debris has been removed.
• A pre-construction survey for IAPS is to be carried out by a suitably qualified ecologist prior to any works commencing.
• Where IAPS occur within the works footprint, the appointed Contractor is to develop and implement an appropriate method statement regarding the management of IAPS on-site.
• All footwear/waders and all equipment to be placed in any watercourse will be treated to prevent foreign flora/fauna entering the water and after use to prevent the spread to other catchments.
• Non-native species control will be practised according to ‘IFI Biosecurity Protocol for Field Survey Work’ (IFI, 2010) noting that some works components are located at/near watercourses.</td></tr>
<tr><td>How will the measure contribute to avoiding/reducing the effects on the integrity of the site?</td><td>How will the measure be implemented and by whom?</td><td>Effectiveness of the measure</td><td>Timescale of implementation</td><td>Proposed monitoring scheme and reporting requirements</td></tr>
<tr><td>The source and pathway to receptors will be controlled, managed and/or removed by the measures. By identifying the IAPS sites, the spread of these species will be controlled. Measures, including regular machinery</td><td>The project ecologist will conduct pre-construction survey. The appointed Construction Contractor and project ecologist will ensure that all plant, equipment, and construction activities</td><td>Measure is in accordance with ‘The Management of Noxious Weeds and Non-native</td><td>IAPS surveys will be conducted immediately prior to the commencement of construction activities and will remain enforce</td><td>Pre-construction IAPS surveys will be undertaken prior to the commencement of any works.

Regular site inspections will be conducted by the ecologist to ensure the proper implementation of measures.</td></tr>
</table>

[4] Resources - Invasives.ie Accessed 03/05/2024

Potential effects identified	Description of the measures, details on implementation, effectiveness, monitoring				
	inspections, will further prevent the ingress of IAPS into waterbodies.	comply with the specified guidelines and protocols.	Invasive Species on National Roads' and best practice management guidelines for various species published by Invasive Species Ireland. Implementation of these measures will reduce to insignificant the effects on the Natura 2000 network.	until construction works are complete.	
During the construction phase of the proposed development, emergencies or accident events such as fuel spills or traffic incidents could occur which may lead to soil and water contamination in the River Barrow and River Nore SAC. This may result in habitat	**Measure # 10 Emergency Plans and Risks of Accidents** • To minimise environmental risk, no concrete pours will take place during severe weather events such as during flooding or heavy rainfall (10 mm/hr). • Best construction practice, including that for Health and Safety, will be employed to minimise the risk of any accidents occurring. • All work on site will be carried out in compliance with the Health and Safety Act 2005, the Health and Safety (Construction) Regulations 2013, and all relevant Legislation and Work Practice to ensure that the construction areas, site environs and public roads remain safe for all users. • The contingency plan in place during construction and displayed at appropriate locations. An emergency spill kit with oil boom and absorbers is to be kept on site in the event of an accidental spill.				

Potential effects identified	Description of the measures, details on implementation, effectiveness, monitoring				
	How will the measure contribute to avoiding/reducing the effects on the integrity of the site?	**How will the measure be implemented and by whom?**	**Effectiveness of the measure**	**Timescale of implementation**	**Proposed monitoring scheme and reporting requirements**
loss and fragmentation, species fragmentation, disturbance, and displacement of species for which this SAC has been selected as listed in Table 25 below. Moreover, it could affect the feeding opportunities, distribution, population structure, density, and spawning habitat availability of sensitive qualifying species of this SAC.	The implementation of best construction practices and adherence to Health and Safety Act 2005, the Health and Safety (Construction) Regulations 2013, and other relevant legislation will effectively minimise the potential risks. The source and pathway to receptors will be controlled, managed and/or removed by the water protection measures.	The measure will be required as part of planning approval, included in the CEMP and will be implemented by the appointed Construction Contractor and Environmental Manager.	Measure is in accordance with 'Health and Safety Act 2005, the Health and Safety (Construction) Regulations 2013' so is expected to be reduced to a level that will not have any significant water quality effects.	Measure to be implemented at the outset of the construction phase and to remain enforce until construction works are complete.	The project's Environmental Manager will supervise fuel/oil handling activities and road works, ensuring regular inspection and maintenance of storage facilities during the construction phase. Regular site inspections will be conducted by appointed safety officers and environmental monitors to ensure the continuous adherence to these safety measures. Emergency/incidents, if any, should be reported to Offaly/Laois County Council and Inland Fisheries Ireland, and corrective actions will be documented in the subsequent reports.

