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Natura Impact Statement

Kilcumber Bridge 110kV substation, Co. Offaly

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1 SUMMARY OF FINDINGS

1.1 NATURA IMPACT STATEMENT

Project Title	Kilcumber Bridge 110kV substation
Project Proponent	Cloncant Renewable Energy Ltd.
Project Location	Edenderry, Co. Offaly.
Natura Impact Statement	In cases where an Appropriate Assessment is required a Natura Impact Statement (NIS) is prepared and includes a report of a scientific examination of evidence and data, carried out by competent persons to identify and classify any implications of a project/plan, individually, or in combination with other plans or projects, for Natura 2000 sites in view of the conservation objectives of the site.
Conclusion	Provided that the mitigation measures are implemented in full, it is considered that the proposal will not affect the integrity of the European Site considered in this report, namely; • River Barrow and River Nore SAC (002162)

2 INTRODUCTION

In cases where an Appropriate Assessment is required a Natura Impact Statement (NIS) shall be prepared and shall include a report of a scientific examination of evidence and data, carried out by competent persons to identify and classify any implications for Natura 2000 sites in the view of the conservation objectives of the site. 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 plan or project. The plan or project should be fully described particularly in relation to the aspects that could interact with the surrounding environment. The proposed project has been fully described in **Section 4** below.

The focus of the assessment is to determine whether the construction and operation of the project will have a significant negative impact on the features of interest of a Natura 2000 site(s) i.e. habitats and species. This assessment identifies the environmental aspects of the project that will interact with the ecological requirements or sensitivities of the habitats and species, in this case the construction and operation of a substation and a grid connection near Kilcumber Bridge, Co. Offaly.

The test of the assessment is whether the plan or project will have 'an adverse effect on the integrity of the site'. Where potentially significant effects are identified proven mitigation measures will be recommended.

2.1 LEGISLATIVE CONTEXT

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) and the Birds Directive (79/409/EEC) seeks to protect birds of special importance by the designation of Special Protected Areas (SPAs). It is the responsibility of each 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 has been transposed into Irish law and the relevant Regulations are the European Communities (Birds and Natural Habitats) Regulations 2011. The requirement for Appropriate Assessment of the implications of plans and projects on the Natura 2000 network of sites comes from the Habitats Directive (Article 6(3)) and Part XAB of the Planning and Development Act 2000-2019.

2.2 STAGES OF APPROPRIATE ASSESSMENT

The Appropriate Assessment process is a four-stage process with issues and tests at each stage. An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required. The stages are set out in the Appropriate Assessment Screening Report attached as **Appendix 1**.

The Screening for Appropriate Assessment was undertaken to determine the potential for likely significant impacts of a proposal to construct Kilcumber Bridge 110kV Substation and associated grid connection in the townlands of Ballykilleen, Cloncreen and Ballinowlart North, individually, or in combination with other plans or projects, on nearby Natura 2000 sites.

It has been concluded in the Screening for Appropriate Assessment report that the potential for significant impacts could not be ruled out for one Natura 2000 site, namely; the River Barrow and River Nore SAC (002162).

3 ASSESSMENT METHODOLOGY

3.1 APPROPRIATE ASSESSMENT GUIDANCE

This Natura Impact Statement (NIS) has been undertaken in accordance with the European Commission Methodological Guidance on the provision of Article 6(3) and 6(4) of the 'Habitats' Directive 92/43/EEC (EC, 2001) and the European Commission Guidance 'Managing Natura 2000 sites' (EC, 2000) and guidance prepared by the NPWS (DoEHLG, 2009).

3.2 CONSULTATION

3.2.1 Consultation during the Cushaling Wind Farm EIAR

The Kilcumber Bridge 110kv substation was part of the EIAR for the Cushaling Wind farm project. There are two differences in the layout plan of the Kilcumber Bridge 110kv substation in the Cushaling Wind Farm plan that underwent consultation and the current proposed development. These are a movement of the substation southwest by about 20 meters and the introduction of the overhead line as the grid connection. As part of the Cushaling Wind Farm EIAR it underwent the following consultations;

3.2.1.1 Pre-Planning Meeting with Offaly County Council

A pre-planning meeting was held with Offaly County Council Planning Department on the 29th May 2019. The objective of the meeting was to outline the proposal and to discuss any concerns or comments that OCC may have in relation to the proposal and any planning and development policy particularly relating to renewable energy strategy. Follow-up discussions were also held with the Roads Department regarding road access to the site.

The Applicant also had a pre-planning consultation meeting with the Edenderry Roads Engineer for Offaly County Council on 26th August 2019. During this meeting, the project was outlined by the Applicant and Offaly County Council advised of their expectations with regards to the use of public roads approaching and within the wind farm, ducting through public roads, public road upgrade works and reinstatement finishes etc.

3.2.1.2 Pre-Planning Meeting with Kildare County Council

A pre-planning meeting was held with Kildare County Council Planning Department on the 9th July 2019. The objective of the meeting was to outline the proposal and to discuss any concerns or comments that KCC may have had in relation to the proposal and any planning and development policy particularly relating to renewable energy strategy.

3.2.1.3 Consultation with Statutory and Non-Statutory Consultees

The Applicant undertook consultation with a range of statutory and non-statutory bodies identified as relevant to the project and location. Community groups relevant to the area were also identified and included.

3.2.1.4 Public Consultation with the Local Community

Cloncant Renewable Energy Ltd. commenced the public consultation for the proposed Cushaling Wind Farm in June 2019 at an early stage in the development process. A Community Liaison Strategy (CLS) was established and set into motion with a nominated Community Liaison Officer (CLO). Since this time, the CLO has been the main point of contact with the local community. The CLS is based on the 'Code of Practice for Wind Energy Development in Ireland Guidelines for Community Engagement' (December 2016).

An important aspect of the community engagement strategy was the distribution of project information and the gathering of feedback. A Project Website was also set up (www.cushalingwindfarm.ie). The CLO called to all houses within 2.2km of the design layout to provide the following information:

- A Project Booklet (June 2019);
- A subsequent Project Newsletter (October 2019);
- Details on the Project website (June 2019);
- Contact details for contacting the CLO at any time.

With regard to all consultation undertaken, all feedback received was carefully considered by the project design team in designing the layout and siting of wind farm infrastructure. Following this, the proposal was finalised and submitted as planning applications to Offaly and Kildare County Councils in November 2019.

3.2.2 Consultation for the stand alone Kilcumber Bridge 110kv substation

3.2.2.1 Pre-Application Consultation Meeting with An Bord Pleanála

A pre-application meeting was held with An Bord Pleanála on the 25th February 2020. The objective of the meeting was to outline the proposal and to discuss any concerns or comments that An Bord Pleanála may have in relation to the proposal. Confirmation that the project was a strategic infrastructure development was a part of the pre application process.

3.2.2.2 Consultation with Eirgrid as operators of the Irish electricity grid.

Cloncant Renewable Energy Ltd. had three meetings with EirGrid in 2020 where the Cushaling Wind Farm and its grid connection including Kilcumber Bridge 110kv substation or policy items effecting these items, were discussed:

- 22nd April
- 17th June
- 16th Sept

These meetings were in an effort to ensure that the needs of the grid operator were addressed.

3.2.2.3 Consultation with statutory and non statutory bodies with a possible interest.

Letters and project descriptions were sent out to a list of statutory and non statutory bodies that may have had an interest in the proposed development.

3.2.2.4 Information drop to adjacent residential houses

Information regarding the proposed development was given to the immediate adjacent residents and they were asked for comments regarding the development.

3.2.2.5 Additional consultation with Offaly County Council

Offaly County Council were included in the non statutory bodies for a request for comments in relation to the project. An online meeting was held with Offaly Co. Co. on the 1st March 2021, in order to get the full information regarding Offaly County Council's thoughts on the proposed development.

3.2.2.6 Project website

Post EIAR an important aspect of the community engagement strategy is the setting up of the Project Website (www.Kilcumberbridgesubstationsid.ie). This is due to go live once the planning application has gone in and will inform the community on all aspects of the proposed development as well as contain the full EIAR in a downloadable version.

3.3 DESK STUDY

In order to complete the Natura Impact Statement, certain information on the existing environment is required. A desk study was carried out to collate available information on the subject site's natural environment. This comprised a review of the following publications, data and datasets:

- OSI Aerial photography and 1:50000 mapping
- National Parks and Wildlife Service (NPWS) online databases
- National Biodiversity Data Centre (NBDC) online map-viewer
- Teagasc soil area maps (NBDC website)
- Geological Survey Ireland (GSI) area maps (online)
- Environmental Protection Agency (EPA) water quality data
- South eastern River Basin District (SERBD) datasets (Water Framework Directive)
- Other information sources and reports footnoted in the course of the report

3.4 FIELD SURVEYS

An ecological walkover survey was carried out during a site visit 13th July and December 2nd 2020. All habitats were classified according to Fossitt 2000.

3.5 ASSESSMENT OF POTENTIALLY SIGNIFICANT EFFECTS

Following the completion of the Screening for Appropriate Assessment, it was concluded that the project could have a significant effect, or significant effects could not be ruled out, for one Natura 2000 site, namely River Barrow and River Nore SAC (002162).

An evaluation was undertaken to determine which of the qualifying interests (QIs) of the SAC potentially lie within the zone of influence of the project and therefore would require further assessment in the NIS (see **Section 5** below). This was done through a scientific examination of ecological evidence and data listed above in **Section 3.33** or referenced in the text as well as the results of the ecological field surveys (**Section 4.5.3**).

The conservation objectives of a Natura 2000 site are site specific and based on the ecological requirements of the species and habitats present and define the desired conservation condition of these species and habitat types on 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 favourable conservation condition of a habitat. The effects of the proposed project on the qualifying interests of the SACs, potentially within their zone of influence, were assessed against the measures designed to achieve the conservation objectives. This was done by way of a focused and detailed examination, analysis and evaluation of the implications of the project, alone and in-

combination with other plans and projects, on the integrity of the relevant European sites in view of the site's conservation objectives (see **Section 5**).

4 DESCRIPTION OF PROJECT

4.1 BRIEF PROJECT DESCRIPTION

The proposed development is the Kilcumber Bridge 110kV substation. Cloncant Renewable Energy Ltd., a subsidiary of Statkraft Ireland Ltd. are applying for planning permission and will build out the proposed Kilcumber Bridge 110kV substation project. Once the development is completed the ownership of the facility will transfer to Eirgrid who will operate and maintain the development as part of the national electricity grid.

The proposal is to construct a 110kV substation to facilitate the connection of permitted renewable energy projects in the local area to the transmission network. The overall compound would have an area of approx. 19,809m2. The development consists of a 12,875m2 compound with all the components of a substation with an additional 7,524m2 area for future expansion of the substation electrical capacity. The buildings and other externally mounted electrical plant will be enclosed in a fenced compound. These compounds will include an Air Insulated Switchgear (AIS) station and Control Building. It will also include underground ducting and cabling.

The components of the proposed Kilcumber Bridge 110kV Air Insulated Switchgear (AIS) Loop Substation are listed below:

- control building,
- over and underground ducting/ cables,
- electrical pylons,
- fencing,
- electrical equipment including busbars, disconnects, breakers, sealing ends, lightning and lighting masts.

The 110kV grid connection route assessed for the NIS is an overhead line (OHL). A 400m OHL going south east from the substation and connecting into the adjacent existing Cushaling – Mount Lucas 110kV OHL. The OHL would consist of a combination of steel lattice pylons and wooden pylons with a height of 12m.

4.2 SITE LOCATION AND CONTEXT

The proposed development site is in the townlands of Ballykilleen, Cloncreen and Ballinowlart North, Co. Offaly. Grid Ref. (ITM) Easting = 660810, Northing = 726820. The proposed development is opposite the Edenderry power station and approximately 6km south of Edenderry on the R401. The site can be accessed via the R401. See **Figure 1** below for location map.

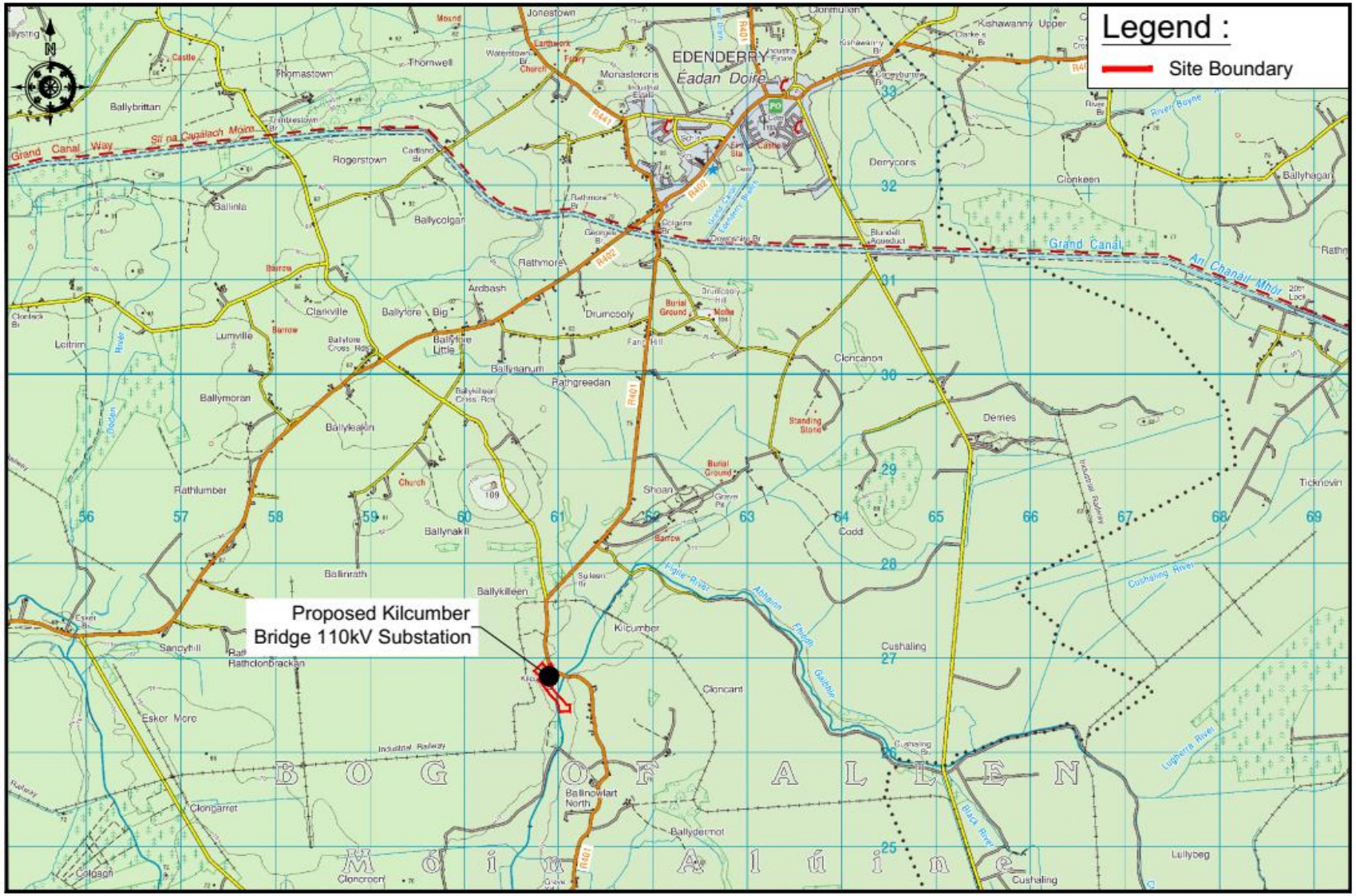

Figure 1. Site Location

4.3 PURPOSE OF THE PROJECT

The purpose of the project is to provide additional national Irish electrical grid capacity for future local energy generation projects in this area of the midlands.

4.4 CHARACTERISTICS OF THE PROJECT

The proposal is described below and has been confirmed with the client.

Size, scale, area, land-take	The proposal involves: – Construction and operation of a new 110kV Kilcumber substation. – A 450m2 substation control building. – 2ha substation compound area. – A 400m overhead line 110kV grid connection to the adjacent existing Cushaling – Mount Lucas overhead 110kV line. – For the most part the proposed development occurs on agricultural grassland. – There is no spatial overlap between the subject site and any Natura 2000 site. – The proposed development does not require land take from any Natura 2000 site.
Details of physical changes that will take place during the various stages of implementing the proposal	– The approximately 2 ha site will be double fenced for security and safety – Inside the compound area the substation equipment will be laid out according to Eirgrid specifications with all safety clearances incorporated into the design. – The compound will contain: o A single story 450m^2 substation control building. o An internal compound road will provide access and four parking bays and a loading bay will be provided outside the control room. o Access to the facility will be from the R401 which separates the proposed development from the existing Cushaling 110kV substation. **New Substation** – Construction and operation of a new proposed 110kV substation (19,809m^2). – Importation of stone from local quarries will be required for the substation compound. **Grid Connection** – 1. A 400m 110kV overhead line (OHL), looped in/out, from the proposed substation to the existing Cushaling – Mount Lucas 110kV overhead line – The route crosses the Figile River to the east and will link into the existing Cushaling – Mount Lucas 110kV overhead line. – Pre-construction surveys will be undertaken immediately prior to the construction phase, including ground investigations to allow detailed design of the OHL route. Access to the grid connection construction areas

	will primarily be via the compound area with limited temporary access from existing field entrances and routes used by the landowner. The detailed design of any temporary access routes will be based on the condition of the land at the time of construction and will be agreed with the landowner prior to the commencement of works. The existing Mount Lucas - Cushaling overhead line will be isolated to allow for construction of the proposed grid connection. – The OHL route consists of two lines going in and out of the substation. The OHL infrastructure includes four 12m steel lattice pylons and six 12m wooden pole structures. The 12m steel lattice pylons will be constructed on four concrete foundation footings of approximately one cubic meter each (four cubic meters of concrete per steel lattice pylon). The steel lattice frames will be constructed on site. The wooden pole infrastructure will consist of holes cored into the ground. The poles will then be concreted into the prepared holes. **Temporary compound** – The construction compound will be situated in the future expansion area of the proposed Kilcumber Bridge 110kV substation, within the red line of the proposed site layout. This compound will act as the construction compound for both the substation and the grid connection. – The compound will be used as a secure storage area for construction materials and temporary welfare facilities for site personnel. Facilities may include office space, canteen area and drying room. The temporary compound will also include an enclosed wastewater management system, which will be capable of handling the demand at construction phase. A holding tank is proposed for wastewater management. The holding tank will only be emptied by permitted contractors. – Sanitation facilities will be provided by means of a self-contained portable toilet/welfare block with an integrated waste holding tank and will be located on the temporary site compound. This will be maintained by the service contractor on a regular basis and will be removed from the site on completion of the construction phase. **Drainage/Water control** – Construction of surface water drainage system while construction is being carried out at the site. (roadside drains, suspended solid dams in existing drainage ditches and around construction areas). **Vegetation clearance** – Removal of treelines/hedgerows to facilitate the subject site.
Description of resource requirements for the construction/operation and decommissioning of the proposal (water resources, construction material, human presence etc)	**Materials** – 1,816m3 of soils excavated for reuse on site; – 28,480m3 of imported rock; – 41m3 of concrete. Typical equipment • Wheeled / tracked excavators • Mobile Cranes

	• Dumpers • Tractor trailers (low loader) • Bobcats • Ride on rollers • Pumps • Steel bars and rope • Concrete vibrators • Drills • Fencing • Timber/plastic templates • Water pumps
Description of timescale for the various activities that will take place as a result of implementation (including likely start and finish date)	**Duration** Depending on the grid application process, the project build is expected to start in 2022 or 2023. The substation will be constructed first, followed by the grid connection over a period of 12 months. There will be an additional allowance of about two months for commissioning and handover to Eirgrid. The total timeframe for the proposed project is 14 months from start of construction to hand over to Eirgrid.
Description of wastes arising and other residues (including quantities) and their disposal	– Construction waste (packaging, spoil including excess concrete, plaster, etc) – Services waste – Fuels and oils All wastes generated will be sent to licensed or permitted facility.
Identification of wastes arising and other residues (including quantities) that may be of particular concern in the context of the Natura 2000 network	– Excavation works will generate about 1,816m3 of soils and subsoil. This material will be reused onsite. – Construction waste will be removed from site for appropriate disposal. Any other general wastes, e.g. packaging, pallets, etc. will be removed off-site by an authorised and permitted waste contractor for recycling or disposal in accordance with best practice and waste management legislation. Waste from temporary toilets will be taken from site on a regular basis by approved contractors during construction phase and disposed of in an authorised facility in accordance with best practice.
Description of any additional services required to implement the project or plan, their location and means of construction	Prior to construction commencing consultation with Offaly County Council will take place to discuss and agree measures related to traffic management, waste management and diversions or road closure required to facilitate the works.

