

East Limerick Substation Development, Hospital, Co. Limerick

Appropriate Assessment Screening

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Abbreviations

AA	Appropriate Assessment
AASR	Appropriate Assessment Screening Report
BOCCI	Birds of Conservation Concern in Ireland
CIEEM	Chartered Institute of Ecology and Environmental Management
DEHLG	Department of Environment, Heritage and Local Government
EC	European Communities
ECJ	European Court of Justice
EPA	Environmental Protection Agency
GIS	Geographic Information Systems
GSi	Geological Survey Ireland
IAQM	Institute of Air Quality Management
INNS	Invasive Non-Native Species
IROPI	Imperative Reasons of Over-riding Public Interest
JBA	JBA Consulting Engineers and Scientists Ltd.
NBDC	National Biodiversity Data Centre
NIS	Natura Impact Statement
NPWS	National Parks and Wildlife Service
OPW	Office of Public Works
QI	Qualifying Interest
RBMP	River Basin Management Plan
SAC	Special Area of Conservation
SCI	Special Conservation Interest
SPA	Special Protection Area
SPR	Source Pathway Receptor
WFD	Water Framework Directive
ZoI	Zone of Influence

Executive Summary

JBA Consulting Engineers and Scientists Ltd. (hereafter JBA) has been commissioned by Harmony Solar East Limerick Ltd to prepare an Appropriate Assessment Screening Report (AASR) for a proposed substation development (hereafter Proposed Substation Development).

The Proposed Substation Development comprises an area of 17.02 ha. The site is located south-west of the village of Hospital and north-west of Knocklong village.

The Proposed Substation Development land is in agricultural use at present. There is an existing agricultural building located within the south-east corner of the parcel, and a derelict shed structure located in the northern area of the parcel. The parcel benefits from existing hedgerows along the field boundaries.

This AASR has been prepared in accordance with European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011), as amended. This report provides information on and assesses the potential in view of best scientific knowledge for the development to have likely significant effects, either individually or in combination with other plans or projects, on any Natura 2000 site. This report assesses at a high level any potential impact, with the precautionary principle applied from the onset.

A suite of surveys was carried out between December 2024 and October 2025, including habitats, birds, mammals, and bats, and the results of these are used to inform this report as well as accompanying ecology reports.

Natura 2000 sites that may be affected using a Source Pathway Receptor (SPR) model were individually assessed and where a pathway between the development and the Natura 2000 site was deemed viable this was further explored. Ex-situ supporting habitat and species were also considered.

The assessment recorded eight Natura 2000 sites within a hypothetical zone of influence, which was reduced to three following further examination as no pathway existed. These are the Lower River Shannon SAC, the River Shannon and River Fergus Estuaries SPA, and Glen Bog SAC. Further examination of the pathways between the Proposed Substation Development site and the Natura 2000 sites concluded that only the Lower River Shannon SAC presented a viable pathway due to a direct, but distant, hydrological connection.

On the basis of the screening exercise, including the use of the precautionary principle, the possibility of any significant impacts on any Natura 2000 sites cannot be excluded. Therefore, a Stage 2 Natura Impact Statement and appropriate mitigation is required.

1 Introduction

1.1 Background

This Appropriate Assessment (AA) Screening has been prepared for proposed works to be carried out for the development of a Proposed Substation to serve a Proposed Solar Farm and all associated works in and around Hospital, Co. Limerick.

The Proposed Substation Development forms part of a wider “Overall Project”. The Overall Project comprises the following components:

- A new 220kV substation development, Battery Energy Storage System (BESS) and associated grid infrastructure (hereafter referred to as the Proposed Substation Development), for which planning consent will be sought from An Coimisiún Pleanála (ACP) as a Strategic Infrastructure Development (SID) under Section 182A of the Planning and Development Act 2000 (as amended).
- A solar farm and associated cable route (the Proposed Solar Farm Development), for which planning consent is sought from Limerick City and County Council under Section 34 of the Planning and Development Act 2000 (as amended). Planning reference **2660888**.

The Proposed Substation Development is not directly connected with, or necessary to the management of any Natura 2000 site. The Proposed Substation Development is in proximity and hydrologically connected to a number of Natura 2000 sites, and therefore, the Proposed Substation Development is subject to the requirements of the AA process. The Screening for AA assesses the potential, in view of best scientific knowledge, for the works to have likely significant effects, either individually or in combination with other plans or projects, on any Natura 2000 site; and shows that likely significant effects have been considered in the project development and design.

JBA has been commissioned by Harmony Solar East Limerick Ltd to prepare this AA Screening, which has been prepared in accordance with European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011), as amended. This report provides information on and assesses the potential in view of best scientific knowledge for the development to have likely significant effects, either individually or in combination with other plans or projects, on any Natura 2000 site.

1.2 Legislative Context

The Habitats Directive (Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora, "Habitats Directive") aims to protect over a thousand species, including mammals, reptiles, amphibians, fish invertebrates, and plants, and 230 characteristic habitat types. The overall objective is to ensure that these species and habitat types are maintained, or restored, to a favourable conservation status within the EU. In

addition to halting the further decline or disappearance of these species and habitats, the Directive aims to allow them to recover and thrive over the long-term.

The Birds Directive (Directive 2009/147/EC of the European Parliament and of the Council on the Conservation of Wild Birds 2009) aims to protect all naturally occurring wild bird species present in the EU and their most important habitats. In addition to halting the decline or disappearance of bird species, the Directive aims to allow bird species to recover and thrive over the long-term. To achieve these aims, EU countries are required to take any necessary measures to maintain or restore bird populations.

The Birds and Habitats Directives form the cornerstones of EU biodiversity policy. They provide a strong legislative framework for all EU countries to protect the most valuable and threatened biodiversity. Together, the two directives have also created the Natura 2000 network.

The requirements of Articles 6(3) and 6(4) of the Habitats Directive have been transposed into Irish legislation by means of, inter alia, the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 / 2011).

Under the Directive a network of sites of nature conservation importance have been identified by each Member State as containing specified habitats or species requiring to be maintained or returned to favourable conservation status. The network consists of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), and also candidate sites, which form the Natura 2000 network.

Article 6(3) of the Habitats Directive requires that, in relation to European designated sites (i.e. SACs and SPAs that form the Natura 2000 network), *"any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives"*.

Therefore, a competent authority can only grant approval for a plan or project after having determined that it will not adversely affect the integrity of any European site, in light of the sites' conservation objectives and best scientific evidence, either alone or in combination with other plans or projects.

In the case of the Overall Project, two competent authorities have been identified, the local authority Limerick City and County Council, who will determine on the solar field aspect of the application, and An Coimisiún Pleanála (ACP) who will determine on the Proposed Substation Development aspect of the application. For the Proposed Substation Development Planning consent will be sought as a Strategic Infrastructure Development (SID) under Section 182A of the Planning and Development Act 2000 (as amended).