Table 23 Table 2 Mitigation Measures– Operational Phase

<table>
<tr><th>Potential effects identified</th><th colspan="5">Description of the measures, details on implementation, effectiveness, monitoring</th></tr>
<tr><td rowspan="3">The discharge of unrestricted flowing surface water runoff during the operational phase of the proposed development poses a potential risk to the River Barrow and River Nore SAC. This may result in habitat loss and fragmentation, species fragmentation, disturbance, and displacement of species for which this Natura 2000 site has been selected, as listed in Table 25 below.

Moreover, it could affect the feeding opportunities, distribution, population structure, density and spawning habitat availability of sensitive qualifying species of the SAC.</td><td colspan="5">Measure # 11 Management of Surface water discharges during the operational phase
At the proposed substation, the surface water drainage system will be managed and appropriately maintained during the operational phase. By effectively managing the drainage system and conducting regular inspections, the proposed project ensures that the quality and quantity of any runoff generated is controlled. This will help prevent erosion patterns from developing, which could lead to sediment discharge through the drainage network and to the River Barrow.</td></tr>
<tr><td>How will the measure contribute to avoiding/reducing the effects on the integrity of the site?</td><td>How will the measure be implemented and by whom?</td><td>Effectiveness of the measure</td><td>Timescale of implementation</td><td>Proposed monitoring scheme and reporting requirements</td></tr>
<tr><td>The implementation and installation of the above mitigation measures will prevent the source (contaminants, silts and sediments) from entering the pathways (local surface and groundwater networks), therefore not adding to/increasing the pollutant concentrations at the receptor. The source and pathway to receptors will be controlled, managed and/or removed by the measure to a degree that will reduce to insignificant water quality impacts.</td><td>The drainage system will be in place prior to the commencement of the operational phase.
The client and operation manager will be responsible for overseeing the proper maintenance of the drainage system.</td><td>Best practices for the protection of water quality. Installation of appropriately sized drainage systems will reduce potential contaminant source in surface water runoff to a level that will not significantly affect the Natura 2000 network.</td><td>The measures mentioned above, will remain in place throughout the operational phase.</td><td>Regular inspections of drainage areas within the substation site will be carried out throughout the project's lifespan.

The operation manager will monitor runoff. Any changes from protocols will be reported immediately to the Client. Incident reports should be reported to Offaly/Laois County Council and Inland Fisheries Ireland.</td></tr>
</table>

Table 24 Mitigation Measures– Decommissioning Phase

<table>
<tr><th>Potential effects identified</th><th colspan="5">Description of the measures, details on implementation, effectiveness, monitoring</th></tr>
<tr><td rowspan="3">During the Decommissioning Phase of the proposed development, birds protected within the River Barrow and River Nore SAC may experience indirect impacts on their habitat, distribution and feeding opportunities. These could result from temporary fugitive noise, human activity, machinery, and alterations in water quality.</td><td colspan="5">Measure # 12 Decommissioning Phase - Protection of Birds