4.5 DESCRIPTION OF THE SITE

4.5.1 General

The proposed development of the Kilcumber Bridge 110kv substation is in the townlands of Ballykilleen, Cloncreen and Ballinowlart North, Co. Offaly. The townland of Ballykillen is bounded by the townland of Ballinrath to the west, Cloncreen and to the south, Kilcumber and Shean to the east

and Ballyfore Little, Ballynanum and Rathgreedan to the north. The townland of Ballinowlart North is bounded by Cloncreen to the west, Ballydermot to the south, Cloncant to the east and Kilcumber to the north. According to Geological Survey Ireland (GSI) online database, the bedrock at the subject site is classified as '*Dark limestone & shale*' which forms a band extending northeast to southwest[1]. A review of the Teagasc map viewer determined that soil at the subject site comprises 'peat'[2].

Overall land-use in the area surrounding the proposed development site and beyond is agricultural comprising improved pasture, peat extraction and to lesser extent areas of commercial forestry. The dominant Corine Land cover Category (2018) of the proposed substation and grid route footprint comprises predominantly of 'Agricultural Areas' Code 231 alongside Edenderry Power plant 'Artificial Surfaces' Code 131 and surrounded by mostly 'Peat bogs' Code 412 and some 'Forest and semi-natural areas' Code 313.

The Figile River (EPA Code: 14F01) is situated ca. 70m east of the proposed substation, it is classified as a fourth (4th) order river and flows south until it meets the River Barrow, 14.2km south of the subject site and ca. 21km via its overland hydrological route.

4.5.2 Water quality

Compliance with the reporting requirements of the Water Framework Directive (Directive 2000/60/EC) obliges each member state to publish reports providing summary information about individual water bodies relating to their status, risks and objectives. Within this reporting framework the proposed site is located in the 'Barrow catchment' (Catchment ID_14) and the 'Figile_SC_010' and 'Figile_SC_020' sub-catchments which all fall within the Hydrometric Area 14. The WFD Status 2013-2018 for the Figile River (EPA Code: 14F01) at the subject site was classed as 'moderate'[3]. An assessment of the 'Figile_SC_010'[4] and 'Figile_SC_020'[5] sub-catchments has been produced as part of the national characterisation programme undertaken for the second cycle of Water Framework Directive river basin management planning. This assessment has been led by the EPA with input from Local Authorities and other public bodies. It has been noted in the reports for both sub-catchments that the main pressure is 'peat extraction' and to a lesser extent 'anthropogenic pressures' 'agriculture' and 'industry'. The majority of the waterbodies within each sub-catchment are deemed 'At risk'.

The Figile River is currently monitored by the EPA. This assessment of water quality is based on the macro-invertebrate community and physio-chemical characteristics of the waterbody at these locations. The closest monitoring station is Kilcumber Bridge which is just east of the subject site. Further downstream are four more monitoring stations before the Figile River meets the River Barrow. All mentioned EPA monitoring stations, for which accompanying Q-Values are known, have been included in **Table 1** below.

[1] https://www.gsi.ie/en-ie/data-and-maps/Pages/Bedrock.aspx#UKIreland

[2] http://gis.teagasc.ie/soils/map.php

[3] https://gis.epa.ie/EPAMaps/

[4] https://www.catchments.ie/data/#/subcatchment/14/14_3?_k=ln971e

[5] https://www.catchments.ie/data/#/subcatchment/14/14_14?_k=tsqu7q

Table 1: River Water Quality at EPA Stations at the Figile River mostly recently surveyed

Station Name/Location	Station ID	Year	Q-rating	Corresponding WFD status
Kilcumber Bridge	RS14F010200	2017	Q3-4	Moderate
Figile – Bridge in Clonbulloge	RS14F010300	2017	Q4	Good
Derrygarran Bridge	RS14F010400	2017	Q4	Good
Ardra Bridge	RS14F010500	2017	Q4	Good
1 km u/s Barrow R confluence	RS14F010600	2006	Q3-4	Moderate

According to the River Waterbody WFD Status of surveys conducted between 2013-2018, the River Figile is classified as having 'Moderate' status with a river waterbody score of '1A; at risk of not achieving good status'[6].

4.5.3 Results of Field Survey

An ecological walkover survey was carried out during site visits on 13th July and 22nd December 2020, all habitats mentioned are classified per Fossitt (2000). The subject site comprises fields of 'Improved agricultural grassland GA1' with associated 'Hedgerows WL1', 'Scrub WS1' and 'Drainage ditches FW4' forming field boundaries. Common species observed in the Improved agricultural grassland consisted of Rye-grasses (*Lolium spp*.), Clover (*Trifolium spp*.), Meadow-grasses (*Poa spp*.) and Yorkshire-fog (*Holcus lanatus*). Frequently occurring species consisted of Nettle (*Urtica dioica*), Plantains (*Plantago spp*.), Creeping buttercup (*Ranunculus repens*), Dandelion (*Taraxacum spp*.), Thistles (*Cirsium arvense, C. vulgare*) and Docks (*Rumex spp*.). Some of the wetter parts of the fields close to the drainage ditches had species indicative to 'Wet grassland GS4' such as Rushes (*Junus spp*.), Yellow iris (*Iris pseudacorus*), Silverweed (*Potentilla anserina*) and Meadow sweet (*Filipendula ulmaria*). Common species found in hedgerows and scrub were Hawthorn (*Crataegus monogyna*), Gorse (*Ulex europaeus*), Holly (*Ilex aquifolium*), Bramble (*Rubus fruticosus agg*.), Ash (*Fraxinus excelsior*), Hazel (*Corylus avellana*), and Willows (*Salix spp*.).

In the surrounding area the habitat types comprise of 'Improved agricultural grassland GA1', 'Wet grassland GS4', and 'Lowland/Depositing River FW2' (Figile River). Extending away from the site to the west further to the east are large areas of 'Cutover bog PB4'. Just northeast of the site is Edenderry power station which is classed as 'Buildings and artificial surfaces BL3'.

There were no invasive species observed at the subject site and the immediate surrounds during the ecological walkover.

During the site visit on 22nd December two locations outside of the footprint of the proposed development showed signs of mammal activity. Camera traps was left at these two locations. One camera to the west and one to the north of the proposed grid connection (See **Figure 2** below). The cameras were in these locations from 22/12/2020 until 15/01/2021.

The images from both cameras revealed activity occurred almost every night. The most common species recorded were Badger (*Mele meles*) and Fox (*Vulpes vulpes*). There were no recordings of Otter (*Lutra lutra*).

[6] https://www.catchments.ie/data/#/waterbody/IE_SE_14F010300?_k=osbtrb

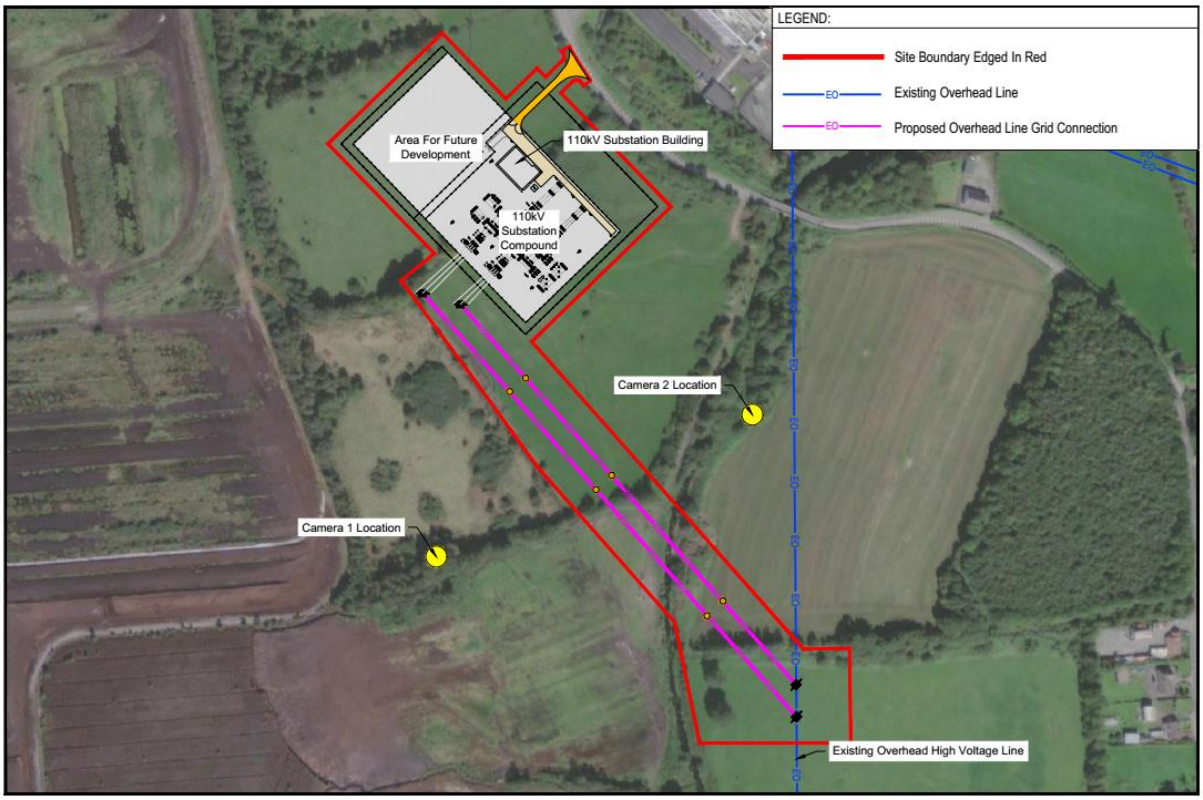

Figure 2. Camera Trap locations

4.5.4 Identification of Other Projects or Plans or Activities

This section identifies other projects, plans or activities that could act cumulatively with the proposed project.

A review of the:

- Offaly County Development Plan 2014-2020
- Offaly County Development Plan 2021-2027 (Draft stage)

A search for relevant plans and projects determined that there are a number of current planning applications or grants of permission for large scale projects in the area, including:

- Mount Lucas Wind Farm – Operating
- Yellow River Wind Farm – Permitted
- Cloncreen Wind Farm – Permitted
- Cushaling Wind Farm – Permitted
- Proposed Irish Water Eastern and Midlands Regional Water Supply Project

A review of EPA licensed operators within the 'Figile_SC_010' sub-catchment determined that there are three IEL Licensed facilities. Edenderry Power Limited (Licence No. P0482-04) power plant is owned by Bord na Mona and is situated just east of the proposed site. This facility has a licensed emission point to the River Figile (P0482_02_1_EW). Located approximately 14km east of the subject site in Co. Kildare are two facilities also owned by Bord na Mona, Drehid Waste Management Facility (Licence No. W0201-03) and Drehid Mechanical Biological Treatment (MBT) Facility (Licence No.

W0283-01). Located approximately 11km northeast of the subject site is Derrinturn urban wastewater plant (UWWT License No. D0244-01).

There are three IEL Licensed facilities located in the 'Figile_SC_020' sub-catchment. Clonbullogue Ash Repository facility situated ca.2km southwest of the subject site and is located in the next sub-catchment 'Figile_SC_020'. This is facility is a functional element of the Bord na Mona Energy Ltd disposes of inert waste products (fly ash and bottom ash), arising from peat combustion within the boiler of the Edenderry Power Ltd[7]. Rosderra Farms (License No. P0614-02) is located 8km of the subject site. Approximately 13km northwest of the subject is Mr. Mattie Moore pig farm (License No. P0430-01). Located approximately 11km west of the subject site is Daingean urban wastewater plant (UWWT License No. D0226-01) with most recent compliance grade as 'pass'.

A review of the Offaly County Council Planning Register[8] indicates that there are no recent planning applications in the townland of Ballinowlart North. There is one application in the townland of Cloncreen pending further information, this pertains to Bord na Móna Clonbullogue Ash Repository facility for the continued use of the previously permitted ash repository (an bord pleanála pl 19.216998 / offaly county council 05/1267). There are a number of recent planning applications in the townland of Ballykilleen (see Error! Reference source not found.).

Table 2: **Planning applications in the townland of Ballykilleen**

Planning Reference	Project	Application Status
2152	Bord na Mona - a modular battery energy storage system (bess) facility within the footprint of a previously consented construction compound (abp ref. pl19.pa0047).	New Application
20447	Retention: Domestic garage, domestic storage space, home office with toilet and all associated site works	Further Information
2088	Retention: • (a) a garage for domestic use and • (b) front boundary wall and entrance	Granted
19496	• Alterations to the existing 110kV cushaling substation and includes the installation of 110kV ais switchgear with associated foundations, steelwork, supports and connectors and associated work.	Granted
19337	• Erection of a one and a half storey type house, • Garage/ fuel store for domestic use, • The installation of septic tank with percolation area and • New vehicular recessed entrance and all associated site work	Granted
19102	• The construction of a new single storey dwelling house and detached fuel/ storage/ garage building, new wastewater treatment plant and percolation area, new site entrance, revisions to front boundary and all ancillary site works.	Granted
19527	• A single storey extension to the rear of the existing dwelling house, porch area to front of dwelling, external study/ library, external utility room, external toilet room comprising, upgrading of existing wastewater treatment system & percolation area,	Granted

[7] http://www.epa.ie/licences/lic_eDMS/090151b280347fa5.pdf

[8] https://offalycoco.maps.arcgis.com/apps/webappviewer/index.html?id=a9badef1ed474100ae1340b33ea9a729

Planning Reference	Project	Application Status
	• Planning permission for single storey extension to the side of the existing dwelling house and all associated site development works.	
19500	• Bord na Mona - The erection and operation of a multi-user telecommunications mast to be utilised as part of the national broadband plan.	Granted
18490	• 1 no. new storey and half type dwelling house b) • 1 no. new domestic garage, • Installation of a new wastewater treatment system, • Use existing vehicular entrance, • New landscaping and all associated site development work.	Granted
16346	• A change of house design to include revisions to floor plans and elevations from that granted under planning permission.	Granted
15129	• Edenderry power station – applied for extension of continues use until the end of 2030.	Granted

Given the rural location of the proposed development site and existing land uses extending away from the site, it is considered that agriculture and peat extraction and to a lesser extent the proposed pipeline project, wind energy projects and power generation projects are the activities/projects with which the proposal could interact synergistically to create cumulative or in-combination impacts.

The evaluation for cumulative impacts as a result of the proposal is presented in **Section 5.3 below**.

5 IDENITIFICAITON OF NATURA 2000 SITES

It could not be objectively concluded at the Screening stage that significant adverse impacts to the following designated Natura 2000 site would not occur:

- River Barrow and River Nore SAC (002162)

Therefore, it is necessary to proceed to appropriate assessment and a Natura Impact Statement is required for this project.

When Natura 2000 sites are selected for stage 2 assessments, then all the qualifying features of conservation interest must be included in that stage of the assessment. However, when assessing impact, qualifying features 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. nearby watercourse), a 'receptor' (e.g. a protected species associated aquatic or riparian habitats), and an impact pathway between the source and the receptor (e.g. a watercourse which connects the proposed development site to the Natura 2000 site). 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.

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 the potential receptors, it is considered that not all of the receptors 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 5.1.2** below. This evaluation determined that certain habitats and species, which are listed as qualifying interests for the SAC, should be selected for further assessment as plausible ecological receptors.

5.1 RIVER BARROW AND RIVER NORE SAC (002162)

5.1.1 Description of the Natura 2000 site

This SAC site is comprised primarily of fresh water stretches of both the River Barrow and the River Nore catchments, extending from as low as the estuary in Waterford, which experiences tidal (saltwater) influences and as far upstream as the Slieve Bloom Mountains.

The SAC is rather extensive in its reach, passing through a total of eight counties, namely: Offaly, Kildare, Laois, Carlow, Kilkenny, Tipperary, Wexford and Waterford. The site encompasses many smaller tributaries, some of the larger ones being Lerr, Fushoge, Mountain, and Stradbally[9]. Both the River Nore and the River Barrow rise over the Old Red Sandstone of the Slieve Bloom Mountains before passing through a band of Carboniferous shales and sandstones, and in part over areas of Limestone as they flow seaward. The River Nore, for much of its course traverses across Limestone

[9] https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY002162.pdf

plains and Old Red Sandstone for a short stretch at its lower reaches. Before joining the River Barrow, the Nore runs over intrusive rocks that are poor in silica composition.

The upper River Barrow runs along Limestone also, with the middle reaches (in the Blackstairs Mountains) running through Leinster Granite, and the lower reaches of the river flowing over intrusive rocks poor in silica.

Along the seaward extent lies Waterford Harbour, this is a deep glacial valley which was formed by glacial floodwaters when the sea level was lower than it currently is. The River Nore and River Barrow SAC is designated for the protection of an array of aquatic (freshwater and saltwater) and terrestrial species. Examples include: Estuaries, Tidal Mud/ Sand Flats, Reefs, Atlantic & Mediterranean Salt Meadows, Petrifying Springs, Old Oak Woods, Dry Heath and the protected Alluvial Forests.

The site is also a very important site for the protection of a number of E.U. Habitats Directive Annex II animal species including: the Freshwater pearl mussel (*Margaritifera magaritifera & Margaritifera magaritifera durrovensis*), White-clawed crayfish (*Austropotamobius pallipes*), Salmon (*Salmo salar*), Twaite shad (*Alosa fallax fallas*), Otter (*Lutra lutra*), Whorl snail (*Vertigo moulinsiana*) and Lamprey species.