1.3 Appropriate Assessment Process

Guidance on the AA process was initially produced by the European Commission in 2002, which was subsequently developed into guidance specifically for Ireland by the Department of Environment, Heritage and Local Government (DEHLG 2009, revised 2010). The Office of the Planning Regulator (OPR) produced a Practice Note in 2021, PN01 - Appropriate Assessment Screening for Development Management (OPR 2021). These guidance documents identify a staged approach to conducting an AA. More recent guidance is contained in Assessment of Plans and Projects in Relation to Natura 2000 Sites – Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive.

1.3.1 Screening for AA

The initial, screening stage of the Appropriate Assessment is to determine:

- whether the proposed plan or project is directly connected with or necessary for the management of the European designated site for nature conservation
- if it is likely to have a significant effect on the European designated site, either individually or in combination with other plans or projects.

For those sites where potential significant effects are identified, either alone or in combination with other plans or projects, further assessment is necessary to determine if the proposals will have an adverse impact on the integrity of a European designated site, in view of the site's conservation objectives (i.e. the process proceeds to Stage 2).

1.3.2 Appropriate Assessment

This stage requires a more in-depth evaluation of the plan or project, and the potential direct and indirect impacts of them on the integrity and interest features of the European designated site(s), alone and in-combination with other plans and projects, taking into account the site's conservation objectives. Where required, mitigation or avoidance measures will be suggested.

The competent authority can only agree to the plan or project after having ascertained that it will not adversely affect the integrity of the site(s) concerned. If this cannot be determined, and where mitigation cannot be achieved, then a derogation from Article 6(3) may be sought in accordance with the provisions of Article 6(4).

1.3.3 Derogation – Procedure under Article 6(4)

Article 6(4) allows for exceptions to the general rule of 6(3). It is up to the authority to decide whether a derogation from Article 6(3) can be applied.

The provisions of Article 6(4) entail three key requirements that must be met and documented:

- Step 1- Identification of alternative solutions
- Step 2- Comparative assessment of the alternatives considered
- Step 3- Examining imperative reasons of overriding public interest (IROPI)

This report is in support of a Stage 1 Screening for Appropriate Assessment.

1.3.4 Court of Justice of the European Union (CJEU) Rulings

The CJEU has been asked to issue rulings on development plans, which are used to inform this assessment.

In the *Sweetman v An Bord Pleanála (C-258/11)* (2013) judgment the CJEU ruled that *authorisation for a plan or project, as referred to in Article 6(3) of the Habitats Directive, may therefore be given only on condition that the competent authorities – once all aspects of the plan or project have been identified which can, by themselves or in combination with other plans or projects, affect the conservation objectives of the site concerned, and in the light of the best scientific knowledge in the field – are certain that the plan or project will not have lasting adverse effects on the integrity of that site. That is so where no reasonable scientific doubt remains as to the absence of such effect.*

The CJEU issued a ruling on the consideration of avoidance and reduction measures as a result of *People over Wind, Peter Sweetman v Coillte Teoranta (C-323/17)* (2018). This judgement stated that:

“...in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site.”

Therefore, measures intended to reduce or avoid effects on a Natura 2000 site should only be considered within the framework of an Appropriate Assessment. In practice, this means that any activities that are not integral to the project (i.e. the project could conceivably take place without them) and have the effect of avoiding or reducing an impact on a European site, cannot be considered at the screening stage.

The decision of the CJEU in case C-721/21 (*Eco Advocacy CLG* 2023), delivered in June 2023, found that Article 6(3) of the Habitats Directive must be interpreted as meaning that:

in order to determine whether it is necessary to carry out an appropriate assessment of the implications of a plan or project for a site, account may be taken of the features of that plan or project which involve the removal of contaminants and which therefore may have the effect of reducing the harmful effects of the plan or project on that site, where those features have been incorporated into that plan or project as standard features, inherent in such a plan or project, irrespective of any effect on the site. (Para. 53(3) of the Judgement). This clarification narrows down features that are standard i.e. will be implemented regardless of ecological features, inherent to the project, i.e. part of the project regardless of ecological concerns, and included irrespective of any Natura 2000 concerns can be considered in the screening stage.

Whilst *People over Wind, Peter Sweetman v Coillte Teoranta (C-323/17)* (2018) remains the rule, the *Eco Advocacy CLG Case (C-721/21)* (2023) judgement clarifies that features which have been incorporated into a project as standard features, inherent in that project, and irrespective of any effect on any European site may be taken into account for the purposes of a Stage 1 Screening for Appropriate Assessment under Article 6(3) of the directive.

The CJEU ruling in *Grace & Sweetman (C-164/17)* (2018) clarified the difference between avoidance and reduction (mitigation) measures and compensation. Measures intended to

compensate for the negative effects of a project cannot be taken into account in the assessment of the implications of a project and instead are considered under Article 6(4). This means that any project where an effect on the integrity of a Natura 2000 site remains and can only be offset by compensation, would need to proceed under Article 6(4), demonstrating “imperative reasons of overriding public interest”.

The CJEU ruling in the case of *Holohan v An Bord Pleanála (C-461/17)* (2018) also clarified the importance in Appropriate Assessment of taking into account habitat types and species outside the boundary of the Natura 2000 site where implications of the impacts on those habitat and species may impact the conservation objectives of the Natura 2000 site. In this assessment functionally linked and supporting habitat for species outside of Natura 2000 sites are assessed where they could potentially impact the conservation objectives of any Natura 2000 sites within the zone of Influence (Zol).

1.4 Methodology

The Screening for Appropriate Assessment has been prepared having regard to the Birds and Habitats Directives, the European Communities (Birds and Natural Habitats) Regulations 2011-15 as amended and relevant jurisprudence of the EU and Irish courts. The following documents have also been used to provide guidance for the assessment:

- DEHLG (2009 rev 2010) Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government (DEHLG 2010);
- Office of the Planning Regulator (2021) OPR Practice Note PN01 - Appropriate Assessment Screening for Development Management (OPR 2021);
- European Communities (EC) (2019) Managing Natura 2000 Sites: the provisions of Article 6 of the ‘Habitats’ Directive 92/43/EEC (European Commission 2019);
- EC (2021/ C 437/01) Commission notice Assessment of plans and projects in relation to Natura 2000 sites – Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive ;
- EC (2022) Guidance document on assessment of plans and projects in relation to Natura 2000 sites - A summary (European Commission 2022);
- EC (2021) Guidance document on the strict protection of species of Community interest under the Habitats Directive ; and
- CIEEM (2024). Guidelines for Ecological Impact Assessment in the UK and Ireland - Terrestrial, Freshwater and Coastal, Second Ed.

This report has been produced using currently available information, with the most up-to-date version available at the time.