• Implement habitat restoration measures within the decommissioned area to promote the reestablishment of native vegetation and support the recovery of local wildlife populations. This may include replanting native tree species and creating wildlife-friendly features such as nesting boxes or bat roosts in the vicinity of the site.
• If required, works would be undertaken outside the bird breeding season (March-August) to mitigate for impacts to nesting and breeding birds.</td></tr>
<tr><td>How will the measure contribute to avoiding/reducing the effects on the integrity of the site?</td><td>How will the measure be implemented and by whom?</td><td>Effectiveness of the measure</td><td>Timescale of implementation</td><td>Proposed monitoring scheme and reporting requirements</td></tr>
<tr><td>By avoiding decommissioning phase activities during the sensitive period, potential disturbances to avian habitats and nesting sites will be reduced. Habitat restoration activities will minimise disruption and recover the local wildlife.</td><td>The project ecologist will be responsible for overseeing the decommissioning works are scheduled outside the breeding season and ensuring appropriate habitat restoration works are conducted.</td><td>Best practices for the protection and recovery of bird species.
Best practices for the protection of water quality will reduce potential contaminant source in surface water runoff to a level that will not significantly affect the Natura 2000 network.</td><td>The measures mentioned above, will remain in place throughout the decommissioning phase.</td><td>Regular site inspections will be conducted by the ecologist to ensure the proper implementation of measures.</td></tr>
</table>

<table>
<tr><th>Potential effects identified</th><th colspan="5">Description of the measures, details on implementation, effectiveness, monitoring</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="3">During the decommissioning phase of the proposed development, sensitive species and habitats protected within the River Barrow and River Nore SAC may experience indirect impacts due to the introduction of IAPS in waterbodies.

This may lead to habitat loss and fragmentation, disturbance, and displacement of species of the Natura 2000 site, as listed in Table 25 below.

Moreover, it could affect the feeding opportunities, distribution, population structure, density, and spawning habitat availability of sensitive qualifying species of this SAC.</td><td colspan="5">Measure # 13 Management of Invasive Species during Decommissioning Phase

• An invasive species management plan will be developed for the decommissioning phase of the grid route. Prior to decommissioning, a survey will be conducted to identify any invasive species present along the grid route. locations and extent of invasive species infestations will be documented. If any future infestations of invasive non-native species are identified prior to any decommissioning works, exclusion zones will be established around them, and the Ecological Clerk of Works (ECoW) contacted for advice as required.

• Best practice measures will be followed for cleaning and decontaminating equipment and vehicles to prevent the accidental transfer of invasive species.</td></tr>
<tr><td>How will the measure contribute to avoiding/reducing the effects on the integrity of the site?</td><td>How will the measure be implemented and by whom?</td><td>Effectiveness of the measure</td><td>Timescale of implementation</td><td>Proposed monitoring scheme and reporting requirements</td></tr>
<tr><td>The source and pathway to receptors will be controlled, managed and/or removed by the measures. By identifying the IAPS sites, the spread of these species will be controlled. Measures, including establishing exclusion zones, will further prevent the ingress of IAPS into waterbodies.</td><td>The project ecologist will conduct pre-decommissioning survey. The appointed Construction Contractor and project ecologist will ensure that activities comply with the specified guidelines and protocols and the Ecological Clerk of Works (ECoW) contacted for advice as required.</td><td>Measure is in accordance with ‘The Management of Noxious Weeds and Non-native Invasive Species on National Roads’ and ‘IFI Biosecurity Protocol for Field Survey Work’. Implementation of these measures will reduce to insignificant the effects on the Natura 2000 network.</td><td>IAPS surveys will be conducted immediately prior to the commencement of decommissioning activities and will remain enforce until works are complete.</td><td>Pre-decommissioning IAPS surveys will be undertaken prior to the commencement of any works. Regular site inspections will be conducted by the ecologist to ensure the proper implementation of measures.</td></tr>
</table>

<table>
<tr><th>Potential effects identified</th><th colspan="5">Description of the measures, details on implementation, effectiveness, monitoring</th></tr>
<tr><td></td><td colspan="5"></td></tr>
<tr><td rowspan="3">During decommissioning phase of the proposed development, storage and improper handling or disposal of chemicals, fuels, and other hazardous materials can lead to water contamination. Furthermore, surface water runoff during the decommissioning phase of the proposed development can degrade water quality in the River Barrow and River Nore SAC. This may result in habitat loss and fragmentation, species fragmentation, disturbance, and displacement, of species listed as conservation interests in this Natura 2000 site, as listed in Table 25 below.