A full description of this extensive site can be found in the site synopsis on the NPWS website here: https://www.npws.ie/protected-sites/sac/002162

5.1.2 Identification of Potentially Significant Impacts to Qualifying Features

Table 3 below lists the QI of the River Barrow and the River Nore SAC and evaluates through a scientific examination of evidence and data which of these should, or should not, be selected for further assessment in the NIS. The QI selected for further assessment are discussed further in **Section 5.3**.

Table 3: **Identification of potentially significant impacts to QI of the River Barrow and River Nore SAC**

Qualifying Interest	Potential for Significant Impacts	Rationale
Freshwater pearl mussel (*Margaritifera margaritifera*) (FPM)	**No**	There are three FPM populations in the Barrow catchment within the River Barrow and River Nore cSAC (002162). FPM populations recorded from the River Barrow sub-basin are restricted to three tributaries of the Barrow in Co. Carlow; the Aughavaud, Ballymurphy and Mountain Rivers. These tributaries drain to the River Barrow and would not be affected by the proposed project. There are no recent records of FPM occurring in the main channel of the River Barrow. Although the FPM is not considered to be within the zone of influence of the project the species could be indirectly impacted if salmon are affected as salmon are a host fish during the early life stage of FPM. The three tributaries of the Barrow that support FPM discharge to the lower reaches of the river and this reach is so far removed from the proposed development that impacts relating to FPM or its host species are not foreseeable. Therefore, the FPM is not considered to be within the zone of influence of the project and thus, there is no potential for significant effects to the species and are not considered further in the NIS.

Qualifying Interest	Potential for Significant Impacts	Rationale
Nore pearl mussel (*Margaritifera durrovensis*)	**No**	The population stretches from Poorman's Bridge Co. Laois to Lismaine Bridge Co. Kilkenny with most of the population found between Poorman's Bridge and the Avonmore Creamery above Ballyragget (Moorkens, 1996 (cited in NPWS, 2011)). Therefore, Nore pearl mussel is not considered to be within the zone of influence of the project and thus, there is no potential for significant effects to the species and are not considered further in the NIS.
White-clawed crayfish (*Austropotamobius pallipes*)	**Yes**	White-clawed crayfish is sensitive to water quality pressures and is Listed as Annex II under the Habitats Directive. This species occurs in the Figile River which is a tributary River Barrow. Therefore, white-clawed Crayfish are within the zone of influence of the project and thus, there is potential for significant effects to the species.
Brook lamprey (*Lampetra planeri*)	**Yes**	Brook lamprey live their entire life in freshwater. Brook lampreys were recorded in the Figile River during surveys carried out in 2019. This species is considered to occur in low densities throughout the river and reproduction is probably limited by the scarcity of suitable spawning areas. Therefore, brook lamprey is within the zone of influence of the project and thus, there is potential for significant effects to the species.
River lamprey (*Lampetra fluviatilis*) & Sea lamprey (*Petromyzon marinus*)	**No**	Sea and River lampreys often spawn in the lower reaches of rivers but also migrate 50 miles and more upstream (Kurz and Costello, 1999). Sea and River lampreys are poor swimmers and cannot jump or climb (Reinhardt *et al.,* 2009), so will have significant difficulty getting past the main stem weirs on the River Barrow, including the lower weir at St. Mullins. These species are considered to be confined to the lower reaches of the River Barrow which is a considerable distance from the project site. The project will not affect the conservation objectives for Sea or River lamprey and these species are not considered further in the NIS.
Twaite shad (*Alosa fallax fallax*)	**No**	The Twaite shad lives in the lower reaches of estuaries or at sea as adults. Following spawning, the adult twaite shad descend the estuaries and resume feeding. Young spend all their time in estuarine waters. They are vulnerable to the construction of artificial barriers along watercourses which can block or cause great difficulty to their upstream migration, which in turn, limits the species to the lower reaches of rivers (which is a considerable distance form the subject site) and restricts access to suitable spawning areas. Therefore, this species is considered outside the zone of influence of the project and would not be significantly impacted by the proposal. The project will not affect the conservation objectives for Twaite shad and the species is not considered further in the NIS.
Atlantic salmon (*Salmo salar*)	**Yes**	The River Barrow is designated for the protection of this species but there is a significant intervening distance between the subject site and the SAC. Taking account of the physical character of the reach of the Figile River adjacent to the proposed project, it is generally not a suitable salmonid spawning and nursery area. The tributaries of the River Barrow, which includes the Figile River are considered important

Qualifying Interest	Potential for Significant Impacts	Rationale
		contributors to the salmon population in the main channel of the River Barrow. However, in terms of salmon spawning, areas of the Figile River downstream of the proposed project are likely more important than the stretch of the river in close proximity to the proposed development. Thus, considering that the project could potentially affect water quality in the Figile River, salmon in the Figile River could also therefore be affected, so this species is considered further in the NIS.
Otter (*Lutra lutra*)	**Yes**	Otter have two basic requirements: aquatic prey and safe refuges where they can rest. Habitats within the development area are considered suitable for breeding otter. Any impact on breeding otter can be expected to be a temporary as there will be no in-stream works. The increased human presence and machinery may temporarily displace commuting or foraging Otters, however the impact is considered to be limited given the localised and temporary nature of the works and the wide availability of suitable habitat upstream and downstream of the works. Taking into account potential water quality impacts, Otter is considered to be within the zone of influence of the project, as knock-on effects on fish could impact Otter foraging and thus, there is potential for significant effects to the species.
Killarney fern (*Trichomanes speciosum*)	**No**	In Ireland the sporophyte occurs in dripping caves, cliff faces, crevices by waterfalls and cascades, rock crevices in woodlands and very occasionally on the floor of damp woodlands. The gametophyte grows in similar habitats, albeit drier and darker, as it does not appear to require direct contact with water[10]. Three locations of known distribution occur within the SAC, one area along the River Nore and two areas along the River Barrow all of which are in excess of 70km from the subject site. On the basis of the intervening distance and the habitat requirements of this species it is objectively concluded that this species is unlikely to be within the zone of influence of the project. The project will not affect the conservation objectives for Killarney fern and the species is not considered further in the NIS.
Desmoulin's whorl snail (*Vertigo moulinsiana*)	**No**	There are two known sites that Desmoulin's whorl snail occurs: Borris Bridge, Co. Carlow and Boston Bridge, Kilnaseer, Co. Laois. There is a significant separation distance between the subject site and this Natura 2000 site and in addition the hydrological connection between the proposed works and the species habitat is crude and tenuous. Thus, the project will not affect the conservation objectives for Desmoulin's whorl snail and the species is not considered further in the NIS.
European dry heaths	**No**	This habitat typically occurs on freely draining steep river valley sides especially the River Barrow and tributaries in the foothills of the Blackstairs Mountains. Given the considerable intervening distance of

[10] https://www.npws.ie/sites/default/files/publications/pdf/2008_KillarneyFern_SAP.pdf

Qualifying Interest	Potential for Significant Impacts	Rationale
		Blackstairs Mountains (excess of 80km south) and the terrestrial nature and extent of the habitat, it is not considered within the zone of influence of the project. There is no potential for significant effect on European dry heaths and the habitat is not considered further in the NIS.
Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	**No**	Distribution of this habitat in this site is currently unknown. Considered to occur in association with some riverside woodlands, unmanaged river islands and in narrow bands along the floodplain of slow-flowing stretches of river. The hydrological distance between the SAC and the subject site exceeds 20km therefore, Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels are not considered within the zone of influence of the project and there is no potential for significant effects on Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels. Therefore, this habitat is not considered further in the NIS.
Petrifying springs with tufa formation (*Cratoneurion*)	**No**	Petrifying springs are lime-rich water sources that deposit tufa, a porous calcareous rock. They constitute a highly specialised habitat with a distinctive flora, typically dominated by bryophytes and often containing rare species. A good example of petrifying springs with tufa formations occurs at Dysart Wood along the Nore. This is a rare habitat in Ireland, and one listed with priority status on Annex I of the E.U. Habitats Directive. These hard water springs are characterised by lime encrustations, often associated with small waterfalls. A rich bryophyte flora is typical of the habitat and two diagnostic species, *Palustriella commutata* and *Eucladium verticillatum*, have been recorded. As there is no potential for significant effects of the on Petrifying springs with tufa formation (*Cratoneurion*), the habitat is not considered further in the NIS.
Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	**No**	Atlantic salt meadows generally occupy the widest part of the saltmarsh gradient. They also contain a distinctive topography with an intricate network of creeks and salt pans occurring on the medium to large sized salt marshes. Atlantic salt meadows contain several distinctive zones that are related to elevation and submergence frequency. The most upstream extent of the habitat is mapped just south of New Ross town Co. Kilkenny/Co. Waterford in the Barrow Estuary, a distance of over 80km downstream of the project. Given the characteristics of the project, it is not considered that the zone of influence of the project will extent this far. There is no potential for significant effects on this habitat, therefore Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) are not considered further in the NIS.
Mediterranean salt meadows (*Juncetalia maritimi*)	**No**	Mediterranean salt meadows occupy the upper zone of saltmarshes and usually occur adjacent to the boundary with terrestrial habitats. They are widespread on the Irish coastline; however, they are not as extensive as Atlantic salt meadows. The most upstream extent of the habitat is mapped just south of New Ross town Co. Kilkenny/Co. Waterford in the Barrow estuary, a distance of over 80km

Qualifying Interest	Potential for Significant Impacts	Rationale
		downstream of the project. Given the characteristics of the project, it is not considered that the zone of influence of the project will extent this far. There is no potential for significant effects on this habitat, therefore Mediterranean salt meadows (*Juncetalia maritimi*) are not considered further in the NIS.
Water courses of plain to montane levels with the *Ranunculion fluitantis* and Callitricho-Batrachion vegetation	**Yes**	It is presumed, on the basis of the information contained in the NPWS site synopsis and on the basis of the precautionary principle that this habitat is potentially within the zone of impact influence of the proposal. Given that the works will take place in close proximity to a watercourse with a hydrological connection to the SAC downstream, it cannot be objectively concluded that no significant impact on this habitat will occur as a result of the proposed works. Therefore, this habitat is considered further in the NIS.
Estuaries	**No**	The River Barrow enters the sea at Waterford Harbour, the most upstream extent of this habitat is mapped to just south of Graiguenamanagh Town, Co. Kilkenny which lies over 80km downstream of the project site. Given the characteristics of the project, therefore it is not considered that the zone of influence of the project will extent this far. There is no potential for significant effects on this habitat, therefore Estuaries is not considered further in the NIS.
Mudflats and sandflats not covered by seawater at low tide	**No**	The River Barrow enters the sea at Waterford Harbour, the most upstream extent is mapped to just south of New Ross Town Co. Kilkenny/Co. Wexford which lies over 80km downstream the project site. Given the characteristics of the project, it is not considered that the zone of influence of the project will extent this far. There is no potential for significant effects on this habitat, therefore Mudflats and Sandflats and is not considered further in the NIS.
Reefs	**No**	Reefs rise from the seabed and are either rocky marine habitats (i.e. rock, boulders and cobbles) which support animal and plant communities or biogenic reefs (where the structure is created by the animals themselves, e.g. cold-water coral reefs). Reefs are generally subtidal but may extend as an unbroken transition into the intertidal zone. This habitat occurs over 80km downstream the project site. There is no potential for significant effects on this habitat, therefore Reefs is not considered further in the NIS.
Salicornia and other annuals colonising mud and sand	**No**	Salicornia and other annuals colonising mud and sand is a pioneer saltmarsh community that may occur on muddy sediment seaward of established saltmarsh, or form patches within other saltmarsh communities where the elevation is suitable and there is regular tidal inundation. The habitat extent is unmapped, but it lies at a distance in excess of 80km downstream of the project site. Given the characteristics of the project, it is not considered that the zone of influence of the project will extent this far. There is no potential for significant effects on this habitat therefore, *Salicornia* and other annuals colonising mud and sand is not considered further in the NIS.

Qualifying Interest	Potential for Significant Impacts	Rationale
Old sessile oak woods with *Ilex* and *Blechnum* in British Isles	**No**	Old sessile oak woods habitat is defined in the interpretation manual of EU habitats as "acidophilous *Quercus petraea* woods, with low, low-branched, trees, with many ferns, mosses, lichens and evergreen bushes". These woodlands occur on acid or base-poor soils that may be either dry or humid, but not waterlogged. There are a few woodlands mapped along the main river channel close to and downstream from just south of Graiguenamanagh Town, Co. Kilkenny. However, given the terrestrial nature and extent of the habitat, they are not considered within the zone of influence of the project. There is no potential for significant effects on this habitat, therefore Old oak woodlands habitat is not considered further in the NIS.
Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)	**No**	The interpretation manual of EU habitats 2007 states that Alluvial forests occur on heavy soils which are periodically inundated by the annual rise of river levels, but which are otherwise well drained and aerated during low water[11]. In addition, there are gallery forests of tall willows (*Salicion albae*) alongside river channels and occasionally on river islands, where the tree roots are almost continuously submerged. There are four locations mapped for this habitat in the main River Barrow and all sites are in excess of 30km from the proposed project site. Given the characteristics of the project, it is not considered that the zone of influence of the project will extent this far. The project will not have a significant effect on this habitat, therefore Alluvial forest with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) is not considered further in the NIS.

Those Qualifying Interests which have been selected for further assessment namely; Atlantic salmon, White clawed crayfish, Brook lamprey, Otter and Water courses of plain to montane levels with the *Ranunculion fluitantis* and Callitricho-Batrachion vegetation, are considered in the following sections. Water courses of plain to montane levels with the *Ranunculion fluitantis* and Callitricho-Batrachion vegetation will be referred to as 'Vegetation of Flowing waters' hereafter in this document.

5.2 ASSESSMENT OF POTENTIALLY SIGNIFICANT EFFECTS

There follows an evaluation of potential significance of impacts by the proposed project on the Qualifying Interests that have been selected for further impact assessment. This section considers the habitats and species identified in the preceding section, above, and determines whether the proposed development is likely to have significant effects on any of the Natura 2000 sites designated for the protection of the Qualifying Features selected.

The significance of the potential impacts that might arise from the project was identified through the use of key indicators.

- Water quality and resource;

[11] https://ec.europa.eu/environment/nature/legislation/habitatsdirective/docs/Int_Manual_EU28.pdf

- Habitat loss and alteration;
- Disturbance and/or displacement of species; and
- Habitat or species fragmentation.

The focus of this assessment is to determine whether the proposed development, will have a significant negative impact on the target features (i.e. features of Interest of the Natura 2000 site, or reason for designation). This assessment identifies the environmental aspects of the project that will interact with the ecological requirements or sensitivities of the Features of Interest of the Natura 2000 sites potentially impacted.

5.2.1 Water Quality

The main risk to water quality will be during the construction phase of the project. Excavations, earth movements and run-off may contribute to adverse impacts to water quality in the watercourses draining away from site and could have potential indirect impacts on the qualifying interests of the nearby Natura 2000 site. As mentioned in **Section 4.5.1** above the proposed development site in close proximity to the Figile River (situated ca.70m east of the proposed substation). Additionally, the proposed grid connection route with be crossing the river by overhead line. The Figile has a direct hydrological connection to the River Barrow and River Nore SAC downstream. Water quality is a key environmental factor underpinning the conservation condition of the complex of aquatic habitats that support the qualifying interests that could be significantly affected by the project, namely; Atlantic salmon, White clawed crayfish, Brook lamprey, Otter and Vegetation of Flowing waters. These are considered in the following sections for which the SAC is designated.

The most likely potential impact of the project on receiving watercourses and aquatic habitats during the construction phase is the release of pollutants via runoff into the Figile River. These indirect impacts could arise through the disposal of excavated spoil, hydrocarbon discharges or loss of concrete. Contamination or water quality impacts on Figile River could result in impacts affecting water quality within the River Barrow downstream, or aquatic species of conservation interest in the Figile River. Any engineering works which cause runoff of sediments can also increase the levels of nutrients in receiving waters. This can potentially result in the enrichment or eutrophication of the affected areas downstream, and a possible change in water quality. Adverse impacts to water chemistry in the watercourses could have potential indirect impacts on the qualifying interests of the nearby Natura 2000 sites.

The potential significant impacts of the project on aquatic ecology (without mitigation) are summarised as follows:

- Pollution of watercourses with suspended solids due to runoff of soil from construction areas. Contamination of water courses with suspended solids may have the potential to impact on aquatic flora and fauna within the Figile River and the River Barrow;
- Pollution of watercourses with nutrients due to ground disturbance during construction. The main potential sources of nutrient inputs to freshwater due to ground disturbance are from nutrients adsorbed or chemically bound to eroded suspended solids;
- Pollution of watercourses during construction phase with other substances such as fuels, lubricants, waste concrete, waste water from wash facilities, etc; and
- Pollution of watercourses with surface drainage water from paved areas and road surfaces.

Releasing non-attenuated suspended solids and heavily contaminated run-off waters into the drainage network has the potential to have a negative impact on the water quality of the Figile River. This would potentially be a temporary but significant negative impact. The risk of occurrence however can be adequately prevented by the implementation of construction best management practices and controls.

5.2.2 Habitat loss

There will be no loss of habitat within the River Barrow and River Nore SAC. All works will be confined to the subject site and any potential changes to water quality would not be at a level that would affect habitats within the River Barrow and River Nore SAC.

5.2.3 Habitat alteration

A reduction in water quality due to pollutants entering Figile River as a result of the construction phase of the proposed development could potentially have an impact on the habitats required by aquatic species during various stages of their life cycles. One of the main risks is the siltation of gravel beds suitable for spawning Brook lamprey and Salmon which would reduce the availability of the habitat and if present, reduce oxygen levels to fish eggs occupying substrate interstices. Nutrients such as phosphorous bound to sediments could result in eutrophication and in an increase in filamentous algae, which in turn can grow on gravels reducing the availability of the habitat and can also reduce oxygen levels. An increase in polluting substances such as oils, fuels and cementitious materials in the water could reduce the suitability of the habitat for populations of Salmon, Lamprey and White-clawed crayfish.

There is some potential that aquatic habitats within Figile River may be altered as a result of the ingress of pollutants and / or sediment during the construction phase works without any mitigation measures in place.

5.2.4 Disturbance and/or displacement of species

There is some potential for indirect disturbance or displacement of species arising from pollutants entering Figile River during the construction phase of the proposed works. Pollutants include silt, chemicals or hydrocarbons associated with construction activities. Spawning Salmon and Brook lamprey need a clean well aerated riverbed substrate to survive. Siltation of the substrate and eutrophication leading to increased biomass of filamentous algae reduces the available suitable habitat. Reduction in water quality in the water column can reduce the suitability of the river for adult Brook lamprey and spawning Salmon resulting in disturbance/displacement of this species. Impacts that reduce the availability or quality of, or cause disturbance to, their terrestrial or aquatic habitats are likely to affect Otters. White-clawed crayfish is sensitive to water quality pressures, adverse water quality may result in disturbance/displacement of this species. Impacts that reduce the availability or quality of, or cause disturbance to, aquatic habitats are likely to affect Otters.

5.2.5 Habitat or species fragmentation

Habitat and species fragmentation can be caused by polluted stretches of water preventing fish from moving to spawning areas. A reduction in the quality of the river-bed substrates arising from siltation can reduce habitat quality and therefore fragment the available suitable habitat for spawning aquatic species such as Salmon and Brook lamprey.