1.4.1 Screening Methods

This screening assessment uses the source-pathway-receptor (SPR) model as outlined OPR Practice Note PN01 - Appropriate Assessment Screening for Development Management (OPR 2021). Using the source-pathway-receptor model allows for the potential significant effects to be eliminated if no viable source, pathway, or receptor is present.

The SPR method uses an examination of the construction methods or project description to determine potential sources of impact. This also allows a zone of influence (Zoi) for the project to be generated based on the size, scale and nature of the works involved. The pathways for impact are also analysed to see if a functional pathway for impact is present. This report analyses three pathways: surface water, groundwater and land. Using information gathered from desk sources (e.g. mapped qualifying interests from the Conservation Objectives (CO) for the site) and from field surveys, receptors within the zone of influence are identified. In some cases, sensitive receptors may also play a role in determining the zone of influence. If any of the three parts to the model are not present (source-pathway-receptor) the potential for a likely significant effect from the project on the Natura 2000 network can be discounted.

1.4.2 Likely Significant Effect Test

The test for AA Screening is whether the project could have a 'likely significant effect' on any Natura 2000 site. A likely significant effect is defined as *any effect that could undermine the conservation objectives of a Natura 2000 site, either alone or in combination with other plans or projects*. There must be a causal connection between the project and the qualifying interest of the site which could result in possible significant effects on the site. The likely significant effect test is a lower threshold for the screening assessment than 'adverse effect on site integrity' considered at Appropriate Assessment stage (Stage 2) as screening is intended to be a preliminary examination for potential effects.

The Zone of Influence was used to identify Natura 2000 sites that could be impacted by the project. For each of these sites, the Qualifying Interest (QI) or Special Conservation Interests (SCI) features and their associated conservation objectives were identified, and the possibility of likely significant effect was determined by a combination of location, ecological and hydrological connectivity, sensitivity of receptor and magnitude of the source of impact.

1.4.3 Desktop study

A desktop study was conducted of available published and unpublished information, along with a review of data available on the National Parks and Wildlife Service (NPWS), Botanical Society of Britain and Ireland (BSBI) and National Biodiversity Data Centre (NBDC) web-based databases, in order to identify key habitats and species (including legally protected and species of conservation concern) that may be present within ecologically relevant distances from the project as explained below. A baseline habitat assessment was performed using satellite imagery of the site.

Online data sources provide indicative information on the habitats and species recorded in the area; these records may be incomplete, dated, and rely on citizen science. Absence of records does not necessarily indicate absence of species. The data sources below (accessed August 2026) were consulted for the desktop study:

- Aerial photography available from www.osi.ie and ESRI World Imagery.
- NPWS website (www.npws.ie) where Natura 2000 site synopses, data forms and conservation objectives were obtained along with Annex I habitat distribution data and status reports.
- Catchment data (www.catchments.ie)

- NBDC Biodiversity Maps (maps.biodiversityireland.ie)
- Environmental Protection Agency Maps (<https://gis.epa.ie/EPAMaps>)
- Geological Survey Ireland (GSI) website (www.gsi.ie)
- GSI - Groundwater data viewer (<https://dcenr.maps.arcgis.com>)
- BSBI Plant Records (bsbi.org/maps)
- IFI – Inland Fisheries Ireland open data hub (<https://opendata-ifigeo.hub.arcgis.com/>)

1.4.4 Ecological Site Surveys

To inform this AA a suite of surveys, including breeding bird, wintering bird, mammal, bat and habitat surveys, were carried out between December 2024 and October 2025. The surveys were carried out by Johanna Healy, Mia Heigh, Olly Lynch-Milner, Anne Mullen and Dominic Tilley. The results of the surveys are detailed in the associated EclA with relevant information retained for this screening.

The survey recorded habitats and protected species, following the methods outlined in the documents below:

- Heritage Council (2011). Best Practice Guidance for Habitat Survey and Mapping (Smith et al., 2011).
- Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Developments (NRA, 2009).

Aerial photographs and site maps assisted the survey. Habitats have been named and described following Fossitt (2000). Nomenclature for higher plants follows that given in New Flora of the British Isles 4th Edition (Stace 2019). Identification of Irish plants generally follows Webb's An Irish Flora (Parnell and Curtis 2012). Bird nomenclature and taxonomy follows guidance from the BOU (British Ornithologists' Union 2022) and AviList (AviList Core Team 2025).

1.4.5 In-Combination Effects

In relation to the assessment of potential of in-combination effects, where there is no effect at all via a pathway, there is no possibility of in-combination effects. Where potential likely significant effects are identified, the in-combination assessment is carried forwards to a Stage 2 Appropriate Assessment.

1.5 Competent Persons

The assessment was prepared by Senior Ecologist Dominic Tilley BSc MSc PhD.

The assessment has been reviewed by Anne Mullen BSc MSc. Anne is a Senior Ecologist with JBA Consulting, with over 10 years' experience in ecological consultancy. Anne is a full Member of the Chartered Institute of Ecological and Environmental Management (CIEEM).

1.6 Limitations and Constraints

This AA Screening is based on ecological site surveys and existing data from the above-mentioned sources. The screening assessment necessarily relies on some assumptions and is inevitably subject to some limitations as detailed below. The following points are recorded in order to ensure the basis of the assessment is clear:

- The precautionary principle is utilised when determining potential ecological sensitivities within the proposed projects Zone of Influence (Zol).
- Information on the works and conditions on site are based on the current knowledge at the time of writing. Changes to the site since this report was drafted cannot be accounted for. However, due to the nature of the site and the type land use type, significant changes to the site are not foreseen to happen prior to the start of the project.

- This assessment is based on methodology for proposed works as described in this report. Where changes to methodology occur, an ecologist will need to be consulted to determine if the changes are likely to alter the ecological impacts and would therefore need reassessment.
- Data from biological record centres or online databases is historical information, datasets may be incomplete, inaccurate or missing. The absence of records for an area may be due to the under recording in the area and not necessarily imply the absence of species. These records are therefore to be treated as minimum information available for the area.
- Some of the site surveys were undertaken during suboptimal survey periods. Hence numbers/species recorded may not be representative of activity or diversity during the optimal surveying period. However, the site was visited periodically over a 10-month period allowing for a comprehensive overview of all ecological receptors, in all land parcels.
- Not all fields were accessible at all times as these form part of activate farms with cattle often out grazing; due to repeated visits over a 10-month period, all land parcels were visited, and ecological assessment of the site was carried out.
- Access to Parcel 4 was restricted during the main habitats survey season due to the presence of a bull; however, access was available in the winter and early spring months, as well as in August and September, allowing for site assessment. These repeated site visit throughout the year allowed for a good understanding of the habitats on site. No in-stream surveys were carried out, however no in-stream works are anticipated.