Moreover, it could affect the feeding opportunities, distribution, population structure, density, and spawning habitat availability of sensitive qualifying species of the SAC.</td><td colspan="5">Measure # 14 Protection of Water Quality During Decommissioning Phase
Ensure proper soil stabilization measures are employed during decommissioning to prevent erosion, sediment runoff, and adverse impacts on water quality. Appropriate silt control measures such as silt fences will be installed on the existing drainage systems and other best management practices followed to protect sensitive resources and control erosion.
Best practices will be incorporated into the safe handling and storage of materials, including containment measures, bunding, drip trays installed as part of plant and machinery used to ensure no risks to water quality.
Spill kits will be readily available on-site where oils or liquids are handled, and all staff will be trained on their location and proper use in case of emergencies.
Implement a monitoring program to assess the effectiveness of decommissioning mitigation measures and the recovery of the impacted environment. Regular reporting should be conducted to provide updates on the progress of habitat restoration and the overall success of decommissioning efforts.</td></tr>
<tr><td>How will the measure contribute to avoiding/reducing the effects on the integrity of the site?</td><td>How will the measure be implemented and by whom?</td><td>Effectiveness of the measure</td><td>Timescale of implementation</td><td>Proposed monitoring scheme and reporting requirements</td></tr>
<tr><td>These measures will prevent the source (contaminants, silts and sediments) from entering the pathways (local surface and groundwater networks), therefore not adding to/increasing pollutant concentrations at the receptor. Therefore, the source and pathway to receptors will be controlled, managed and/or removed by the measure. There will be no significant water quality impacts and no indirect effects on the</td><td>The appointed contractor will be responsible for the implementation and management of these measures.</td><td>Best practices for the protection of water quality will ensure no significant water quality impacts and no indirect effects on the Natura 2000 network.</td><td>Measures to be implemented at the outset of the decommissioning phase and to remain in place until works are complete.</td><td>The project Environmental Manager shall monitor and ensure that all erosion control and retention facilities, will be regularly inspected and maintained during the decommissioning phase.

Reporting will be undertaken and recorded, and documentation will be retained to ensure implementation and compliance. Issues raised will be addressed by the appointed contractor.</td></tr>
</table>

<table>
<tr><th>Potential effects identified</th><th colspan="5">Description of the measures, details on implementation, effectiveness, monitoring</th></tr>
<tr><td></td><td>Natura 2000 network.</td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="3">During the decommissioning phase of proposed development, mammals protected within the River Barrow and River Nore SAC may face indirect impacts from temporary fugitive noise, human activity, and machinery.</td><td colspan="5">Measure # 15 Protection of Mammals during Decommissioning Phase

• Standards of good practice for noise and vibration will be followed to minimise noise and vibration impacts from activities and vehicles.</td></tr>
<tr><td>How will the measure contribute to avoiding/reducing the effects on the integrity of the site?</td><td>How will the measure be implemented and by whom?</td><td>Effectiveness of the measure</td><td>Timescale of implementation</td><td>Proposed monitoring scheme and reporting requirements</td></tr>
<tr><td>By identifying locations used by mammals, potential disturbances will be avoided.</td><td>The project ecologist will conduct the surveys before decommissioning activities. Mitigation will be required as part of planning approval, included in the CEMP and will be implemented by the appointed Construction Contractor and Environmental Manager.</td><td>Standard best practices will help protect and eliminate significant noise pollution.</td><td>Mammal surveys will be conducted immediately prior to the commencement of decommissioning activities.</td><td>Pre-decommissioning mammal surveys will be undertaken prior to the commencement of any works in order to identify any changes in mammals activity.

Regular site inspections will be conducted by the ecologist to ensure the proper implementation of measures.