5.3 ASSESSMENT OF EFFECT ON RIVER BARROW AND RIVER NORE SAC CONSERVATION OBJECTIVES

5.3.1 Introduction

In **Section 5.2** above, an evaluation was undertaken to determine which of the Qualifying Interests of the River Barrow and River Nore SAC potentially lie within the zone of influence of the project and required further assessment in the NIS. The effects of the project on the Qualifying Interests, potentially within the zone of influence of the project, have been assessed against the measures designed to achieve the conservation objectives. The outcome of the assessment has been presented in the following sections.

5.3.2 Atlantic salmon (*Salmo salar*) [1106]

The following table assesses the effects of the project against the measures designed to achieve the conservation objectives for Salmon. Where a measure may be negatively affected by the project the need for mitigation is indicated.

Table 4: Assessment of Potentially Significant Effects on Salmon

Attribute/ Measure	Target	Assessment of Potentially Significant Effects	Mitigation Required
Distribution/ % of river accessible	100% of river channels to 2nd order accessible from estuary	The project will not result in the physical impediment of the migration of fish. No significant effects to attribute anticipated.	**No**
Adult spawning fish/ Number	Conservation Limit (CL) each system consistently exceeded	The Barrow River is currently below its CL of 11,738 for Salmon. In 2019, the river achieved only 16% of its CL achievement[12]. Between 2015 and 2018, the river achieved only 16 or 17% of its CL, a decline from 29% in 2013 and 2014. Through potential water quality impacts there is potential for construction phase impacts to indirectly affect the CL, as the early life stages of this species could be adversely affected, thus this attribute could be significantly affected.	**Yes, Refer to Section 6.3**
Salmon fry abundance/ Number of fry per 5 minutes electrofishing	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 min sampling	Salmon need good water quality high in oxygen, low in nutrients and suspended solids, neutral pH and with temperatures never exceeding 25° C. The construction phase of the project could potentially result in sediment and nutrient release. Therefore, there is potential for this conservation objective to be negatively affected.	**Yes Refer to Section 6.3**
Out-migrating	No significant decline	Young Salmon need good water quality high in oxygen, low in nutrients and suspended solids, neutral pH and with temperatures never exceeding 25° C. The	**Yes,**

[12] https://www.oireachtas.ie/en/debates/question/2019-02-19/531/#pq-answers-531_532_533_534

Attribute/ Measure	Target	Assessment of Potentially Significant Effects	Mitigation Required
smolt abundance/ Number		construction phase of the project could potentially result in sediment and nutrient release from excavations. Therefore, there is potential for this attribute to be negatively affected.	**Refer to Section 6.3**
Number and distribution of redds/ Number and occurrence	No decline in number & distribution of redds	The construction phase of the project could potentially result in sediment release from excavations and silt up clean gravels in the main channel. Eggs and alevins incubate in the gravel until May and are unable to tolerate gravels becoming clogged with silt or sand. Therefore, there is potential for this attribute to be negatively affected.	**Yes Refer to Section 6.3**
Water quality/ EPA Q value	At least Q4 at all EPA sampled sites	The nearest EPA biological monitoring point on the River Barrow downstream of the proposed development is at Monasterevin, which is in excess of 20km downstream of the project. It is highly unlikely that water quality at this station could be negatively affected by runoff during the construction phase, given the distance downstream and dilution factor. However, based on the precautionary principle, negative effects cannot be ruled out.	**Yes, Refer to Section 6.3**

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

The following table assesses the effects of the project against the measures designed to achieve the conservation objectives for White-clawed crayfish. Where a measure may be negatively affected by the project the need for mitigation is indicated.

Table 5: Assessment of Potentially Significant Effects on White-clawed crayfish

Attribute/ Measure	Target	Assessment of Potentially Significant Effects	Mitigation Required
Distribution/ Occurrence	No reduction from baseline	The White-clawed crayfish is present almost throughout this SAC. The records extend as far downstream as Thomastown on the Nore and Graiguenamanagh on the Barrow. Significant effects to conservation objective could occur through contamination with the Crayfish plague pathogen. This could occur through plague contamination of the White-clawed crayfish within the Figile River and subsequent spread downstream to the SAC.	**Yes, Refer to Section 6.8.2**
Population structure: recruitment/ % occurrence of juveniles & females with eggs	Juveniles &/or females with eggs in at least 50% samples	Considering the current levels of siltation in the Figile River and continued presence White-clawed crayfish, it is not anticipated that the project will negatively affect the measure due to water quality impacts. No significant effects to conservation objective anticipated. However, the threat of Crayfish plague could significantly affect this attribute.	**Yes, Refer to Section 6.8.2**
Negative indicator species/	No alien crayfish species	There are no components of the proposed development, and in particular during the construction phase, that could bring about	**No**

Attribute/ Measure	Target	Assessment of Potentially Significant Effects	Mitigation Required
Occurrence		the introduction of alien crayfish to the waters draining the project site.	
Disease/ Occurrence	No instances of disease	There are currently five outbreaks of crayfish plague (*Aphanomyces astaci*) in Ireland, affecting the Bruskey/Erne rivers, the lower River Suir, the River Deel (Limerick), the River Barrow and the River Lorrha. The disease is spread invisibly in water and the infectious stage may be moved to other river systems on equipment, boats and machinery. Crayfish plague is recognised as a very significant threat to the survival of the globally threatened White-clawed crayfish in Ireland. The disease is considered fatal to all infected native crayfish and the experience in other countries is that where outbreaks occur there is complete extermination White-clawed crayfish populations. At construction stage, machinery will be required and will be used adjacent to Figile River. If this machinery has been in contact with waters affected by crayfish plague, spores of *Aphanomyces astaci* could potentially be spread to Figile River and consequently the Barrow River. Therefore, there is potential for this attribute to be negatively affected.	**Yes, Refer to Section 6.8.2**
Water quality/ EPA Q value	At least Q3-4 for all EPA sites	The nearest EPA biological monitoring point on the River Barrow downstream of the proposed development is the station south of the site in Monasterevin, which lies in excess of 20km downstream of the project site. While there is a possibility that the water quality at this station could be negatively affected by runoff during the construction phase, given the distance downstream of over 20km to the and dilution factor, it is unlikely to be significantly affected. However, based on the precautionary principle, negative effects cannot be ruled out.	**Yes, Refer to Section 6.3**

5.3.4 Brook lamprey (*Lampetra planeri*) [1096]

The following table assesses the effects of the project against the measures designed to achieve the conservation objectives for Brook lamprey. Where a measure may be negatively affected by the project the need for mitigation is indicated.

Table 6: Assessment of Potentially Significant Effects on Brook lamprey

Attribute/ Measure	Target	Assessment of Potentially Significant Effects	Mitigation Required
Distribution/ % of river accessible	Access to all watercourses	The project will not result in the physical impediment to the movement of Brook lamprey. No significant effects to attribute anticipated.	**No**
Population structure of juveniles/ Number of age/size groups	At least 3 age/size groups present	Lamprey can be present as juveniles for several years after hatching from eggs, and as adults before spawning. Brook lamprey tends to spawn at the downstream end of pools, but often in smaller rivers and in slightly shallower and slower flowing water building a nest in sandy or gravelly sediment. The construction phase of the project could potentially result in sediment release from excavations and run-off and silt up	**Yes, Refer to Section 6.3**

		clean gravels in the Figile River and reduce oxygen levels to the eggs. Therefore, there is potential for this attribute to be negatively affected.	
Juvenile density in fine sediment/ Juveniles per m^2	Juvenile density at least 2 per m^2	Juveniles live buried in silt beds. The construction phase of the project could potentially result in release of pollutants in the main channel and affect the quality of the water associated with the silt beds. Therefore, based on the precautionary principle, there is potential for this attribute to be negatively affected.	**Yes, Refer to Section 6.3**
Extent and distribution of spawning habitat/ m^2 and occurrence	No decline in extent & distribution of spawning beds	The construction phase of the project could potentially result in sediment release from excavations and silt up clean gravels in the main channel and reduce oxygen levels to the eggs. Therefore, there is potential for this attribute to be negatively affected.	**Yes, Refer to Section 6.3**
Availability of juvenile habitat/ Number of positive sites in 2nd order channels	More than 50% sample sites positive	Juvenile habitat consists of silt beds in slower-flowing reaches of the river. The project will not affect the stability of the substrate. The construction phase of the project could potentially result in release of pollutants in the main channel and affect the quality of the water associated with the silt beds. Therefore, based on the precautionary principle, there is potential for attribute to be negatively affected.	**Yes, Refer to Section 6.3**

5.3.5 Otter (*Lutra lutra*) [1355]

The following table assesses the effects of the project against the measures designed to achieve the conservation objectives for Otter. Where a measure may be negatively affected by the project the need for mitigation is indicated.

Table 7: Assessment of Potentially Significant Effects on Otter

Attribute/ Measure	Target	Assessment of Potentially Significant Effects	Mitigation Required
Distribution/ Percentage positive survey sites	No significant decline	While the project may indirectly temporarily impact water quality of the receiving watercourses during construction, it is not expected that it will affect the distribution of Otter associated with the River Barrow. The project will not significantly affect this attribute.	**No**
Extent of terrestrial habitat/ Ha	No significant decline	The project is limited to the subject site and will not directly affect any terrestrial habitat outside of this. The project will not reduce the area of available terrestrial habitat. The project will not significantly affect this attribute.	**No**
Extent of marine habitat/ Ha	No significant decline	During the construction phase there is potential for indirect temporary impacts to water quality of receiving watercourses during construction. The extent of the project influence is not considered to extend the approximately 80km downstream to the nearest marine habitats suitable for Otter. The project will not reduce the area of available marine habitat. The project will not significantly affect this attribute.	**No**
Extent of freshwater habitat/ Ha	No significant decline	While the project may indirectly temporarily impact water quality of the receiving watercourses, it is not expected that it will reduce the area of available freshwater habitat. The project will not significantly affect this attribute.	**No**
Extent of freshwater (lake) habitat/ Ha	No significant decline	While the project may indirectly impact water quality of the receiving watercourses, it is not upstream of any lake habitat and will thus not result in loss of area of any associated habitat. The project will not significantly affect this attribute.	**No**
Couching sites and holts	No significant decline	The project is limited to the subject site and will not directly affect any terrestrial habitat outside of this. Couching sites or holts have not been identified within the site. The project will not reduce the number of couching sites or holts. The project will not significantly affect this attribute.	**No**
Fish biomass availability/ Kg	No significant decline	Impacts that reduce the availability or quality of, or cause disturbance to, their terrestrial or aquatic habitats are likely to affect Otters. Ample food supply is normally associated with high water quality. Prey such as salmonids and white-clawed crayfish need good water quality. The construction phase of the project could potentially result in pollutants release and knock-on effects on fish biomass. Therefore, there is potential for this attribute to be negatively affected.	**Yes, Refer to Section 6.3**

5.3.6 Vegetation of Flowing Waters [3260]

The following table assesses the effects of the project against the measures designed to achieve the conservation objectives for this habitat. Where a measure may be negatively affected by the project the need for mitigation is indicated

Table 8: Assessment of Potentially Significant Effects on Vegetation of Flowing Waters

Attribute/ Measure	Target	Assessment of Potentially Significant Effects	Mitigation Required
Habitat distribution/ occurrence	No decline, subject to natural processes	The full extent of this habitat is unknown. The basis of the selection of the SAC for the habitat is the presence of an excellent example of the vegetation community (nutrient-rich type) associated with extensive tufa deposits on the riverbed in the Kings tributary of the Nore (Heuff, 1987 (cited in NPWS, 2011)). Other examples of this or other sub-types may be present within the SAC. Therefore, there is potential for this attribute to be negatively affected.	**Yes, Refer to Section 6.3**
Habitat area/ km	Area stable, subject or increasing, subject to natural processes	The full distribution of this habitat and its sub-types within the SAC are unknown and the description is broad. The project could potentially result in sediment release from excavations and deposit silt in the main channel possibly affecting the distribution of the habitat downstream. Therefore, there is potential for this attribute to be negatively affected.	**Yes, Refer to Section 6.3**
Hydrological regime: river flow/mps	Maintain appropriate hydrological regimes	A natural flow regime is required for both plant communities and channel geomorphology to be in favourable condition. The project will not affect the hydrological regime of the downstream watercourses. No significant effects to attribute anticipated.	**No**
Hydrological regime: groundwater discharge/mps	Maintain appropriate hydrological regime	Even small groundwater contributions can significantly alter hydrochemistry, particularly where there is basic bedrock and/or subsoils. The project will not affect groundwater discharge to the SAC. No significant effects to conservation objective anticipated.	**No**
Substratum composition: particle size range/mm	The substratum should be dominated by large particles and free from fine sediments	The tufaceous sub-types develop on relatively stable substrata such as bedrock, boulders and cobbles, where tufa can deposit and accumulate. Tufa deposition is believed to be biologically mediated, by algae and bryophytes. The substratum must remain free of fine sediments such as clay, silt and fine sand, which would adversely affect the growth of algae and mosses. Based on the precautionary principal, there may be potential for this attribute to be negatively affected by the project.	**Yes, Refer to Section 6.3**
Water chemistry: minerals/mm	The groundwater and surface water should have sufficient concentrations of minerals to	The tufaceous sub-types require mineral- (typically calcium-) rich groundwaters to allow deposition of tufa. Surface water must also be sufficiently base-rich to prevent chemical erosion. Alkalinity and/or total hardness data may also be relevant. The construction phase of the project could potentially result in	**Yes, Refer to Section 6.3**

Attribute/ Measure	Target	Assessment of Potentially Significant Effects	Mitigation Required
	allow deposition and persistence of tufa deposits	sediment release from excavations and alter water chemistry. Based on the precautionary principal, there may be potential for this attribute to be negatively affected by the project	
Water quality; suspended sediment/mg per litre	The concentration of suspended solids in the water column should be sufficiently low to prevent excessive deposition of fine sediments	The construction phase of the project could potentially result in sediment release from excavations and deposit causing turbidity in the main channel due to suspended solids. Therefore, there is potential for this attribute to be negatively affected.	**Yes, Refer to Section 6.3**
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 are poorly understood, and their typical species have not yet been defined. Typical species and appropriate targets may emerge to be site-specific. The typical species of the tufaceous sub-type in the Kings tributary of the Nore are identified in Heuff (1987) (Cited in NPWS, 2011). The typical species may include higher plants, bryophytes, macroalgae and microalgae. Based on the precautionary principal, there may be potential for this attribute to be negatively affected by the project	**Yes, Refer to Section 6.3**
Floodplain connectivity: area/ Ha	Maintain area of active floodplain habitat	River connectivity with the floodplain is essential for the functioning of this habitat. The site of the tufaceous sub-type in the King's River is within an area of floodplain, with further large floodplains upstream. Floodplains regulate fine sediment deposition within the channel. No significant effects to attribute anticipated.	**No**

5.4 ASSESSMENT OF POTENTIALLY SIGNIFICANT CUMULATIVE EFFECTS

A cumulative impact arises from incremental changes caused by other past, present or reasonably foreseeable actions together with the proposed development. The surrounding environment is dominated by degraded bog, agricultural land and conifer plantation. The projects and activities considered in relation to the potential for cumulative effects relate to in-combination water quality impacts and include those listed below:

- Offaly County Development Plan 2014-2020
- Offaly County Development Plan 2021-2027 (draft stage)
- Climate change
- Operating and permitted Wind Energy Developments
- The Irish Water Eastern and Midlands Regional Water Supply Project (WSP)
- Peat extraction
- Agriculture
- Panning applications for townland of Ballykilleen
- Industry

The cumulative effects considered most significant are described hereunder.

5.4.1 Offaly County Development Plan 2014-2020 and 2021-2027

No significant cumulative impacts are predicted with the Offaly County Development Plan 2014-2020 as this plan has a range of environmental and natural heritage policy safeguards in place. These safeguards to protect the natural environment and Natura 2000 Sites will also apply to the proposal described in this report. The 2021-2027 Development Plan is at draft stage. The draft Natura Impact Statement states '*measures that have been incorporated into the Draft Plan in order to mitigate against potential effects to European sites*'[13]. The measures put in place for this Development Plan will will safeguard any effects on Natura 2000 sites, therefore significant cumulative impacts are not envisaged.

5.4.2 Climate Change

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. Similarly, as sea level rises, saltwater intrusion into a freshwater system may force some key species to relocate or die, thus removing predators or prey that are critical in the existing food chain. Climate change not only affects ecosystems and species directly, 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*, 2014). Because species differ in their ability to adjust, asynchronies[14] can develop, increasing species and ecosystem vulnerability. 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.

[13] https://www.offaly.ie/eng/Services/Planning/County-Development-Plan-2021-2027/Stage-2-Draft/Natura-Impact-Report.pdf

[14] https://archive.epa.gov/epa/climate-impacts/climate-impacts-ecosystems.html

Climate change and human modification may restrict ecosystems' ability to temper the impacts of extreme conditions, and thus may increase vulnerability to damage. An example of a biotope is the riparian zone that acts as buffer zones protecting riverine ecosystems from runoff of silt/nutrient laden waters via overland/pluvial flow, by absorbing/attenuating surface floodwaters. Land along the Figile River, as well as land 'improvement' along other watercourses within the catchment 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 associated siltation of rivers. Climate change and shifts in ecological conditions could also support the spread of pathogens, parasites, diseases and non-native biota, with potentially serious effects on agriculture and aquatic ecosystems. Together with the proposed development, the aforementioned effects of climate change could exacerbate potential impacts.

Taking into account the degraded nature of the wider area (already altered state of the Figile River which has been drained and maintained, past and present peat extraction, and increased conifer plantation), the potential for cumulative impacts are considered unlikely to be significant. Any water quality impacts on this channel arising from the proposed development are not considered cumulatively significant on the River Barrow and Nore SAC with regard to the current unsatisfactory water quality of the reach of the Figile River adjacent to the proposed development site.

5.4.3 Wind Farm Developments

A number of wind energy developments have taken place or are planned in the Offaly. It is considered that the scale of the works and implementation of effective mitigation avoids all adverse effects on the environment associated with other wind energy developments.

- Mount Lucas Wind Farm – Operating
- Yellow River Wind Farm – Permitted
- Cloncreen Wind Farm – Permitted
- Cushaling Wind Farm – Permitted

A number the developments listed above lie within the same surface water catchment as the proposed development, it is considered that the residual (mitigated) in-combination effect of the proposed development on surface water quality will not be significant. Therefore, there will be no significant cumulative effects of the proposed project with other projects on surface water quality.

5.4.4 The Irish Water Eastern and Midlands Regional Water Supply Project

The Irish Water Eastern and Midlands Regional Water Supply Project (WSP) is at pre-planning stage. The Preliminary Options Appraisal Report has identified abstraction from the Parteen Basin in Tipperary as the 'Emerging Preferred Option' for a new source of water supply for the Eastern and Midlands Region. The emerging preferred option corridor is situated north of the proposed development site. An Environmental Impact Statement (EIS) Scoping report has been prepared for the Eastern and Midlands Regional Water Supply Scheme (Jacobs and Tobin, 2016). This report provides a preliminary scoping of potential direct, indirect and cumulative impacts associated with the proposed development. It has highlighted potential adverse effects in the absence of mitigation, and mitigation measures. Potential construction phase and operation impacts identified at scoping stage, as well as mitigation measures cited in the scoping report are outlined below.