2 Project Description

2.1 Project Location

The site of the Proposed Substation Development is situated in the townlands of Gotoon, Coolscart, and Kilfrush in County Limerick. The Overall Project further extends to the townlands of Ballyhaukish, Millfarm, Coolalough, Ballycahill, Newtown and Knocklong (Figure 2-1).

The Proposed Substation Development is not directly connected with, or necessary to the management of any Natura 2000 site. However, likely significant effects upon the Natura 2000 sites cannot be excluded and therefore the Proposed Substation Development is subject to the requirements of the AA process.

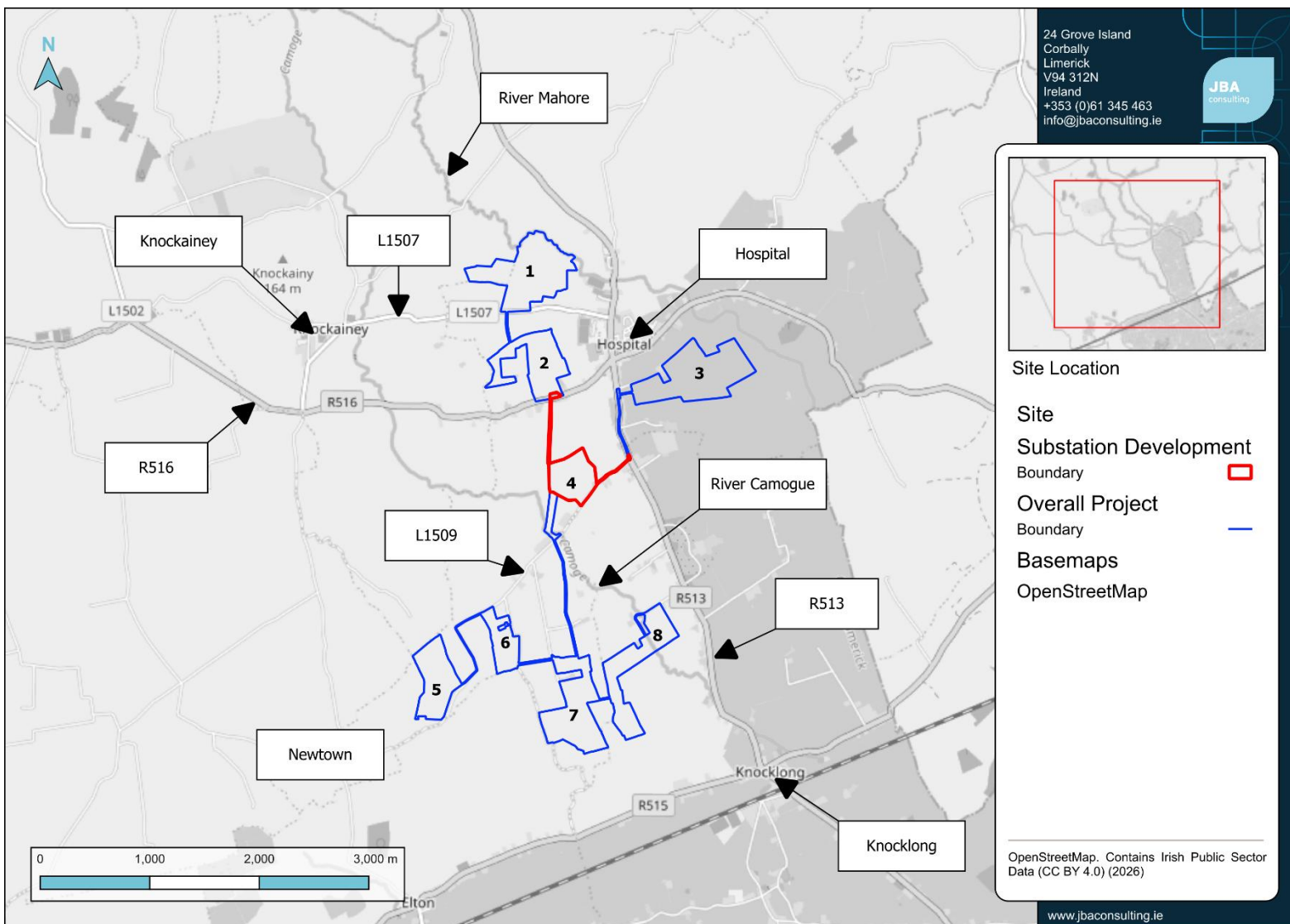


Figure 2-1: Overall Project site location.