The project construction manager/ engineer/Environmental Manager shall oversee all works.</td></tr>
</table>

9 RESIDUAL IMPACTS

It has been concluded that, in the absence of mitigation, the proposed development has potential for significant water quality and/or direct/indirect species disturbance/displacement impacts within the River Barrow and River Nore SAC, or at least cannot be ruled out, in combination with other activities. Detailed mitigation measures have been prescribed with regards to the protection of water quality, aquatic habitats and water-dependant species during the construction phase. With the implementation of the recommended mitigation measures, as outlined in **Section 8**, above, it is objectively concluded that significant adverse residual impacts on the Conservation Objectives of any of the identified European sites evaluated herein, namely the River Barrow and River Nore SAC, are not likely to occur as a result of the proposed development, either independently or in combination with other plans or projects.

Table 25 Summary results of the assessment after implementation of mitigation measures

Relevant Features in the site	Summary description of impacts/adverse effects	Importance/magnitude of the effects	Description of the proposed mitigation measures	Expected results regarding the mitigation of effects
<u>Habitats</u> **River Barrow and River Nore SAC** • Petrifying springs with tufa formation • Estuaries • Mudflats and sandflats not covered by seawater at low tide • Reefs • Salicornia and other annuals colonizing mud and sand • Atlantic salt meadows • Mediterranean salt meadows • Old sessile oak woods with Ilex and Blechnum in the British Isles • Alluvial forests with Alnus glutinosa and Fraxinus excelsior • Water courses of plain to montane levels with the Ranunculion fluitantis and	During the construction, operation and decommissioning phase of the proposed development, surface water runoff, as well as the use of fuel, oils, concrete, excavated material, and storage and stockpiling activities, pose a potential risk to water quality in the River Barrow and River Nore SAC. This has the potential to cause habitat loss and alteration by way of indirect impacts.	The environmental effects, including habitat loss and alteration, will be localised considering the nature and duration of the works. The impact will be limited in scale, focusing on the immediate area around the SAC. There is some potential for water quality impacts to affect habitats and species in the River Barrow and River Nore SAC.	Measures outlined below, as detailed in Table 1, 2 and 3 above, will be managed and implemented to ensure the protection of the qualifying habitat and species of the River Barrow and River Nore SAC. • Protection of Water Quality / Run-off and Sediment Control • Protection of Water Quality / Waste Management • Protection of Water Quality / Surface Water Monitoring • Protection of Water Quality / Management of Fuels/Oils • Protection of Water Quality / Management of Concrete • Protection of Water Quality / Management of Excavated Materials • Protection of Water Quality / Storage and Stockpiles • Protection of Mammals/ Pre-Construction Monitoring • Management of Invasive Species during Construction Phase • Emergency Plans and Risks of Accidents • Management of Surface water discharges during the operational phase • Decommissioning Phase - Protection of Birds • Management of Invasive Species during Decommissioning Phase	These mitigation measures will avoid/reduce habitat disruption, protect sensitive species and preserve water quality of the River Barrow, thereby protecting the River Barrow and River Nore SAC. Pollution sources will be minimised and pathways to receptors will be controlled, managed and/or removed to a degree that reduces any water quality impacts to a level that will not affect the qualifying features of the River Barrow and River Nore SAC.