It is important to note that the project design at this current time is not yet finalised and is subject to ongoing, iterative design development and environmental impact assessment. This includes the location of the main water supply infrastructure, access ways and pipeline route within the emerging preferred corridor.

5.4.4.1 Watercourses potentially affected by the proposed corridor of the WSP

All watercourse crossed by and draining areas under the footprint of the proposed pipeline corridor would be potentially affected during construction and operation phases of the Eastern and Midlands Regional WSP. All rivers crossed in the Figile sub-basin of Barrow catchment, or watercourses draining this area could be negatively affected by the proposed pipeline in terms of morphology and water quality. The potential for transfer of pollutants arising from the proposed pipeline to downstream areas is not exclusively related to size but likely greater in larger watercourses due to greater conveyance capacity and larger flows. There are numerous pipeline crossings required on rivers and streams feeding the River Barrow within the River Barrow and River Nore SAC, including three on the River Figile (upstream of the proposed development site). The western-most proposed pipeline crossing on the River Figile is located approximately 22km upstream of the River Barrow, representing the closest crossing point of any watercourse upstream of the River Barrow and River Nore SAC. The 3rd order Esker Stream (tributary of the Figile) and 2nd order Philipstown Stream (tributary of the Esker), is crossed by the pipeline in excess of 25km upstream of the River Barrow. There are several other tributaries of the Figile sub-catchment potentially affected, including the 2nd order Rathcobican, Doden and Lullymore East Streams and the 1st order Eskerbeg, Ballykileen and Abbeylough Streams. The potential impacts are provided in Jacobs and Tobin (2016) and are the outlined below.

5.4.4.2 Potential construction phase impacts

Potential construction phase impacts identified at scoping stage are outlined here:

- Project construction will lead to direct habitat loss, potentially affecting sites of high ecological value, for example, designated conservation sites and Annex I habitats located outside of designated sites. Loss of habitat area for undesignated sites of high local importance e.g. species rich grasslands, scrub, treelines, hedgerows and woodland which are common to the locality along the route corridor of the pipeline and along any access routes or ancillary works. Direct habitat loss may result in the destruction of protected flora. Where avoidance is not possible, a license will be sought under the Section 21 of the Wildlife Acts (Amendment 2000) and, if approved, mitigation measures will be undertaken to reduce the impact of the project. There is the potential for direct impacts, including habitat loss, within the Lower River Shannon SAC at Parteen Basin. The scale and extent of the proposed development gives rise to the potential for additional impacts, in the absence of mitigation, affecting designated Natura 2000 sites or NHA. These impacts may extend from short term, to long-term or permanent effects;
- Severance effects (i.e. fragmentation or loss of connectivity of habitat) includes indirect impacts on habitats located outside of the works area / route corridor but which are within the zone of influence of the proposed works. Potential pathways for effects are via hydrological or hydrogeological pathways; e.g. water dependant habitats, wetlands and peatlands. This may result in the fragmentation or indirect loss of integrity of Annex I habitats, or protected flora which may occur within such habitats. These impacts may extend from short term, to long-term or permanent effects;

- Temporary effects such as increased lighting (security or night time works) which may impact on bats and other nocturnal species; direct mortality/injury of animals arising from the disturbance or removal of dwellings or habitat – such effects may potentially impact protected species listed on the EU Habitats Directive or on the Wildlife Act (Amendment 2000), including, but not limited to; badgers (through damage to setts); bats (through removal or damage to mature trees or other features used by bats); otters (through damage to holts); breeding birds (through removal of vegetation containing nests); and at watercourses / aquatic habitats which may contain lamprey, salmon and white-clawed crayfish. These impacts may extend from short term, to long-term or permanent effects;
- Physical disturbance may result in indirect impacts resulting in the displacement of rare and protected fauna from their dwellings or habitats. Examples may include impacts affecting tree roots, ground nesting birds, badger setts or aquatic habitats;
- Introduction and/or spread of non-native invasive species within the proposed development site, ancillary sites, and the wider zone of influence, including across water catchments. These impacts may extend from short term, to long-term or permanent effects;
- Direct loss or indirect disturbance to aquatic ecological receptors, including fisheries, Annex II species and their habitat and food sources. This may arise through permanent or temporary physical removal, alteration of hydrology or flow regime, or through indirect habitat alteration leading to increased sedimentation and change in geomorphological character affecting downstream reaches. Without mitigation, impacts may occur during sensitive life stages or over extended time periods;
- Direct damage to riparian margins;
- Pollution of surface water receptors through accidental spillage or discharge of polluting substances, or via elevated suspended solids and siltation through run-off to watercourses; and
- Pollution of groundwater sources, particularly in high groundwater vulnerability zones.

5.4.4.3 Potential operation phase impacts

Potential operation phase impacts identified at scoping stage are outlined here:

- The placement and management of the pipeline may result in long-term habitat alteration, and consequent changes in land-management and potential habitat loss within the footprint of the pipeline corridor. Direct and indirect habitat fragmentation and loss of connectivity for high value ecological habitat features including, for example, woodland or water-dependant habitats may occur, which could be severed by the project. As above, such severance impacts could extend beyond the footprint of the route corridor, resulting in operational impacts along access routes, etc.;
- Human disturbance impacts on retained and surrounding habitats along the pipeline corridor, potentially associated with trampling and noise from maintenance tasks and vehicle access along operational access routes;
- Operational impacts on aquatic receptors, including water-dependant habitats and aquatic species, may occur along the pipeline route where pipeline maintenance or repair could result in discharges of water from the Shannon catchment to watercourses of a different hydro-chemistry, or ecological status, with potential for alteration of the aquatic habitat. The introduction of aquatic invasive species through this pathway could also occur. Direct impacts at such locations may include scouring, increases in siltation/sedimentation and hydrological

effects associated with increased flows. The discharge of potentially treated drinking water to freshwater habitats will be in compliance with the objectives set out within the WFD.

5.4.4.4 Mitigation measures

The ecological team will advise on required mitigation measures during both the design and construction phases of the project. Specific mitigation measures will be incorporated into the EIS based on the outcomes of the impact assessment. The principal mitigation measures incorporated into the project is the iterative avoidance of sensitive areas, flora and/or fauna during the design stage of the project, informed by completed and ongoing ecological field surveys.

The methodology used to assess and mitigate potential impacts will be based on established best practice and the following guidance documents:

- 'Guidelines for Assessment of Ecological Impacts of National Road Schemes' (NRA, 2009; 'Ecological Surveying Techniques for Flora and Fauna') and other guidelines in the NRA's Environmental Planning and Construction Guideline Series (National Roads Authority, 2005 – 2011); and
- 'Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal' (CIEEM, 2016).

In line with the above guidance, the assessment will cover potential impacts on flora and fauna and will describe the existing conditions and the likely potential impacts associated with the construction and operation of the proposed development. The impact assessment process will involve:

- Assigning the receptor sensitivity;
- Identifying and characterising the magnitude and significance of any potential impacts;
- Incorporating measures to avoid and mitigate (reduce) these impacts; and
- Assessing the significance of any residual effects after mitigation.

5.4.4.5 Statement of cumulative impact

Irish Water (2018) intended to submit the planning application to An Bord Pleanála in 2019 and stated that water from the WSP will be available throughout the Eastern and Midlands Region from 2025 onwards. It is most likely the Kicumber Bridge 110kV substation and grid connection will be constructed prior to the works on the pipeline.

It is considered that the residual (mitigated) in-combination effect of the proposed development and the Irish Water development on surface water quality will not be significant, taking account of the distance upstream of the River Barrow and River Nore SAC (>22km). The cumulative effect of these developments is further reduced given the temporal separation of construction activities. Therefore, there will be no significant cumulative effects of the proposed development with the Eastern and Midlands Regional Water Supply Project on surface water quality in the River Barrow and River Nore SAC. Any cumulative water quality impacts of these projects on the Figile River are not predicted to be at a level that contravenes the conservation objectives of the freshwater conservation interests of the River Barrow and River Nore SAC.

5.4.5 Peat Extraction

Peat extraction has been occurring in the Midlands region for many decades. Peat extraction is undertaken in the general area of the proposed development site. The expected ecological impacts from this activity would be a minor loss and alteration of already degraded peatland habitat. The drainage and cutting associated with peat extraction have, in the past, resulted in loss of intact raised bog, which is likely to have dominated the area before human activities altered the habitat. The resultant activity has led to habitat alteration of raised bog to degraded and cutover bog. Subsequently, there is a requirement to pump water from extraction areas to maintain drainage, with some waters likely carrying a high peat load.

The proposed development is not expected to result in a significant cumulative impact on water quality in the River Barrow and River Nore SAC with respect to peat extraction, as the subject site is situated in an agricultural grassland with no requirements to venture further than the footprint of the site. It is not envisaged peat silt will enter the Figile River as a result of the proposed development.

5.4.6 Agriculture

The subject site is situated within fields of 'improve agricultural grassland GA1' and the immediate surrounding area, most notably to the south and southeast. There is potential for the proposed development to contribute to a cumulative impact on water quality within the Figile River, through the potential for sediments and other pollutants entering the watercourses as a result of slurry spreading, drainage and other farming operations. For example, MCPA is a selective hormone type herbicide commonly used by farmers for the control of many broad-leaved weeds e.g. Thistles, Buttercup, Ragwort and in particular Soft rush in agricultural grassland. In combination with agriculture, the proposed project may result in some decline in water quality in the mid reach of the Figile River, but not expected to change water quality status. With mitigation, any negative cumulative impact to water quality will not be significant.

5.4.7 Applications in the townlands of Ballykilleen and Cloncreen

A review of the Offaly County Council Planning Register indicates that there are a number of recent planning applications in the townland of Ballykilleen (refer to **Table 2** for details) and one pending further information in the townland of Cloncreen, this application pertains to Bord na Móna Clonbullogue Ash Repository facility for the continued use of the previously permitted ash repository (an bord pleanála pl 19.216998 / offaly county council 05/1267) It is considered that there is some albeit limited potential for significant cumulative water quality effects to the River Barrow and River Nore SAC when the proposed project is considered in-combination with these projects. With mitigation, any negative cumulative impact to water quality will not be significant.

5.4.8 Industry

5.4.8.1 Edenderry Power Plant

Edenderry Power Limited operates a power plant near Kilcumber Bridge at Ballykilleen, Clonbullogue, Co. Offaly directly adjacent to proposed development, with planning permission in place until 2023 to co-fire peat with biomass. Water is abstracted from the Figile River at a rate of 240m^3/hr to meet most requirements of the plant. Two on-site wells are used for domestic supply and for production of

demineralised water for the boiler. Effluent arises from regeneration of the water treatment system. Both effluent and surface water from the plant discharge to the Figile River.

Effluent from the plant is mainly composed of the following streams: water treatment plant effluent neutralisation; water treatment plant backwashes; boiler blowdown and cooling water and cooling tower blowdown. All effluent streams are drained to a settlement pond where they combine with the surface water run-off for the site before discharging to the river. The surface water from the oil storage area passes through an interceptor before reaching the settlement pond.

The plant currently operates under an Environmental Protection Agency IPPC Licence (Register Reference Number P0482-04) so can be expected to operate within licence conditions. Therefore, there will be no significant cumulative effect of the proposed project with ongoing emissions /abstractions from Edenderry Power Plant.

5.4.8.2 Clonbullogue Ash Repository facility

Clonbullogue Ash Repository facility is a functional element of the Bord na Mona Energy Ltd and its situated ca.2km southwest of the proposed substation. This facility disposes of inert waste products (fly ash and bottom ash), arising from peat combustion within the boiler of the Edenderry Power Ltd.

This facility currently operates under an Environmental Protection Agency IEL Licence W0049-02 and so can be expected to operate within licence conditions. Therefore, there will be no significant cumulative effect of the proposed project with ongoing operations from Clonbullogue Ash Repository facility.

5.4.8.3 Drehid Waste Management Facility

Drehid Waste Management Facility is located approximately ca.14km east of the subject site. This facility currently operates under an Environmental Protection Agency IEL active Licence No. W0201-03 and so can be expected to operate within licence conditions. Therefore, there will be no significant cumulative effect of the proposed project with ongoing operations from Drehid Waste Management Facility.

5.4.8.4 Drehid Mechanical Biological Treatment (MBT) Facility

Drehid Mechanical Biological Treatment (MBT) Facility located approximately ca.14km east of the subject site. This facility currently operates under an Environmental Protection Agency IEL Licence No. W0201-03 and so can be expected to operate within licence conditions. Therefore, there will be no significant cumulative effect of the proposed project with ongoing operations from Drehid Mechanical Biological Treatment (MBT) Facility.

5.4.8.5 Derrinturn urban wastewater plant

Derrinturn urban wastewater plant is located approximately 11km northeast of the subject site. This plant has a discharge point to the to the Cushaling River which is located upstream form the Figile River. This facility currently operates under UWWT License No. D0244-01. It can be expected to operate within licence conditions. Therefore, there will be no significant cumulative effect of the proposed project with ongoing operations from Derrinturn urban wastewater plant.

5.4.8.6 Daingean urban wastewater plant

Daingean urban wastewater plant is located approximately 11km west of the subject site. This plant discharges in to the Daingean River which flows southeast before meeting the Figile River to the south

of the subject site. This facility currently operates under UWWT License No. D0226-01. It can be expected to operate within licence conditions. Therefore, there will be no significant cumulative effect of the proposed project with ongoing operations from Daingean urban wastewater plant.

5.4.8.7 Rosderra Farms

Rosderra Farms is located 8km northwest of the subject site. This farm currently operates under License No. P0614-02, it can be expected to operate within licence conditions. Therefore, there will be no significant cumulative effect of the proposed project with ongoing operations from Rosderra Farms.

5.4.8.8 Mattie Moore Pig Farm

Mr. Mattie Moore pig farm is located approximately 13km northwest of the subject. This farm currently operates under License No. P0430-01, it can be expected to operate within licence conditions. Therefore, there will be no significant cumulative effect of the proposed project with ongoing operations from Mr. Mattie Moore farm.

5.4.9 Pressures on River Barrow and the River Nore SAC

In the Standard Data From[15] for the River Barrow and the River Nore SAC (002162), NPWS have identified threats and pressure to the SAC (See **Table 9** below). The high-ranking threats to the SAC relate to number of activities such as 'natural system modification', 'agriculture', 'pollution' and 'natural biotic and abiotic processes (without catastrophes, e.g. erosion)'. Medium ranking threats are: 'Sylviculture', 'climate change', 'peat extraction', 'invasive species, plant and animal' and 'biological resource use other than agriculture & forestry'.

Table 9: Threats and pressures listed on the Standard Form for River Barrow and the River Nore SAC

Negative Impacts				
Threat and Pressure	**Code**	**Description**	**Rank**	**Inside/Outside designated site**
Natural system modification	J02.05.02	Modifying structures of inland water courses	H	Inside
	J02.12.02	Dykes and flooding defense in inland water systems	H	Inside
	J02	Human induced changes in hydraulic conditions	M	Outside
	J02.02.01	Reclamation of land from sea, estuary or marsh	M	Inside
	J03.02.01	Reduction in migration/ migration barriers	M	Inside
	J02.06	Water abstractions from surface waters	M	Inside
Agriculture	A02.01	Agricultural intensification	H	Outside
	A01.01.04	intensive cattle grazing	M	Inside
Pollution	H01	Pollution to surface waters (limnic, terrestrial, marine & brackish).	H	Outside
Natural biotic and abiotic processes (without catastrophes)	K01.01	Erosion	H	Inside
Sylviculture, forestry	B05	Use of fertilizers (forestry)	M	Outside
	B07	Erosion due to forest clearing, fragmentation	M	Outside

[15] https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF002162.pdf

Negative Impacts				
Threat and Pressure	**Code**	**Description**	**Rank**	**Inside/Outside designated site**
	B02	Forest and Plantation management & use	M	Outside
Climate change	M01	Changes in abiotic conditions	M	Inside
Mining, extraction of materials and energy production	C01.03	Peat extraction	M	Outside
Biological resource use other than agriculture & forestry	F02	Fishing and harvesting aquatic resources.	M	Outside
Invasive, other problematic species and genes	I01	invasive non-native species, plant and animal.	M	Inside

Some of these threats and pressures have been assessed in the preceding paragraphs while there is some albeit limited potential for significant cumulative effects with the remaining without mitigation measures for water quality in place.

6 MITIGATION

6.1 CONSTRUCTION AND ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

A CEMP has been prepared for the proposed development (refer to **Appendix 4** of the EIAR supporting the planning application). A finalised CEMP will be implemented by the appointed contractor, who will manage the environmental commitments of the project including any planning conditions. The implementation of proposed mitigation measures, as well as the monitoring and supervision of these measures, will be managed through the CEMP. Mitigation measures to prevent significant negative impacts on the water quality in the Figile River will be incorporated into the project through the CEMP. The CEMP will take cognisance of CIRIA technical guidance on water pollution control (Murnane *et al.* 2006) and will include the following:

- Noise, Vibration, Dust and Air Control
- Management of Construction and Demolition Waste
- Water Quality/Sediment and Erosion Control
- Fuel and Oils Management
- Management of Concrete
- Emergency Response Plan
- Site Clearance Plan
- Construction method statements will be prepared prior to commencement of construction and incorporated into the CEMP.

6.2 ECOLOGICAL CLERK OF WORKS

A project ecologist (Ecological Clerk of Works (ECoW)) will be appointed to monitor/audit the works on a weekly basis for the full duration of the project. Ideally, the project ecologist will be responsible for and capable of managing all ecological matters for the project. The contractor, the project engineer and ecologist will meet ahead of work beginning on site to inform all relevant personnel of the sensitive nature of the environment that they will be working in and provide details of the environmental controls and mitigation measures that must be implemented for the duration of the works ('tool box talk').

The project ecologist or project manager/engineer shall induct all construction members making them aware of the method statement and the sensitivities of the site before they are allowed to access the site. The project ecologist will check that relevant staff are familiar with emergency response procedures and trained in the use of spill kits. Tool box talks will be undertaken as necessary and for any new worker prior to commencement of work on site.

The project ecologist weekly site audits will aim to ensure that all mitigation measures outlined in this document are fully and properly implemented. The project ecologist will have the authority to suspend works if works are not being carried out in line with the agreed method statement or daily monitoring indicates that the proposed measures are not functioning adequately to minimise the potential impact to local ecology.

6.3 WATER QUALITY CONTROL

The main risk to the water quality results from the potential for ingress of sediment or accidental fuel or oil spillages discharging to watercourses during construction. Sediments can be released during excavation and construction works. The following measures will be incorporated so as to ensure no

significant negative water quality impacts occur. These measures will be incorporated into the finalized CEMP:

- Raw or uncured waste concrete/cementitious material will be disposed of by removal from the development area.
- Suitable excavated soil will be re-used where possible as backfill and landscaping. Temporary stockpiles will not be permitted within 20m of a watercourse. Silt fences will be installed on the side of temporary stockpiles to prevent run-off to watercourses and drains in the event of an adverse weather event.
- There will be one temporary construction compound The site compound will be situated at least 25m from watercourses and drains.
- Fuelling and lubrication of equipment will be carried out under controlled conditions in bunded areas within the site compound and away from the watercourses and drains.
- Any spillage of fuels, lubricants or hydraulic oils will be immediately contained and the contaminated soil removed from the site and properly disposed of.
- Sufficient oil booms and oil soakage pads will be kept on site to deal with any accidental spillage.
- Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the site for disposal or recycling.
- 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.
- Overnight parking of plant machinery and site vehicles will only take place in the designated site compound.