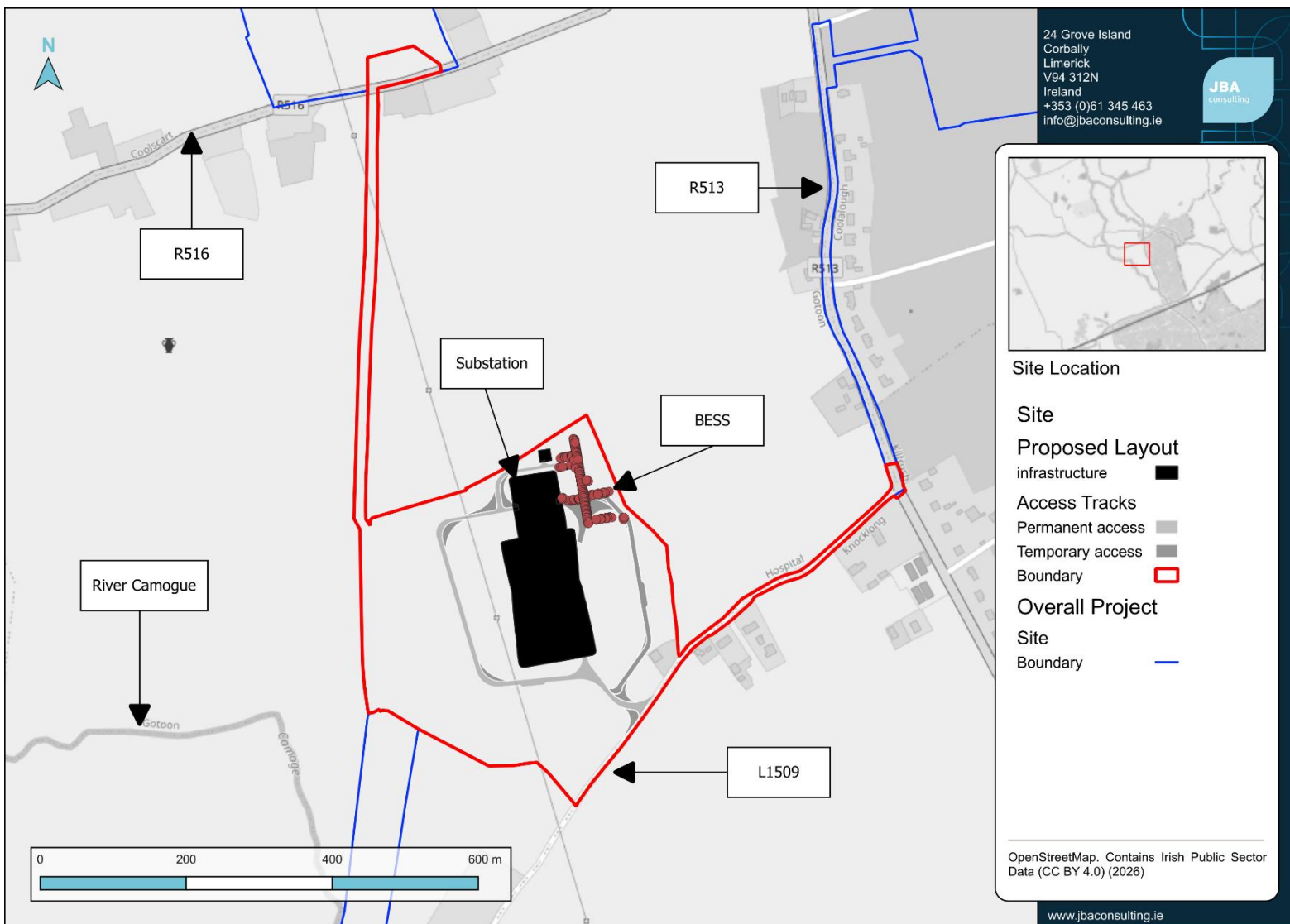


Figure 2-2: Proposed Substation Development.

2.2 Project Description

The site of the Proposed Substation Development is situated in the townlands of Gotoon, Coolscart, and Kilfrush in County Limerick. The Overall Project further extends to the townlands of Ballyhaukish, Millfarm, Coolalough, Ballycahill, Newtown and Knocklong.

The Proposed Substation Development comprises an area of 17.02 ha. The site is located south-west of the village of Hospital and north-west of Knocklong village.

The Proposed Substation Development land is in agricultural use at present. There is an existing agricultural building located within the south-east corner of the parcel, and a derelict shed structure located in the northern area of the parcel. The parcel benefits from existing hedgerows along the field boundaries.

The site lies entirely within the 'Agricultural Lowlands' Landscape Character Area (LCA) as designated within the Limerick Development Plan 2022-2028.

There are no residential dwellings within the red line boundary for the Proposed Substation Development. There are, however, residential properties and farm holdings within the surrounding area, including properties located along the L1509 public road to the south of the site and within the wider rural area between Hospital and Knocklong.

The site associated with the Proposed Substation Development is within four private landownerships. Agreements are in place between the landowners and the Applicant to facilitate the construction and operation of the Proposed Substation Development on these lands. Letters of consent from the landowners have been provided to the Applicant and will be submitted with the SID application.

2.2.1 220kV GIS Substation and Compounds

The Proposed Substation Development will comprise a new 220 kV loop-in/loop-out substation, including a Transmission System Operator (TSO) compound and a Customer compound.

The TSO compound will include a 220kV GIS substation building with a total floor area of 3,550.8m² and a height of 20.7m. It will also include 220kV electrical infrastructure, including switchgear, gantries, insulators, conductors, protection and control equipment, and all associated electrical plant and apparatus required to facilitate the loop-in/loop-out connection to the existing 220kV overhead line.

The Customer compound will include a customer building with a total floor area of 311.8m² and a height of 7.62m, accommodating a switchgear room, SCADA room, office, storeroom, hall, mess room and WC. The Customer compound will include a 220kV customer transformer positioned within a bunded enclosure, with a height of 9.5m above finished ground level, together with associated electrical plant, switchgear, control equipment and cabling.

The compounds will include internal access tracks to the two buildings, areas of gravel and hardstanding, service and maintenance access, drainage infrastructure, security fencing and gates. Parking will also be provided within the compounds. Wastewater from the on-site

washroom and toilet facilities will be collected in a sealed holding tank and periodically removed by a licensed waste management contractor. Potable water will be delivered to the site as required.

Construction details are provided in the Outline Construction Methodology document accompanying this application.

2.2.2 Battery Energy Storage System (BESS)

The Proposed Substation Development will include a Battery Energy Storage System (BESS), providing up to 75 MW / 300 MWh of electricity storage capacity. The BESS will be located within a dedicated BESS compound forming part of the Proposed Substation Development.

The BESS compound will include 55 no. containerised battery storage modules, each measuring 6.06 m long, 2.44 m wide and 2.9 m high. It will also include 28 no. containerised transformer and power conversion / conditioning units, each measuring 6.06 m long, 2.44m wide and 2.9 m high. The BESS units will generally be supported on concrete rails, with localised concrete slabs provided where required.

The BESS compound will include ancillary BESS infrastructure, including inverters, transformers, switchgear, control equipment, thermal management systems, fire detection and suppression systems, acoustic screening, cabling, ducting and associated electrical plant.

Each BESS unit will be equipped with a comprehensive fire detection and mitigation system, including in-cell temperature monitoring, unit-level off-gas detection, and smoke detection to provide early warning of abnormal battery conditions. Active fire suppression systems, such as aerosol or clean-agent suppression, will be included alongside off-gas ventilation and explosion relief measures designed in accordance with relevant NFPA guidance. The selected BESS technology will have undergone testing to UL 9540A or CSA TS800 standards, demonstrating its capability to limit thermal runaway propagation and reduce the potential for fire spread beyond the affected unit. Water is not proposed to be used on site for fire suppression or boundary cooling as the testing completed on the BESS units has shown this not necessary to prevent fire propagation to other units.

2.2.3 Overhead Line and Loop In Loop Out (LILO) Works

A 220 kV overhead line currently traverses the Proposed Substation Development site. To facilitate the Proposed Substation Development, the existing overhead line will be reconfigured to provide a LILO connection to the proposed 220 kV substation.

Two new 220kV steel towers will be fitted onto the existing overhead line. These towers will deviate the overhead line for 52m onto two new steel gantries within the EirGrid TSO compound. Associated cable sealing ends and post insulators will transition the overhead line to two circuits of 220 kV underground cable, which will connect into the proposed 220 kV GIS Substation. There will be three associated power cables within a single circuit, this cable trench will enclose 2 no. communication ducts and a single ECC duct. A communication chamber will be required beside the proposed gantry structures to transition the communications link between the overhead line and the underground cable.

2.2.4 Underground Cabling

From the cable sealing ends at the two new gantries, 69m of 220 kV underground cabling will continue to the proposed 220 kV GIS Substation. Associated infrastructure will include ducting, communications link, marker posts and other ancillary works.

Underground cabling and ducting will also be provided within the Proposed Substation Development site to connect the TSO compound, Customer compound, BESS compound, transformer infrastructure and associated electrical plant.

The Proposed Substation Development will be connected to the Proposed Solar Farm Development by way of underground electrical cabling routed across private lands. This solar farm connection cabling is located within the Red Line Boundary for the Proposed Solar Farm Development and is subject to the separate planning application to Limerick City and County Council.