Relevant Features in the site	Summary description of impacts/adverse effects	Importance/magnitude of the effects	Description of the proposed mitigation measures	Expected results regarding the mitigation of effects
Callitricho-Batrachion vegetation • Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels • European dry heaths			• Protection of Water Quality During Decommissioning Phase • Protection of Mammals During Decommissioning Phase	
<u>Species</u> **River Barrow and River Nore SAC** • Nore Freshwater Pearl Mussel • Sea Lamprey • Brook Lamprey • River Lamprey • Salmon • Otter • Desmoulins whorl snail • White-clawed crayfish	During the construction, operation and decommissioning phase of the proposed development, surface water runoff, as well as the use of fuel, oils, concrete, excavated material, and storage and stockpiling activities, pose a potential risk to water quality in the River Barrow and River Nore SAC. This may lead to habitat loss and alteration, fragmentation, disturbance, and displacement of species like Nore Freshwater Pearl Mussel, River Lamprey, Sea Lamprey, Brook Lamprey, Salmon, Otter, Desmoulins whorl snail and White-clawed crayfish Additionally, it could affect the feeding behaviour, distribution, population structure, density, and spawning habitat availability of sensitive qualifying species of	Given the nature and duration of the construction, operation and decommissioning activities, potential effects such as habitat loss and disruption, species fragmentation and displacement, will remain localised. Impacts will be limited in scale, primarily affecting the immediate vicinity around the River Barrow and River Nore SAC.	Measures outlined below, are detailed in Table 1, 2, and 3 above, will be implemented to ensure the protection of the qualifying species of the SAC. • Protection of Water Quality / Run-off and Sediment Control • Protection of Water Quality / Waste Management • Protection of Water Quality / Surface Water Monitoring • Protection of Water Quality / Management of Fuels/Oils • Protection of Water Quality / Management of Concrete • Protection of Water Quality / Management of Excavated Materials • Protection of Water Quality / Storage and Stockpiles • Protection of Mammals/ Pre-Construction Monitoring • Management of Invasive Species during Construction Phase • Emergency Plans and Risks of Accidents	These mitigation measures will protect sensitive species and preserve water quality of the River Barrow and River Barrow and River Nore SAC as the source and pathway to receptors will be controlled, managed and/or removed by the measure.

Relevant Features in the site	Summary description of impacts/adverse effects	Importance/magnitude of the effects	Description of the proposed mitigation measures	Expected results regarding the mitigation of effects
	the River Barrow and River Nore SAC. Otters and bird species protected within this European site could be subjected to indirect impacts from temporary fugitive noise, human activity, machinery and water quality during the construction and decommissioning phase.		• Management of Surface water discharges during the operational phase • Decommissioning Phase - Protection of Birds • Management of Invasive Species during Decommissioning Phase • Protection of Water Quality During Decommissioning Phase • Protection of Mammals During Decommissioning Phase	

10 CONCLUSION

It has been objectively concluded, following an examination, analysis and evaluation of the relevant information, including in particular the nature of the predicted impacts from the proposed development and with the implementation of the mitigation measures proposed, that the proposed development will not adversely affect (either directly or indirectly) the integrity of any European site, either alone or in combination with other plans or projects, and there is no reasonable scientific doubt in relation to this conclusion.

These sites are:

- River Barrow and River Nore SAC (002162)

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Appendix 1
Stages Of Appropriate Assessment

Stage 1 - Screening

This is the first stage of the Appropriate Assessment process and is undertaken to determine the likelihood of significant impacts because of a proposed project or plan. It determines the need for a full Appropriate Assessment.

If it can be concluded that no significant impacts to Natura 2000 sites are likely, then the assessment can stop here. If not, it must proceed to Stage 2 for a further, more detailed assessment.

Stage 2 - Natura Impact Statement (NIS)

The second stage of the Appropriate Assessment process assesses the impact of the proposal (either alone or in combination with other projects or plans) on the integrity of the Natura 2000 site with respect to the conservation objectives of the site and its ecological structure and function. This is a much more detailed assessment that Stage 1. A Natura Impact Statement that contains a professional scientific examination of the proposal is required and must include any mitigation measure(s) that would avoid, reduce or offset any negative impacts of the proposal. If the outcome of Stage 2 is negative i.e. adverse impacts to the sites cannot be scientifically ruled out despite mitigation, the plan or project should proceed to Stage 3 or be abandoned.

Stage 3 - Assessment of alternative solutions

A detailed assessment must be undertaken to determine whether alternative ways of achieving the objective of the project/plan exists. Where no alternatives exist, the project/plan must proceed to Stage 4.

Stage 4 - Assessment where no alternative solutions exist and where adverse impacts remain

The final stage is the main derogation process examining whether there are imperative reasons of overriding public interest (IROPI) for allowing a plan or project to adversely affect a Natura 2000 Site where no less damaging solution exists.