6.3.1 Water crossing

6.3.2 Runoff and Sediment Control

During the construction phase of the project, there is potential for sedimented surface water run-off from the construction works areas to contaminate downstream watercourses. Fundamental to any construction project, is the need to keep clean water (i.e. runoff from adjacent ground upslope of the permitted development footprint) clean and manage all other run-off and water from construction in an appropriate manner. Measures to ensure erosion control, where runoff is prevented from flowing across exposed ground, and sediment control, where runoff is slowed in order to allow suspended sediment to settle, will be implemented into the finalised CEMP to prevent transport of sediment to the Figile River.

Control of the dirty water generated is key to effective sediment management on the site. A site-specific drainage system has been designed taking account of the following:

- Knowledge of the ground and hydrological conditions at the site.
- Previous construction experience in similar environments.
- Previous experience of environmental constraints and issues from construction activities in similar environmental conditions.
- Technical guidance and best management practice manuals.

Measures will be implemented to control any erosion and prevent runoff, particularly in the proximity of watercourses. Runoff will be slowed in order to allow any suspended sediment to settle, will be implemented on site to prevent transport of sediment to streams/drains close to the site. These measures will include the following:

- Implement control measures to prevent runoff flowing across exposed ground within the working areas and become polluted by sediments, these will include; diversion of any clean water around the site, , install silt fences and check dams in drainage ditches.
- Silt and runoff will be prevented from entering surface water drains or water courses using appropriate means. These include the temporary installation of silt fences, cut off drains, silt traps and drainage to vegetated areas where appropriate.
- Regularly inspect and maintain surface water and sediment controls. Inspection and maintenance is especially important after prolonged or intense rainfall.

6.3.3 Fuel Management Plan

Fuel oils must not, under any circumstances, discharge into the aquatic zone. The fuel and oil management plan outlined in this statement will be incorporated into the conduct of the works. These measures to prevent fuel and oil from entering any surface water body and will describe the emergency procedures designed to control any accidental spillages. All site plant and machinery e.g. excavators, dumpers, etc, will be refuelled in a, bunded, designated area at least 50m from any water body. No servicing or repair of plant, machinery or vehicles will be undertaken outside the site compound area. The management of fuel on site will have regard to the following elements:

- Machinery will be confirmed as being mechanically sound and without fuel or oil leaks and fit for purpose prior to project start.
- To minimize the requirement for refuelling during operations, plant will be refuelled prior to the start of each day's works program.
- Fuelling and lubrication of equipment will be carried out in bunded areas.
- Use of biodegradable products where possible, e.g. hydraulic fluid.
- Mobile bowsers, tanks, and drums will be stored in secure, impermeable storage area within the site compound.
- Fuel containers must be stored within a secondary containment system e.g. bund for static tanks or a drip tray for mobile stores.
- Ancillary equipment such as hoses, pipes must be contained within the bund.
- Taps, nozzles or valves must be fitted with a lock system.
- Fuel and oil stores including tanks and drums will be regularly inspected for leaks and signs of damage.
- Only designated trained operators will be authorized to refuel plant on site and emergency spill kits will be present at equipment for all refuelling events.
- Procedures and contingency plans will be set up to deal with emergency accidents or spills
- An emergency spill kit with the oil boom, absorbers, etc. will be kept on site in the event of an accidental spill.
- Fuels, lubricants and hydraulic fluids for equipment used will be carefully handled to avoid spillage, properly secured against unauthorized access or vandalism and provided with spill containment according to current best practice.
- Procedures and contingency plans will be set up to deal with emergency accidents or spills.

6.3.4 Concrete

With regard to the use of concrete, there will be no batching of concrete. Rather, it will be transported to the site as it is required. A dedicated, bunded area will be created to cater for concrete wash-outs and this will be within the temporary compound. This will be for the wash-out of the chutes only after the pour. Concrete trucks will then exit the site and return to the supply plant to wash out the mixer itself.

It is important to prevent concrete from entering the Figile River and the River Barrow and River Nore SAC. The following measures will be implemented during construction of the development:

- Washout of concrete trucks will not occur within the development area. Trucks will return to the supplier's yard for washout.
- A designated trained operator experienced in working with concrete will be employed during any concrete pouring.
- 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 into the ground. Settled solids will need to be appropriately disposed of off-site. The total volume will be reduced by only permitting concrete chutes to be washed on site.

6.3.5 Temporary Site Compound

The following measures will be undertaken to avoid or minimise negative effects to water quality as a result of the erection of the temporary compound:

- An emergency spill kit with oil boom and absorbers will be kept at the site compound in the event of an accidental spill.
- Temporary toilet facilities will be connected to a temporary underground storage tank. Effluent from the tank will be removed by a licenced waste management contractor and disposed of at a licenced treatment plant facility to the approval of Offaly County Council.
- A bunded containment area will be provided within the compound for the storage of fuels, lubricants, oils etc.

6.4 WASTES

With regards to other wastes arising during the construction phase, this will be collected at the end of the construction phase and taken off site to be reused, recycled and disposed of in accordance with best practice procedures at an approved facility. The sewage that will be generated during the construction phase will be managed by the installation of a temporary integrated waste holding tank. This will be emptied on a weekly basis or when 75% full by a licensed waste contractor and removed to a licensed waste-water treatment plant for treatment. With this approach, all human waste will be isolated from the exterior environment. Plastic waste will be taken for recycling by an approved contractor and disposed or recycled at an approved facility. Excavated materials from all construction activities will be subsequently reused on site for backfill, re-grading or re-vegetation. Wastes arising during the operation phase of the project include but are not limited to lubricating oils, cooling oils, unused paint and packaging from spare parts. The containment and disposal of such oils will be carried out in a safe manner by an approved contractor and in accordance with best practice. Wastes generated during the decommissioning phase will be taken off site and recycled or disposed of appropriately.

With regard to the potential for groundwater quality impacts, management of sewerage via the integrated waste holding tank will prevent any groundwater contamination impacts.

6.5 PLANT AND MACHINERY MANAGEMENT

Plant and machinery management measures shall be implemented to ensure that plant machinery is appropriately managed for the duration of the program of works. Operators shall adhere to the following practices:

- Vehicle and equipment operators must have appropriate training and qualifications for proper and safe use of their equipment.
- Operation of all vehicles, vessels, and equipment will be carried out in a safe and professional manner.
- The fuel management plan as outlined **Section 6.3.3** above, will be adhered to at all times.
- To avoid the risk of spills or leakages into the marine environment continuous care and maintenance of vehicles and equipment will be maintained.
- All filters, oils, lubricants and other related materials will be disposed of properly; and
- Plant will be parked in the secure compound when not in use.

6.6 EMERGENCY PLANS AND PROCEDURES

The contractor will prepare an emergency response plan and set of procedures for incidents/events likely to cause pollution including the pollution of water courses (i.e. Figile River) with silt/sediment, fuels/oils, etc. 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.

6.7 OTTER

Pre-construction surveys will be undertaken to ensure that newly established holts do not occur within the works area before the commencement of construction. Should a holt be identified, additional surveys/enabling works will only be undertaken under the appropriate NPWS licence.

6.8 INVASIVE SPECIES

6.8.1 General

The following measures address potential effects associated with the construction phase of the project:

- Good construction site hygiene will be employed to prevent the introduction and spread of problematic invasive alien plant species (e.g. Himalayan balsam (*Impatiens glandulifera*), Japanese knotweed (*Fallopia japonica*) etc.) by thoroughly washing vehicles prior to leaving any site.
- All plant and equipment employed on the construction site (e.g. excavator, footwear, etc.) will be thoroughly cleaned down using a power washer unit prior to arrival on site to prevent the spread of invasive plant species.
- All washing must be undertaken in areas with no potential to result in the spread of invasive species. This process will be detailed in the contractor's method statement.
- Any soil and topsoil required on the site will be sourced from a stock that has been screened for the presence of any invasive species and where it is confirmed that none are present.

- All planting and landscaping associated with the proposed development shall avoid the use on invasive shrubs.

During the site visits in July and December 2020 no invasive species were observed, it is recommended that an invasive species survey shall be undertaken prior to commencement of construction. Should newly established invasive species be identified within the site, an Invasive Species Management Plan will be incorporated into the final CEMP. Areas where invasive species are present will be identified and demarcated prior to commencement of construction:

- A distribution map of the invasive alien plant species along the route, and the above recommendations, will be incorporated into the final CEMP.
- To reduce the likelihood of invasive species spreading, the construction personnel involved in works will be trained in basic relevant invasive species prevention and management (tool box talk); and
- To reduce the likelihood of invasive species being introduced to the site from quarries, the aggregate will be crushed stone which will be biologically inert and would not be expected to have a seed bank.

6.8.2 White-clawed crayfish specific mitigation

The most important invasive species to consider is the pathogen associated with White-clawed crayfish plague. The construction manager and project ecologist will share responsibility for ensuring all staff are aware of the procedures necessary to prevent introduction/spread of the Crayfish plague to the Figile River.

Prior to being brought onto site, all plant and equipment will need to be clean and free of soil/mud/debris or any attached plant or animal material. All plant/equipment with water retaining compartments, tanks, etc. will require water to be drained or dried out before transportation to the site. Prior to entering the site, all plant/equipment will be visually inspected to ensure all adherent material and debris has been removed.

It may be the case that river water will have been used in certain plant/equipment (e.g. bowsers) intended for use at the proposed development site. Such plant/equipment will require cleaning and rinsing with a 1% solution of Virkon Aquatic or another proprietary disinfection product (e.g. 5% solution - 100ml/20litre of chlorine bleach) followed by thorough rinsing with clean water.

7 RESIDUAL IMPACTS

Residual impacts are impacts that remain, once mitigation has been implemented or, impacts that cannot be mitigated. Provided all mitigation measures set out in **Section 6** are implemented in full and remain effective, it is not expected that significant residual impacts will result to the qualifying features of the River Barrow and River Nore SAC, in view of the sites conservation objectives. Thus, it is not expected that the proposal to construct and operate the Kilcumber Bridge 110kV substation will have an adverse impact on the integrity of Natura 2000 sites, namely the River Barrow and River Nore SAC (002162).

8 CONCLUSION OF NATURA IMPACT STATEMENT

In conclusion, provided the recommended mitigation measures are implemented in full, it is not expected that the construction and operation of the proposed Kilcumber Bridge 110kV substation will result in adverse effects on the integrity of the Natura 2000 site considered in this NIS, namely:

- River Barrow and River Nore SAC (002162)

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Appendix 1

A Screening for Appropriate Assessment Report

Malachy Walsh and Partners
Engineering and Environmental Consultants

Screening for Appropriate Assessment

Kilcumber Bridge 110kV substation, Co. Offaly

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ISSUE FORM	
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1 SUMMARY OF FINDINGS

1.1 SCREENING FOR APPROPRIATE ASSESSMENT

Project Title	Kilcumber Bridge 110kV Substation
Project Proponent	Cloncant Renewable Energy Ltd.
Project Location	Edenderry, Co. Offaly.
Screening for Appropriate Assessment	The screening for Appropriate Assessment is undertaken to determine the potential for likely significant effects of a proposal to construct a 110kV Substation and grid connection in the townlands of Ballykilleen, Cloncreen and Ballinowlart North, County Offaly individually, or in combination with other plans or projects, on Natura 2000 sites.
Conclusion	It cannot be objectively concluded, at this stage, that significant adverse impacts to the following designated Natura 2000 site, will not occur: • River Barrow and River Nore SAC (002162) Therefore, it is necessary to proceed to Appropriate Assessment and as such a Natura Impact Statement must be prepared for the project.

2 INTRODUCTION

2.1 PURPOSE OF ASSESSMENT

This Screening for Appropriate Assessment has been undertaken to determine the potential for significant impacts of a proposal to construct the Kilcumber Bridge 110kV substation approximately 6km southwest of Edenderry Co. Offaly on nearby Natura 2000 sites. The screening exercise determines the need for a full appropriate assessment, in which case a Natura Impact Statement would need to be prepared. This Screening for appropriate assessment has been undertaken by Malachy Walsh and Partners ecologists.

An Environmental Impact Assessment Report (EIAR) has also been prepared by MWP in support of the planning application to Offaly County Council.

2.2 LEGISLATIVE CONTEXT

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) and the Birds Directive (79/409/EEC) seeks to protect birds of special importance by the designation of Special Protected Areas (SPAs). It is the responsibility of each 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 has been transposed into Irish law and the relevant Regulations are the European Communities (Birds and Natural Habitats) Regulations 2011. The requirement for appropriate assessment of the implications of plans and projects on the Natura 2000 network of sites comes from the Habitats Directive (Article 6(3)).

Under the European Communities (Birds and Natural Habitats) Regulations 2011 a public authority is required to carry out a Screening for appropriate assessment of a proposed development prior to issuing consent to assess, in view of best scientific knowledge and the sites conservation objectives, if that project or plan, individually or in combination with other plans or projects is likely to have a significant effect on a Natura 2000 site. The information presented in this Screening for appropriate assessment will be used by the competent authority to assist them to complete their screening exercise.

The Screening for appropriate assessment will determine whether an appropriate assessment of the proposed development is required if it cannot be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plan or projects, will have a significant effect on a Natura 2000 site. If it is determined that an appropriate assessment is required in respect of the proposed development, a Natura Impact Statement (NIS) must be prepared.

2.3 STAGES OF APPROPRIATE ASSESSMENT

The appropriate assessment process is a four-stage process with issues and tests at each stage. An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required. The stages are set out in **Appendix 1**.

3 ASSESSMENT METHODOLOGY

3.1 APPROPRIATE ASSESMENT GUIDANCE

This Screening for appropriate assessment has been undertaken in accordance with the European Commission Methodological Guidance on the provision of Article 6(3) and 6(4) of the 'Habitats' Directive 92/43/EEC (EC, 2001) and the European Commission Guidance 'Managing Natura 2000 sites' (EC, 2000) and guidance prepared by the NPWS (DoEHLG, 2009).

3.2 CONSULTATION

3.2.1 Consultation during the Cushaling Wind Farm EIAR

The Kilcumber Bridge 110kv substation was part of the EIAR for the Cushaling Wind farm project. There are two differences in the layout plan of the Kilcumber Bridge 110kv substation in the Cushaling Wind Farm plan that underwent consultation and the current proposed development. These are a movement of the substation southwest by about 20 meters and the introduction of the overhead line as the grid connection. As part of the Cushaling Wind Farm EIAR it underwent the following consultations;

3.2.1.1 Pre-Planning Meeting with Offaly County Council

A pre-planning meeting was held with Offaly County Council Planning Department on the 29th May 2019. The objective of the meeting was to outline the proposal and to discuss any concerns or comments that OCC may have in relation to the proposal and any planning and development policy particularly relating to renewable energy strategy. Follow-up discussions were also held with the Roads Department regarding road access to the site.

The Applicant also had a pre-planning consultation meeting with the Edenderry Roads Engineer for Offaly County Council on 26th August 2019. During this meeting, the project was outlined by the Applicant and Offaly County Council advised of their expectations with regards to the use of public roads approaching and within the wind farm, ducting through public roads, public road upgrade works and reinstatement finishes etc.

3.2.1.2 Pre-Planning Meeting with Kildare County Council

A pre-planning meeting was held with Kildare County Council Planning Department on the 9th July 2019. The objective of the meeting was to outline the proposal and to discuss any concerns or comments that KCC may have had in relation to the proposal and any planning and development policy particularly relating to renewable energy strategy.

3.2.1.3 Consultation with Statutory and Non-Statutory Consultees

The Applicant undertook consultation with a range of statutory and non-statutory bodies identified as relevant to the project and location. Community groups relevant to the area were also identified and included.

3.2.1.4 Public Consultation with the Local Community

Cloncant Renewable Energy Ltd. commenced the public consultation for the proposed Cushaling Wind Farm in June 2019 at an early stage in the development process. A Community Liaison Strategy (CLS) was established and set into motion with a nominated Community Liaison Officer (CLO). Since this time, the CLO has been the main point of contact with the local community. The CLS is based on

the 'Code of Practice for Wind Energy Development in Ireland Guidelines for Community Engagement' (December 2016).

An important aspect of the community engagement strategy was the distribution of project information and the gathering of feedback. A Project Website was also set up (www.cushalingwindfarm.ie). The CLO called to all houses within 2.2km of the design layout to provide the following information:

- A Project Booklet (June 2019);
- A subsequent Project Newsletter (October 2019);
- Details on the Project website (June 2019);
- Contact details for contacting the CLO at any time.

With regard to all consultation undertaken, all feedback received was carefully considered by the project design team in designing the layout and siting of wind farm infrastructure. Following this, the proposal was finalised and submitted as planning applications to Offaly and Kildare County Councils in November 2019.

3.2.2 Consultation for the stand alone Kilcumber Bridge 110kv substation

3.2.2.1 Pre-Application Consultation Meeting with An Bord Pleanála

A pre-application meeting was held with An Bord Pleanála on the 25th February 2020. The objective of the meeting was to outline the proposal and to discuss any concerns or comments that An Bord Pleanála may have in relation to the proposal. Confirmation that the project was a strategic infrastructure development was a part of the pre application process.

3.2.2.2 Consultation with Eirgrid as operators of the Irish electricity grid.

Cloncant Renewable Energy Ltd. had three meetings with EirGrid in 2020 where the Cushaling Wind Farm and its grid connection including Kilcumber Bridge 110kv substation or policy items effecting these items, were discussed:

- 22nd April
- 17th June
- 16th Sept

These meetings were in an effort to ensure that the needs of the grid operator were addressed.

3.2.2.3 Consultation with statutory and non statutory bodies with a possible interest.

Letters and project descriptions were sent out to a list of statutory and non statutory bodies that may have had an interest in the proposed development. A full list of the bodies and the project description is included in the EIAR that accompanies the planning application.

3.2.2.4 Information drop to adjacent residential houses

Information regarding the proposed development was given to the immediate adjacent residents and they were asked for comments regarding the development.

3.2.2.5 Additional consultation with Offaly County Council

Offaly County Council were included in the non statutory bodies for a request for comments in relation to the project. An online meeting was held with Offaly Co. Co. on the 1st March 2021, in order to get the full information regarding Offaly County Council's thoughts on the proposed development.

3.2.2.6 Project website

Post EIAR an important aspect of the community engagement strategy is the setting up of the Project Website (www.Kilcumberbridgesubstationsid.ie). This is due to go live once the planning application has gone in and will inform the community on all aspects of the proposed development as well as contain the full EIAR in a downloadable version.