2.2.5 Lightning Protection

The Proposed Substation Development will include 4 no. lightning protection masts, with a height of 18m. Lightning protection will be provided to protect the substation compounds, BESS compound and associated electrical infrastructure.

2.2.6 Telecommunications Infrastructure

The Proposed Substation Development will include 1 no. telecommunications mast with a height of 37.52m. The telecommunications mast will support the operational, control and communications requirements of the Proposed Substation Development.

2.2.7 Site Access

A new access point will be provided from the L1509 public road to serve the Proposed Substation Development. The access will facilitate construction, operation, maintenance and emergency access to the substation and BESS compounds. Internal access tracks will be constructed within the site to provide access to the TSO compound, Customer compound, BESS compound and other operational areas.

The L1509 will also provide the principal route for delivery of the 220kV customer transformer. Localised widening of the L1509 within the public road boundary will be undertaken where required to accommodate the transformer delivery vehicle, together with localised works at its junction with the R513. Any temporary alterations required to the existing footpath or roadside signage at the junction will be reinstated following completion of the transformer delivery.

A contingency transformer delivery route is also included within the Red Line Boundary, extending northwards across agricultural lands to the R516. This follows the same corridor as the underground cable route associated with the Proposed Solar Farm Development and is included as an alternative delivery option should it be required. No additional hedgerow removal or ground disturbance is anticipated in association with this route, as any necessary works would be undertaken in conjunction with the cable installation. Any works required

solely to facilitate the transformer delivery would be temporary and the affected lands would be reinstated following delivery.

2.2.8 Parking and Maintenance Access

Service and maintenance parking facilities will be provided within the Proposed Substation Development site. The site will not be open to the public and will be accessed only by authorised personnel for operational, maintenance, inspection and emergency purposes.

2.2.9 Lighting

Lighting will be provided within the Proposed Substation Development. Lighting will ordinarily remain switched off and will only be activated when required for operational, maintenance, switching or emergency purposes. Lighting will be manually activated at the entrance gate and is expected to be required only intermittently during the year

2.2.10 Fencing and Security Gate

The Proposed Substation Development will include security gates, boundary fencing and all associated security infrastructure. The TSO compound, Customer compound and BESS compound will be secured by perimeter fencing, including palisade fencing, together with post and rail / stockproof fencing. Provision for mammal gaps will also be included.

2.2.11 Closed-Circuit Television (CCTV)

CCTV cameras will be installed and will be directed internally within the development and will therefore not monitor lands outside of the boundary. The CCTV will operate using passive infra-red technology.

2.2.12 Temporary Construction Compound

The Proposed Substation Development will include a temporary construction compound located within the red line boundary (2,700 m²). Given the confined area and constraints within the Proposed Substation Development site, construction sequencing will need to be considered at the detailed design phase to facilitate the temporary construction compound, the construction of the cable route and the construction of the substation.

The temporary construction compound will include a 'portacabin' site office with employee parking, welfare facilities that comply with Safety, Health and Welfare at Work (Construction) Regulations 2013-Part 14 Construction Site Welfare Facilities (Construction Site Welfare Facilities) and shall be used for storage of all construction materials and machinery. The compound may also include:

- Bunded fuel storage area.
- Potable water supply.
- Contractor lock-up facility.
- Water tanker.
- Diesel generator.

- First aid facilities.

A layer of granular material will be spread and lightly compacted within the temporary construction compound to provide hardstanding for site offices and storage containers. Areas of the compound may be used as vehicle hardstanding.

The temporary construction compound will be removed on completion of the construction phase, and the area will be reinstated to its original condition.

2.2.13 Landscaping and Hedgerows

Existing hedgerows and field boundaries will be retained where possible. Some hedgerow and vegetation removal will be required to facilitate the substation compound which includes site access, internal access tracks, electrical infrastructure, cabling, drainage infrastructure and visibility splays.

Landscaping and biodiversity enhancement measures will be provided as part of the Proposed Substation Development. These measures will include new native hedgerow planting, reinforcement of retained existing field boundaries, grassland enhancement and other biodiversity measures as required.

2.2.14 Removal of Existing Structures

The Proposed Substation Development will include the removal of a derelict farm building within the site. The development will also include the removal of 1 no. existing 25m steel lattice tower and any associated redundant infrastructure required to facilitate the proposed 220kV loop-in/loop-out connection works.

2.2.15 Ancillary Development

The Proposed Substation Development will include all associated and ancillary development, site works and services, including earthworks, localised alterations to the landscape, underground services, ducting, cabling, drainage, signage, lighting, fencing, access infrastructure, landscaping and site reinstatement.

2.2.16 Proposed Solar Farm Development

The Proposed Solar Farm Development is the subject of a separate application to Limerick City and County Council and comprises ground-mounted solar photovoltaic panels and associated infrastructure, including electrical plant, internal access tracks, underground cabling, site access works, and landscaping and biodiversity measures. The Proposed Solar Farm Development lands extend to 210 hectares across eight land parcels in County Limerick.

2.3 Excavation Depths

Different elements of the development will require different specific excavations. Fencing is not expected to require excavations with posts being driven in; Posts around gateways may need some excavations to afford more stability and solidity to the gate.

- Cabling will require excavations and trenching to a depth of approximately 1.25m.
- Mast foundations will require foundations of 3.6m
- Cut and fill will require excavation of approximately 3.1m

2.4 Construction Duration

The planning permission for the construction is to last 10 years, with the operation of the site expected to be 40 years. Construction is expected to last 18 months.

2.5 Drainage

A drainage management plan has been prepared for the Proposed Substation Development. The drainage strategy has been developed in accordance with SuDS principles and the site-specific drainage assessment. It is intended to preserve existing overland flow pathways outside the formal drainage catchment, manage the additional runoff generated by the proposed hardstanding areas and avoid increasing flood risk to downstream or third-party receptors.

The strategy comprises two complementary drainage systems:

- Outside the formal hardstanding drainage catchment, shallow interception trenches, trackside drains, check dams, cross-underdrains and diffusers will maintain the continuity of existing overland flow pathways across the access tracks. These measures will limit localised ponding and prevent the access infrastructure from creating new barriers to flow or concentrating runoff towards adjacent land.
- Within the formal drainage catchment, runoff from the buildings and hardstanding areas will be collected through surface grading, gullies, and vegetated swales. The swales will convey runoff to the proposed attenuation pond, which will operate as a detention basin and discharge at a controlled maximum rate of 5.1 l/s to the receiving watercourse. The pond will provide attenuation storage and a dedicated interception zone for the first 5 mm of rainfall.

2.6 Zone of Influence

The work is primarily anticipated to only impact the footprint of the Proposed Substation Development. However, as watercourses and drainage ditches are located throughout the Proposed Substation Development area, impacts may be carried further afield.

The Zone of Influence (Zoi) is considered using the SPR model (OPR, 2021), therefore only designated sites that are connected to the project site are recorded and assessed. This Zoi uses the precautionary principle, and consequently if there is any doubt, a designated site will be assumed to have a pathway to the project.

The project will primarily affect the site only, but a wider Zoi is used for impacts relating to the following:

- Surface water – any downstream hydrological connections to Natura 2000 site(s).

- Groundwater - determined by the underlying aquifer but generally 5km to 10km.
- Air (disturbance) - noise disturbance to supporting *ex-situ* habitat(s) of QI and/or SCI species within or adjacent to the site (500m) (Cutts et al. 2013).
- Air (emissions and dust) - air pollution (250m) using IAQM guidance (IAQM 2024).
- Land – physical disturbance to supporting *ex-situ* habitat(s) of QI and/or SCI species within or adjacent to the site.

3 Existing Environment

3.1 Baseline Conditions

Site surveys were carried out between December 2024 and October 2025 covering seasonality and a suite of species that may be present. The area of the Proposed Substation Development consists of agricultural lands, with some existing trackways and land tracks, and some agricultural buildings.

3.2 Desktop Review

3.2.1 NBDC

A 2km radius custom polygon was created through NBDC Biodiversity Maps (NBDC 2026) in order to assess which Natura 2000 QI/SCI species were recorded in close proximity to the site within the last ten years. Records older than 10 years were consulted but not presented here to only keep time relevant records.

A total of 253 entries were recorded in the area; this was filtered down to 38 entries after excluding records that are over 10 years old. Of these four records correspond to species covered under EU legislation, wither Annex I EU Birds Directive (Directive 79/409/EEC, hereafter Birds Directive) or Annex II, IV, or V of EU Habitats Directive.

Of note, all bird species are protected under the Wildlife Act, but only birds covered by the EU Birds Directive are considered in this assessment. And Only species covered by the EU Habitats Directive are considered. Species protected under the Wildlife Acts are considered in the ECIA. Two invasive species are also recorded.

Table 3-1: NBDC records.

Species name	Date of last record	Designation
Birds		
Golden Plover <i>Pluvialis apricaria</i>	11/01/2018	Birds Directive >> Annex I
Mammals		
Otter <i>Lutra lutra</i>	11/01/2018	Habitats Directive >> Annex II, IV
Common Pipistrelle <i>Pipistrellus pipistrellus sensu stricto</i>	04/09/2019	Habitats Directive >> Annex IV
Soprano Pipistrelle <i>Pipistrellus pygmaeus</i>	04/09/2019	Habitats Directive >> Annex IV
Invasive species		
Japanese Knotweed <i>Reynoutria japonica</i>	20/05/2018	EU Invasive Alien Species Regulation No. 1143/2014 Regulation S.I. 477/2011 (Ireland) Regulation S.I. 374/2024 (Ireland) High Risk Invasive Species
Giant Hogweed <i>Heracleum</i>	10/01/2018	EU Invasive Alien Species Regulation

Species name	Date of last record	Designation
<i>mantegazzianum</i>		No. 1143/2014 Regulation S.I. 477/2011 (Ireland) Regulation S.I. 374/2024 (Ireland) High Risk Invasive Species

3.2.2 Fishery Records

Inland Fisheries Ireland surveys for the Water Framework Directive Fish Ecological status carried out in 2024 along the Mahore and the Camogue record the presence of six species across different location upstream and downstream (Table 3-2). Brown Trout *Salmo trutta*, , Lamprey Spp. (*Petromyzon spp.* and/or *Lampetra spp.*), Minnow *Phoxinus phoxinus*, Atlantic Salmon *Salmo salar*, Three-spined Stickleback *Gasterosteus aculeatus* and Stone Loach *Barbatula barbatula* (IFI 2025). The Camogue and Mahore rivers flow into the River Maigue providing a hydrological connection between the Overall Project and the Lower River Shannon SAC.

Table 3-2: IFI records.

River	Year	Location	Species	Ecological status
Mahore	2024	Bridge Hospital	Brown trout; Minnow; Stone loach; Three-spined stickleback; Salmon	Good
Mahore	2024	O'Carroll's Bridge	Brown trout; Minnow; Stone loach; Salmon	Good
Camogue	2024	Ballycahill Bridge	Brown trout; Minnow; Stone loach; Three-spined stickleback; Lamprey sp.	Moderate
Camogue	2024	Ballincarroona	Brown trout; Minnow; Stone loach; Three-spined stickleback; Salmon	Moderate

3.3 Habitats

The habitats recorded during the site survey are listed below in Table 3-3 and mapped in Figure 3-1 and Table 3-3. These habitats are described in more detail within the following sub-sections. No habitats that corresponded to Habitats Directive Annex I habitats were recorded on site.

Table 3-3: Habitats recorded during the site visit.

Habitat Type	Fossitt Code	Annex I link?
Improved agricultural grassland	GA1	None
Wet grassland	GS4	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) 6410). Not present in project area.
Dry meadows and grassy verges	GS2	Lowland hay meadows (<i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i>) (6510). Not present in project area.
Treelines	WL2	None
Hedgerows	WL1	None
Drainage ditches	FW4	None
Depositing/lowland rivers	FW2	Water courses of plain to montane levels, with submerged or floating vegetation of the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> (3260)
Buildings and artificial surfaces	BL3	None