3.3 DESK STUDY

In order to complete the Screening, certain information on the existing environment is required. A desk study was carried out to collate available information on the subject site's natural environment. This comprised a review of the following publications, data and datasets:

- OSI Aerial photography and 1:50000 mapping
- National Parks and Wildlife Service (NPWS) online databases
- National Biodiversity Data Centre (NBDC) online map-viewer
- Teagasc soil area maps (NBDC website)
- Geological Survey Ireland (GSI) area maps (online)
- Environmental Protection Agency (EPA) water quality data
- South eastern River Basin District (SERBD) datasets (Water Framework Directive)
- Offaly County Development Plan 2014-2020

Other information sources and reports footnoted in the course of the report

3.4 SCREENING FOR APPROPRIATE ASSESSMENT

As set out in the NPWS guidance, the task of establishing whether a plan or project is likely to have an effect on a Natura 2000 site(s) is based on a preliminary impact assessment using available information and data, including that outlined above, and other available environmental information, supplemented as necessary by local site information and ecological surveys. This is followed by a determination of whether there is a risk that the effects identified could be significant. The precautionary principle approach is required.

Once the potential impacts that may arise from the proposal are identified the significance of these is assessed through the use of key indicators:

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

4 SCREENING FOR APPROPRIATE ASSESSMENT

Screening for appropriate assessment determines the need for a full appropriate assessment and consists of a number of steps, each of which is addressed in the following sections of this report:

4.1 Establish whether the project necessary for the management of a Natura 2000 site
4.2 Description of the Project (*Kilcmber110kV substation)*
4.3 Identification of Natura 2000 sites potentially affected
4.4 Identification and description of individual and cumulative impacts of the project
4.5 Assessment of the significance of the impacts on the integrity of Natura 2000 sites
4.6 Conclusion of screening stage

4.1 MANAGEMENT OF NATURA 2000 SITES

The proposal is not connected with or necessary to the conservation management of a Natura 2000 site.

4.2 DESCRIPTION OF PLAN/PROJECT

4.2.1 Brief Project Description

The proposed development is to construct the Kilcumber Bridge 110kV substation that will form a new node on the Eirgrid transmission network in Co. Offaly. The substation will have a looped in/out 110kV grid connection to the existing Cushaling – Mount Lucas 110kV overhead line (OHL). The proposed Kilcumber Bridge 110kV substation is located opposite the Bord na Mona Edenderry Power plant.

4.2.2 Purpose of the Project

The purpose of the project is to provide additional electrical grid capacity for future local energy generation projects in this area of the midlands.

4.2.3 Site Location

The subject site is located in a rural area approximately 6km southwest of Edenderry Town, Co. Offaly and is situated in agricultural fields opposite the Endenderry Power Plant. The site can be accessed via the R401. See **Figure 1** below.

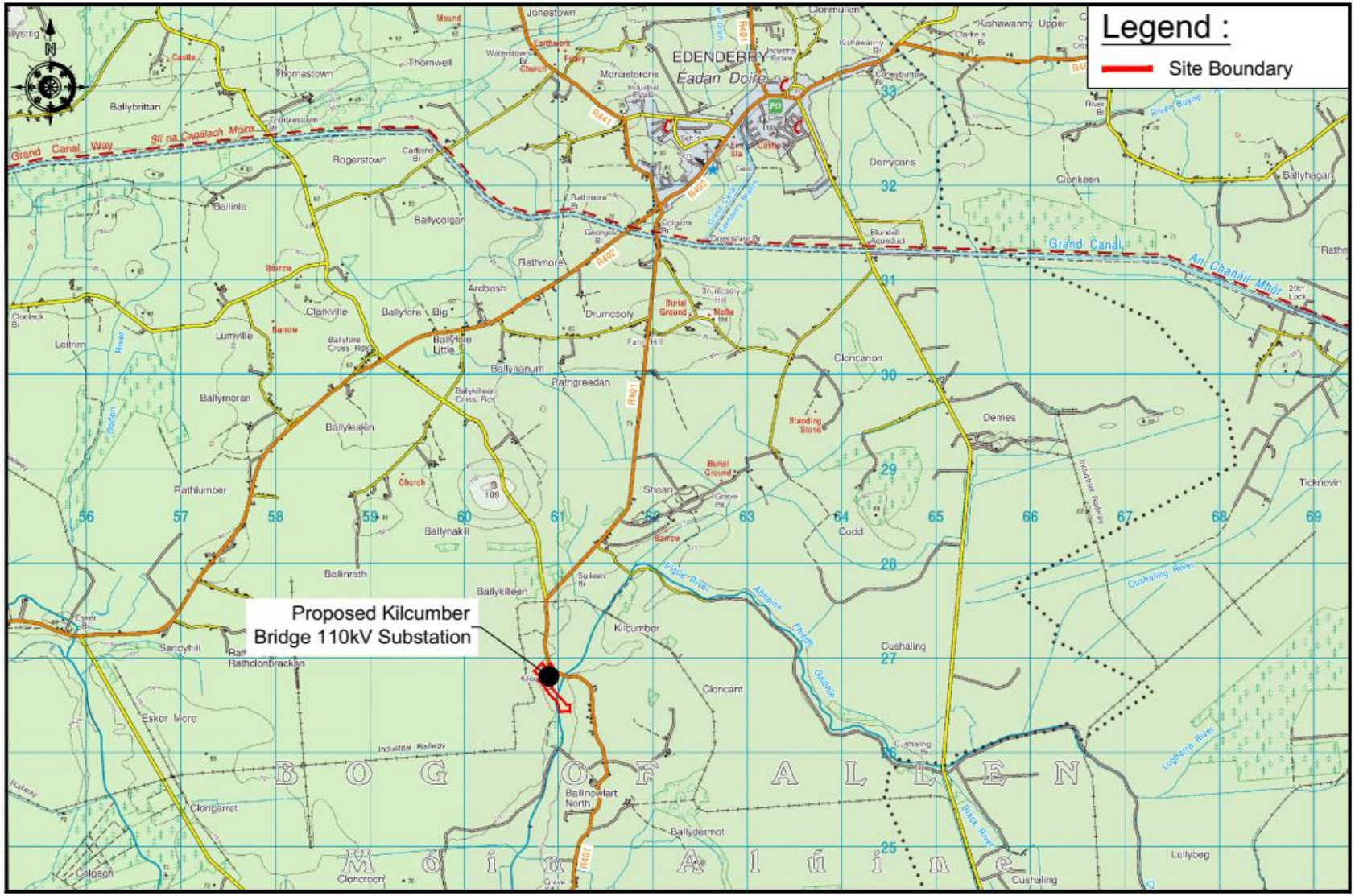

Figure 1: Site Location

4.2.4 Description of the Site

The proposed development is located within the Electoral Division 'Edenderry Rural' (CSO Area Code ED 12041). CSO data indicates that, in 2016, this ED had a total population of 816. CSO data indicates that, in 2010, a total of 1,578ha were farmed within ED 12041. The majority of this was used for grazing and silage production, primarily for beef cattle and sheep[1].

The proposed development is situated in agricultural fields adjacent to Edenderry power station. These fields are currently managed for livestock and have a series of drainage ditches and associated hedgerows separating them. Overall land-use in the surrounding area comprising agriculture, areas of commercial forestry and bog some which has been extensively commercially extracted. The dominant Corine Land cover Category (2018) of the proposed substation and grid route footprint comprises predominantly of 'Agricultural Areas' Code 231 alongside Edenderry Power plant 'Artificial Surfaces' Code 131 and surrounded by mostly 'Peat bogs' Code 412' and some 'Forest and semi-natural areas' Code 313[2]. The bedrock aquifer is described as 'Locally Important Aquifer - Bedrock which is described as 'Moderately Productive only in Local Zones' and the ground water vulnerability at the site is classed as 'moderate' to the east and 'low' to the west**Error! Bookmark not defined.**.

The proposed development of the Kilcumber Bridge 110kv substation is in the townlands of Ballykilleen, Cloncreen and Ballinowlart North, Co. Offaly. The townland of Ballykillen is bounded by the townland of Ballinrath to the west, Cloncreen and to the south, Kilcumber and Shean to the east and Ballyfore Little, Ballynanum and Rathgreedan to the north. The townland of Ballinowlart North is bounded by Cloncreen to the west, Ballydermot to the south, Cloncant to the east and Kilcumber to the northAccording to Geological Survey Ireland (GSI) online database, the bedrock at the proposed site is classified as '*Dark limestone & shale*' which forms a band extending northeast to southwest[3]. A review of the Teagasc map viewer determined that soil at the subject site comprises 'peat'[4].

The proposed development is located in the 'Barrow' WFD catchment and the 'Figile_SC_010' and 'Figile_SC_020' sub-catchment which all fall within Hydrometric Area 14. As part of the national characterisation programme undertaken for the second lifecycle of the Water Framework Directive (WFD) river basin management planning, assessments of individual sub-catchments have been undertaken. This assessment has been led by the EPA with input from Local Authorities and other public bodies. It has been noted in the in the 2019 Figile_SC_010 Subcatchment Assessment WFD Cycle report the main pressures are 'extractive industry (peat)', 'industry' and 'agriculture'[5]. It has been noted in the in the 2019 Figile_SC_020 Subcatchment Assessment WFD Cycle report the main pressures are 'extractive industry (peat)', 'anthropogenic pressures' and 'agriculture'[6].

[1] http://census.cso.ie/censusagriculture/Results.aspx?Geog_Type=ED&Geog_Code=12041

[2] https://gis.epa.ie/EPAMaps/

[3] https://www.gsi.ie/en-ie/data-and-maps/Pages/Bedrock.aspx#UKIreland

[4] http://gis.teagasc.ie/soils/map.php

[5] https://www.catchments.ie/data/#/subcatchment/14/14_3?_k=scxwjq

[6] https://www.catchments.ie/data/#/subcatchment/14/14_14?_k=tsj4zh

The Figile River (EPA Code: 14F01) is situated ca. 70m east of the proposed substation, it is classified as a fourth (4th) order river and flows south until it meets the River Barrow, 14.3km south of the subject site and 21.3km via its hydrological route.

The Figile River is currently monitored by the EPA. This assessment of water quality is based on the macro-invertebrate community and physio-chemical characteristics of the waterbody at this location. The closest monitoring station is Kilcumber Bridge which is just east of the subject site. Further downstream are four more monitoring stations before the Figile River meets the River Barrow. All mentioned EPA monitoring stations, for which accompanying Q-Values are known, have been included in **Table 1** below.

Table 1: River Water Quality at EPA Stations at the Figile River most recently surveyed

Station Name/Location	Station ID	Year	Q-rating	Corresponding WFD status
Kilcumber Bridge	RS14F010200	2017	Q3-4	Moderate
Figile – Bridge in Clonbulloge	RS14F010300	2017	Q4	Good
Derrygarran Bridge	RS14F010400	2017	Q4	Good
Ardra Bridge	RS14F010500	2017	Q4	Good
1 km u/s Barrow R confluence	RS14F010600	2006	Q3-4	Moderate

According to the River Waterbody WFD Status of surveys conducted between 2013-2018, the River Figile is classified as having 'Moderate' status with a river waterbody score of '1A; at risk of not achieving good status'[7].

4.2.5 Characteristics of the Project

The proposal is described below and has been confirmed with the client.

Size, scale, area, land-take	The proposal involves: – Construction and operation of the proposed Kilcumber Bridge 110kV substation. – A 450m2 substation control building. – 2ha substation compound area. – A 400m overhead line 110kV grid connection to the adjacent existing Cushaling – Mount Lucas 110kV overhead line. – For the most part the proposed development occurs on agricultural grassland. – There is no spatial overlap between the subject site and any Natura 2000 site. – The proposed development does not require land take from any Natura 2000 site.
Details of physical changes that will take place during the various stages of implementing the proposal	– The approximately 2 ha site will be double fenced for security and safety – Inside the compound area the substation equipment will be laid out according to Eirgrid specifications with all safety clearances incorporated into the design. – The compound will contain:

[7] https://www.catchments.ie/data/#/waterbody/IE_SE_14F010300?_k=osbtrb

	○ A single story 450m2 substation control building. ○ An internal compound road will provide access and four parking bays and a loading bay will be provided outside the control room. ○ Access to the facility will be from the R401 which separates the proposed development from the existing Cushaling 110kV substation. New Substation – Construction and operation of a new proposed 110kV substation (19,809m2). – Importation of stone from local quarries will be required for the substation compound. Grid Connection – 1. A 400m 110kV overhead line (OHL), looped in/out, from the proposed substation to the existing Cushaling – Mount Lucas 110kV overhead line – The route crosses the Figile River to the east and will link into the existing Cushaling – Mount Lucas 110kV overhead line. – Pre-construction surveys will be undertaken immediately prior to the construction phase, including ground investigations to allow detailed design of the OHL route. Access to the grid connection construction areas will primarily be via the compound area with limited temporary access from existing field entrances and routes used by the landowner. The detailed design of any temporary access routes will be based on the condition of the land at the time of construction and will be agreed with the landowner prior to the commencement of works. The existing Mount Lucas - Cushaling overhead line will be isolated to allow for construction of the proposed grid connection. – The OHL route consists of two lines going in and out of the substation. The OHL infrastructure includes four 12m steel lattice pylons and six 12m wooden pole structures. The 12m steel lattice pylons will be constructed on four concrete foundation footings of approximately one cubic meter each (four cubic meters of concrete per steel lattice pylon). The steel lattice frames will be constructed on site. The wooden pole infrastructure will consist of holes cored into the ground. The poles will then be concreted into the prepared holes. Temporary compound – The construction compound will be situated in the future expansion area of the proposed Kilcumber Bridge 110kV substation, within the red line of the proposed site layout. This compound will act as the construction compound for both the substation and the grid connection. – The compound will be used as a secure storage area for construction materials and temporary welfare facilities for site personnel. Facilities may include office space, canteen area and drying room. The temporary compound will also include an enclosed wastewater management system, which will be capable of handling the demand at construction phase. A holding tank is proposed for wastewater management. The holding tank will only be emptied by permitted contractors. – Sanitation facilities will be provided by means of a self-contained portable

	toilet/welfare block with an integrated waste holding tank and will be located on the temporary site compound. This will be maintained by the service contractor on a regular basis and will be removed from the site on completion of the construction phase. Drainage/Water control – Construction of surface water drainage system while construction is being carried out at the site. (roadside drains, suspended solid dams in existing drainage ditches and around construction areas). Vegetation clearance – Removal of treelines/hedgerows to facilitate the subject site.
Description of resource requirements for the construction/operation and decommissioning of the proposal (water resources, construction material, human presence etc)	Materials – 1,816m3 of soils excavated for reuse on site; – 28,480m3 of imported rock; – 41m3 of concrete. Typical equipment • Wheeled / tracked excavators • Mobile Cranes • Dumpers • Tractor trailers (low loader) • Bobcats • Ride on rollers • Pumps • Steel bars and rope • Concrete vibrators • Drills • Fencing • Timber/plastic templates • Water pumps
Description of timescale for the various activities that will take place as a result of implementation (including likely start and finish date)	Duration Depending on the grid application process, the project build is expected to start in 2022 or 2023. The substation will be constructed first, followed by the grid connection over a period of 12 months. There will be an additional allowance of about two months for commissioning and handover to Eirgrid. The total timeframe for the proposed project is 14 months from start of construction to hand over to Eirgrid.
Description of wastes arising and other residues (including quantities) and their disposal	– Construction waste (packaging, spoil including excess concrete, plaster, etc) – Services waste – Fuels and oils All wastes generated will be sent to licensed or permitted facility.
Identification of wastes arising and other residues (including quantities) that may be of particular	– Excavation works will generate about 1,816m3 of soils and subsoil. This material will be reused onsite. – Construction waste will be removed from site for appropriate disposal.

concern in the context of the Natura 2000 network	Any other general wastes, e.g. packaging, pallets, etc. will be removed off-site by an authorised and permitted waste contractor for recycling or disposal in accordance with best practice and waste management legislation. Waste from temporary toilets will be taken from site on a regular basis by approved contractors during construction phase and disposed of in an authorised facility in accordance with best practice.
Description of any additional services required to implement the project or plan, their location and means of construction	Prior to construction commencing consultation with Offaly County Council will take place to discuss and agree measures related to traffic management, waste management and diversions or road closure required to facilitate the works.

4.2.6 Identification of Other Projects or Plans or Activities

The proposed works was considered in combination with other plans and projects in the area that could result in cumulative impacts on Natura 2000 sites.

A review of the:

- Offaly County Development Plan 2014-2020
- Offaly County Development Plan 2021-2027 (Draft stage)

A search for relevant plans and projects determined that there are a number of current planning applications or grants of permission for large scale projects in the area, including:

- Mount Lucas Wind Farm – Operating
- Yellow River Wind Farm – Permitted
- Cloncreen Wind Farm – Permitted
- Cushaling Wind Farm – Permitted
- Proposed Irish Water Eastern and Midlands Regional Water Supply Project

A review of EPA licensed operators within the 'Figile_SC_010' sub-catchment determined that there are three IEL Licensed facilities. Edenderry Power Limited (Licence No. P0482-04) power plant is owned by Bord na Mona and is situated just east of the proposed site. This facility has a licensed emission point to the River Figile (P0482_02_1_EW). Located approximately 14km east of the subject site in Co. Kildare are two facilities also owned by Bord na Mona, Drehid Waste Management Facility (Licence No. W0201-03) and Drehid Mechanical Biological Treatment (MBT) Facility (Licence No. W0283-01). Located approximately 11km northeast of the subject site is Derrinturn urban wastewater plant (UWWT License No. D0244-01) with most recent compliance grade as 'pass'**Error! B ookmark not defined.**.

There are three IEL Licensed facilities located in the 'Figile_SC_020' sub-catchment. Clonbullogue Ash Repository facility situated ca.2km southwest of the subject site and is located in the next sub-catchment 'Figile_SC_020'. This is facility is a functional element of the Bord na Mona Energy Ltd and disposes of inert waste products (fly ash and bottom ash), arising from peat combustion within the

boiler of the Edenderry Power Ltd[8]. Rosderra Farms (License No. P0614-02) is located 8km of the subject site. Approximately 13km northwest of the subject is Mr. Mattie Moore pig farm (License No. P0430-01). Located approximately 11km west of the subject site is Daingean urban wastewater plant (UWWT License No. D0226-01) with most recent compliance grade as 'pass'.

A review of the Offaly County Council Planning Register[9] indicates that there are no recent planning applications in the townland of Ballinowlart North. There is one application in the townland of Cloncreen pending further information, this pertains to Bord na Móna Clonbullogue Ash Repository facility for the continued use of the previously permitted ash repository (an bord pleanála pl 19.216998 / offaly county council 05/1267). There are a number of recent planning applications in the townland of Ballykilleen (see **Table 2**).

Table 2. Planning applications in the townland of Ballykilleen

Planning Reference	Project	Application Status
2152	Bord na Mona - a modular battery energy storage system (bess) facility within the footprint of a previously consented construction compound (abp ref. pl19.pa0047).	New Application
20447	Retention: Domestic garage, domestic storage space, home office with toilet and all associated site works	Further Information
2088	Retention: • (a) a garage for domestic use and • (b) front boundary wall and entrance	Granted
19496	• Alterations to the existing 110kV cushaling substation and includes the installation of 110kV ais switchgear with associated foundations, steelwork, supports and connectors and associated work.	Granted
19337	• Erection of a one and a half storey type house, • Garage/ fuel store for domestic use, • The installation of septic tank with percolation area and • New vehicular recessed entrance and all associated site work	Granted
19102	• The construction of a new single storey dwelling house and detached fuel/ storage/ garage building, new wastewater treatment plant and percolation area, new site entrance, revisions to front boundary and all ancillary site works.	Granted
19527	• A single storey extension to the rear of the existing dwelling house, porch area to front of dwelling, external study/ library, external utility room, external toilet room comprising, upgrading of existing wastewater treatment system & percolation area, • Planning permission for single storey extension to the side of the existing dwelling house and all associated site development works.	Granted
19500	• Bord na Mona - The erection and operation of a multi-user telecommunications mast to be utilised as part of the national broadband plan.	Granted
18490	• 1 no. new storey and half type dwelling house b) • 1 no. new domestic garage,	Granted

[8] http://www.epa.ie/licences/lic_eDMS/090151b280347fa5.pdf

[9] https://offalycoco.maps.arcgis.com/apps/webappviewer/index.html?id=a9badef1ed474100ae1340b33ea9a729

Planning Reference	Project	Application Status
	• Installation of a new wastewater treatment system, • Use existing vehicular entrance, • New landscaping and all associated site development work.	
16346	• A change of house design to include revisions to floor plans and elevations from that granted under planning permission.	Granted
15129	• Edenderry power station – applied for extension of continues use until the end of 2030.	Granted

Given the rural location of the proposed development site and existing land uses extending away from the site, it is considered that agriculture and peat extraction and to a lesser extent the proposed pipeline project, wind energy projects and power generation projects are the activities/projects with which the proposal could interact synergistically to create cumulative or in-combination impacts.

As there is potential for interaction between the some of the activities listed above, and the proposal, the potential to create cumulative impacts on the receiving environment must be assessed. This aspect will be considered in **Section 4.5.5** below.

4.3 IDENTIFICATION OF NATURA 2000 SITES

4.3.1 Zone of Impact Influence

The screening stage of AA involves compiling a 'long list' of European sites within a zone of potential impact influence for later analysis which may or may ultimately not be significantly impacted upon by the proposal. All Natura 2000 sites within 15km of the proposal location will be characterised in the context of the rationale for designation and qualifying features, in accordance with NPWS guidance. In line with the precautionary principle, during the preparation of this report Natura 2000 sites that lie outside 15km that may be significantly impacted as a result of the proposed works were also considered. Following this, the potential impacts associated with the proposal will be identified before an assessment is made of the likely significance of these impacts.

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 plan/project is likely to have a significant effect on a Nature 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.

4.3.2 Identification of Natura 2000

Adopting the precautionary principle in identifying potentially affected European sites, it has been decided to include all SACs and SPAs, within a 15km radius of the proposal site. The Natura 2000 sites considered being within this 'likely zone of impact' and their qualifying features of conservation interest are identified in **Table 3**,

Table 4 and **Figure 1** below.

Table 3: Natura 2000 sites within 15km radius of proposed substation

Natura 2000 site	Site Code	Proximity of subject site to nearest point of designated site
The Long Derries, Edenderry SAC	000925	5.3km to the northeast of the subject site.
River Barrow and River Nore SAC	002162	14.2km to the south of the subject site and ca. 21km via its hydrological route (Figile River).

4.3.3 Characteristics of Natura 2000 Sites

Table 4 lists the qualifying features for the Natura 2000 sites that lie within 15km of the proposal. Information pertaining to the Natura 2000 sites is from site synopses, conservation objectives and other information available on www.npws.ie.

Table 4: Designated site with qualifying features of conservation interest

Designated Site	Qualifying features of conservation interest
The Long Derries, Edenderry SAC (000925)	- Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210]
River Barrow & River Nore SAC (002162)	- 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] - Desmoulin's Whorl Snail (*Vertigo moulinsiana*) [1016] - Freshwater pearl mussel (*Margaritifera margaritifera*) [1029] - White-clawed crayfish (*Austropotamobius pallipes*) [1092] - Sea lamprey (*Petromyzon marinus*) [1095] - Brook lamprey (*Lampetra planeri*) [1096] - River lamprey (*Lampetra fluviatilis*) [1099] - Twaite shad (*Alosa fallax fallax*) [1103] - Atlantic salmon (*Salmo salar*) [1106] - *Lutra lutra* (Otter) [1355] - Killarney fern (*Trichomanes speciosum*) [1421] - Nore pearl mussel (*Margaritifera durrovensis*) [1990]

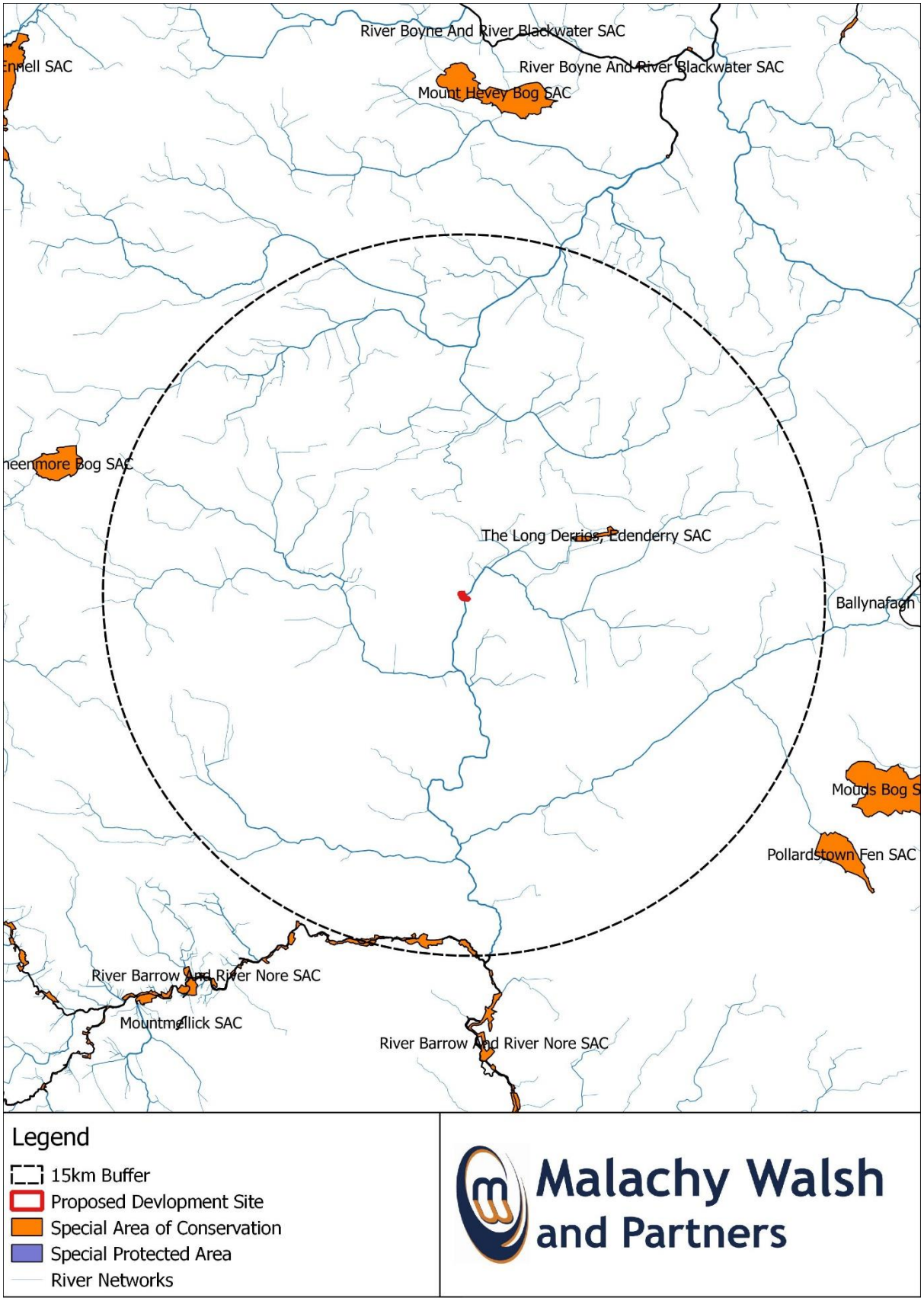

Figure 1. Natura 2000 sites within a 15km radius of the proposed works at Kilcumber Bridge 110kV substation

4.3.4 Conservation Objectives

According to the Habitat's Directive, the *conservation status of a natural habitat* will be taken as 'favourable' within its biogeographic range when:

- its natural range and areas it covers within that range are stable or increasing, and
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- the conservation status of its typical species is favourable as defined below.

According to the Habitat's Directive, the conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations. The conservation status will be taken as 'favourable' within its biogeographic range when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

The specific conservation objectives for each site are available on www.npws.ie. These have been accessed for the sites listed in the tables above on the 23/11/2020. Generic conservation objectives were available for the following sites:

Generic conservation objectives were available for the following sites:

- The Long Derries, Edenderry SAC (000925) – Published 7th April, 2020;

Site specific, detailed conservation objectives were available for the following sites:

- River Barrow and River Nore SAC (002162) – Published 19th July 2011

All conservation objectives together with other designated site information are available on http://www.npws.ie/protectedsites/.

4.4 IDENTIFICATION OF POTENTIAL IMPACTS

Potential likely ecological impacts arising from the project are identified in this section.

Description of elements of the project likely to give rise to potential ecological impacts sites.	– Site clearance – Construction of substation, site compound – Construction of overhead line grid connection – Use of plant, machinery and associated fuels and oils. – Waste/spoil generation – Increased human activity/noise during the construction phase. – Excavations to accommodate new internal compound road

	infrastructure (provide access and four parking bays and a loading bay) – Construction of new internal road infrastructure – Use of construction equipment, vehicles, and plant – Run-off from the site e.g. sediment – Use of hazardous substances such as fuels/oils, concrete and chemicals
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.*	The proposed development does not require land take from any Natura 2000 site. The site is located <100m from the Figile River which discharges into the River Barrow downstream and subsequently the River Barrow and River Nore SAC. In general, construction works associated with the project have the potential to result in the following impacts: – Surface run-off of sediments/fines to watercourses – Ingress of uncured cementitious material/concrete wastewater, fuels or oils to Figile River and downstream watercourses – Species disturbance/displacement impacts – Risk of sedimentation of downstream watercourses – Disturbance/displacement to species – Ingress of invasive alien plant species into the site

4.5 ASSESSMENT OF SIGNIFICANCE OF POTENTIAL IMPACTS

This section considers the list of sites identified in **Section 4.3.2** above together with the potential ecological impacts identified in the previous section and determines whether the proposal is likely to have significant effects on a Natura 2000 site.

The likelihood of significant effects to a Natura 2000 site from the project was determined based on a number of indicators including:

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

The likelihood of significant cumulative/in-combination effects is assessed in **Section 4.5.5**.

4.5.1 Water Quality

There are some elements of the proposed works which could potentially result in impairment of water quality, as outlined in **Section 4.4** above. In general, where works are conducted within proximity to water bodies, impairment of water quality may potentially occur as a result of run-off of sediment/fines, accidental fuel/oil spills from machinery/equipment and/or release of uncured cementitious or other such material during the works. These elements of the proposal could therefore potentially result in pollution of the aquatic environment and subsequent adverse impacts to qualifying features within Natura 2000 sites.

The proposed development site is situated on agricultural grasslands and the Figile River is situated ca. 70m east of the proposed substation compound. The grid connection is proposed to cross the Figile River to the east by overhead line. There are a number of drainage ditches along the field boundaries of the agricultural grasslands which drain into this watercourse, providing a hydrological pathway between the subject site, Figile River and eventually, the River Barrow and River Nore SAC (002162). Water quality is a key environmental factor underpinning the conservation condition of the complex of aquatic habitats that support the SCI species for which the River Barrow and River Nore SAC is designated.

Bearing these factors in mind the risk of accidental release of fuel into the watercourse is considered low, however the close proximity of Figile River to the proposed development, which has a hydrological link to the River Barrow and River Nore SAC (002162) could result in potentially significant water quality impacts during the construction phase. Therefore, further assessment is required.

4.5.2 Habitat Loss and Alteration

There is no spatial overlap between the proposed development and any Natura 2000 site; therefore, there will be no direct loss habitats within these sites.

4.5.2.1 Long Derries, Edenderry SAC

Long Derries, Edenderry SAC (000925) is designated for the protection of Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210] which is a terrestrial habitat, this is site is situated upgradient of the proposed development site, therefore no direct or indirect habitat loss or alteration impacts will ensue.

4.5.2.2 River Barrow and River Nore SAC

With regards to the potential for indirect alteration of aquatic or other water dependant habitats through potential water quality impacts arising as a result of the proposal, it has been determined in the previous section (**Section 4.5.1**) that significant water quality impacts cannot be ruled out. Therefore, further assessment is required.

4.5.3 Disturbance and/or Displacement of Species

4.5.3.1 Long Derries, Edenderry SAC

Long Derries, Edenderry SAC (000925) is designated for a terrestrial habitat and not species therefore there will be no species disturbance/displacement as a result of the proposed development within this SAC.

4.5.3.2 River Barrow and River Nore SAC.

Potential ecological impacts identified as a result of the proposal are water quality effects and/or an increase in noise levels/human activity during the construction phase of the project. These aspects of the proposal could result in potential disturbance/displacement impacts to qualifying interest for the River Barrow and River Nore SAC.

Qualifying interest species for this designated Natura 2000 site include:

- Desmoulin's Whorl Snail (*Vertigo moulinsiana*) [1016]

- Freshwater pearl mussel (*Margaritifera margaritifera*) [1029]
- White-clawed crayfish (*Austropotamobius pallipes*) [1092]
- Sea lamprey (*Petromyzon marinus*) [1095]
- Brook lamprey (*Lampetra planeri*) [1096]
- River lamprey (*Lampetra fluviatilis*) [1099]
- Twaite shad (*Alosa fallax fallax*) [1103]
- Atlantic salmon (*Salmo salar*) [1106]
- *Lutra lutra* (Otter) [1355]
- Killarney fern (*Trichomanes speciosum*) [1421]
- Nore pearl mussel (*Margaritifera durrovensis*) [1990]

The Barrow and River Nore SAC is designated for a range of aquatic species. With regards to the potential for indirect disturbance/displacement impacts to these qualifying features it has been determined in the previous section that significant water quality impacts as a result of the proposal cannot be ruled out. Therefore, further assessment for these species is required.

Barrow and River Nore SAC is also designated for Otter. Otters are found in a variety of aquatic habitats in Ireland such as lakes, rivers, streams, estuaries, marshland, and canals and along the coast. Otters have a widespread distribution in Ireland and could potentially use the Figile River which drains to the SAC. With regards to the potential for direct disturbance/displacement impacts to Otter, it is considered there is potential for prey biomass to be affected through negative water quality effects. Therefore, further assessment for this species is required.

The River Barrow and River Nore SAC is designated for Desmoulin's whorl snail. There are two known sites that Desmoulin's whorl snail occurs: Borris Bridge, Co. Carlow and Boston Bridge, Kilnaseer, Co. Laois. There is a significant separation distance between the proposed development site and this Natura 2000 site and in addition the hydrological connection between the proposed works and the species habitat is crude and tenuous. Therefore, it is objectively concluded that significant disturbance/displacement impacts on the Conservation Objectives of Desmoulin's whorl snail within the The Barrow and River Nore SAC are not reasonably foreseeable as a result of the proposed development.

The River Barrow and River Nore SAC is designated for the protection of one species of plant, namely Killarney fern. This species can occur, in its sporophyte form, in "*dripping caves, cliff faces, crevices by waterfalls and cascades, rock crevices in woodlands and very occasionally on the floor of damp woodlands. The gametophyte grows in similar habitats, albeit drier and darker, as it does not appear to require direct contact with water*"[10]. The habitat requirements for this plant are not suitable at the proposed development site. Therefore, it is objectively concluded that significant disturbance/displacement impacts on the Conservation Objectives of Killarney fern within the The Barrow and River Nore SAC are not reasonably foreseeable as a result of the proposed development.

4.5.4 Habitat or Species Fragmentation

Habitat fragmentation has been defined as 'reduction and isolation of patches of natural environment' (Hall *et al*., 1997 cited in Franklin *et al*., 2002) which results in spatial separation of habitat areas which had previously been in a state of greater continuity. Adverse effects of habitat

[10] https://www.npws.ie/sites/default/files/publications/pdf/IWM%2082%20Killarney%20Fern.pdf

fragmentation on species include the increased isolation of populations which can detrimentally impact on the resilience or robustness of the populations.

Due to the nature of the project and location of the proposed development, and the location of habitats protected within nearby designated sites, it is not likely that significant habitat fragmentation impacts will occur as a result of the proposed works for the Kilcumber Bridge 110kV substation. However, the previous sections, described potential impacts which may ensue on species protected within The River Barrow and River Nore SAC due to impacts on water quality, thus fragmentation impacts cannot be ruled out at this stage.

4.5.5 Cumulative/In-combination Impacts

As well as singular effects, the potential for in-combination or cumulative impacts also need to be considered. A cumulative impact arises from incremental changes caused by past, present and proposed projects together with the proposal considered in this document. Relevant plans and projects have been identified in **Section 4.2.6** above.

Pollutants arising from pressures on existing land uses and activities can ultimately contribute to a cumulative impact on Natura 2000 sites. Given the nature of the works, and the location upstream of the River Barrow and River Nore SAC (002162), it is considered that the most likely ecological impacts to potentially arise as a result of the works are water quality effects within the River Barrow and River Nore SAC. Such impacts could interact synergistically with point and non-point sources of pollution in the area.

In light of the above factors, it is concluded that there is potential for significant cumulative/in-combination water quality impacts through interaction between the proposal and other projects/activities as a result of the programme of works described in **Section 4.2.5** above. Therefore, significant cumulative/in-combination impacts to Natura 2000 sites cannot be ruled out and further assessment is required.

4.6 CONCLUSION OF SCREENING STAGE

The Screening for appropriate assessment is undertaken to determine the potential for likely significant effects of the proposed construction of the Kilcumber Bridge 110kV substation, Co. Offaly individually, or in combination with other plans or projects, in view of the conservation objectives of the site on Natura 2000 Sites.

The proposed development is within 15km of two Natura 2000 sites. It has been objectively concluded that the following sites are not likely to be significantly affected by the proposal and can therefore be screened out for appropriate assessment:

- The Long Derries, Edenderry SAC

It cannot be objectively concluded, at this stage, that significant adverse impacts to the following designated Natura 2000 sites, will not occur:

- River Barrow and River Nore SAC (002162)

Therefore, it is necessary to proceed to Appropriate Assessment and as such a Natura Impact Statement is required for this site.

5 REFERENCES

Department of the Environment, Heritage and Local Government (DoEHLG) (2009). *Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities.* Department of Environment, Heritage and Local Government.

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Appendix 1

Stages of Appropriate Assessment

Stage 1 - Screening

This is the first stage of the Appropriate Assessment process and that undertaken to determine the likelihood of significant impacts as a result of a proposed project or plan. It determines 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 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 containing a professional scientific examination of the proposal is required and includes any mitigation measure to avoid, reduce or offset negative impacts.

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.