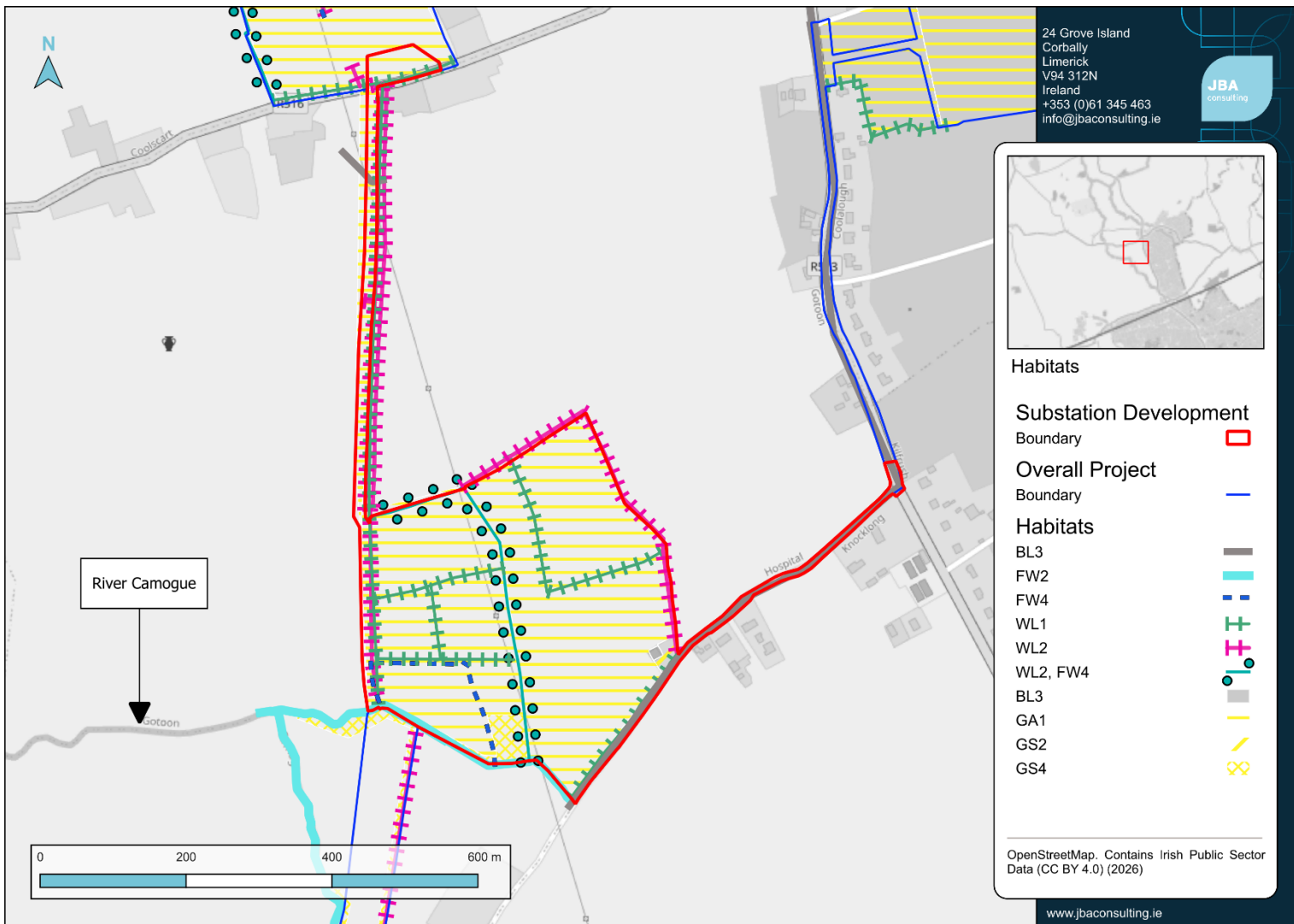


Figure 3-1: Habitats across parcel of the Proposed Substation Development.

3.3.1 Improved Agricultural Grassland (GA1)

This habitat covers approximately 145 000 m² and is split up by hedgerows and drainage ditches. The Proposed Substation Development including access tracks will cover approximately 32 750 m². This grassland is managed and used primarily for cattle grazing. Some areas in the southwest of the land parcel have been drained. Approximately 60 000 m² on the west of the plot are intensively managed, with signs of reseeded. Approximately 80 000 m² on the east of the plot show signs of fewer interventions, with a more species rich sward. The area is however typically dominated by Perennial Rye-grass *Lolium perenne*, with species such as White Clover *Trifolium repens*, Common Mouse-ear Chickweed *Cerastium fontanum*, Meadow Buttercup *Ranunculus acris*, Creeping Buttercup *Ranunculus repens* and Broad-leaved Dock *Rumex obtusifolius*.

3.3.2 Wet Grassland (GS4)

These grasslands are typically found on flat ground that is often waterlogged, typically due to mineral or organic soils that are poorly drained. This habitat was found along the river Camogue, in areas of fields that have been drained covering approximately 3000m². This habitat in this land parcel is heavily modified, and can be considered to be a wet GA1 habitat.

3.3.3 Dry Meadows and Grassy Verges (GS2) and Dry Meadows and Earthen Bank Mosaic (GS2/BL2)

Some small areas of this habitat occur in the southeast corner of the site covering approximately 500m². This habitat is more akin to an unused area of land around agricultural buildings.

Typical species consisted of Cock's-foot *Dactylis glomerata*, Common Bent *Agrostis capillaris*, Yorkshire Fog, False Oat-grass *Arrhenatherum elatius*, Meadow Buttercup *Ranunculus acris*, Ribwort Plantain *Plantago lanceolata*.

3.3.4 Treelines (WL2)

The field boundary around the Proposed Substation Development is dominated by treelines. These are typically overgrown hedgerows that are now dominated by trees. These provide ecological corridors across the landscape.

These are of mixed species including Ash *Fraxinus excelsior*, Pedunculate Oak *Quercus robur*, Sycamore *Acer pseudoplatanus*, Apple *Malus domestica/sylvestris*, Willow *Salix sp*, Hawthorn *Prunus spinosa*, Ivy *Hedera hibernica*, Bramble *Rubus fruticosus agg*, as well as other herbaceous woodland edge species.



Figure 3-2: WL2 Treelines as a field boundary

3.3.5 Hedgerows (WL1)

Hedgerows often formed field boundaries that divided up different fields within land parcel, while treelines commonly denoted the outer edges/boundaries of the farm/landholding. Hedgerows also commonly were used as a boundary between a field and a roadway. By their nature, hedgerows are typically lower in stature to treelines and are not dominated by mature trees but do have some. They are comprised of low to moderate height scrub. In many cases, the hedgerows were also associated with and along drainage ditches (Figure 3-3).

The most common hedgerow species were Hawthorn, Blackthorn, Bramble and Dog Rose *Rosa canina*. The large Hawthorn hedgerow demarcating the northeastern corner of the plot was left unmanaged; it is thin at the base with little to no undergrowth. All other hedgerows were heavily managed cut to a low level.



Figure 3-3: Hedgerows (WL1). Note the accompanying drainage ditch

3.3.6 Drainage Ditches (FW4)

This is a common habitat, running adjacent to the treelines/hedgerows, dividing up the different smaller fields within the overall parcel. They are typically incorporated to assist with removing water from land, especially improved agricultural grasslands. (Figure 3-4).



Figure 3-4: Drainage ditch (FW4). Note the presence standing water backfilling from the river

3.3.7 Depositing / Lowland Rivers (FW2)

These are natural watercourses, unlike the drainage ditches which are manmade. This habitat encompasses river sections that are typically lowland and have reduced velocity that enables deposition of sediments. The Camogue flows along the southwestern aspect of the site (Figure 3-5). This is a tributary of the River Maigue. Rivers in this area are characterised by a mix of exposed substratum of gravels to areas where aquatic river vegetation has developed. The banks of the river were dominated by herbaceous species, with no significant riparian habitat.



Figure 3-5: River Camogue adjacent to the land parcel

3.3.8 Buildings and Other Artificial Surfaces (BL3)

A derelict building is present in the north section of the Proposed Substation Development site. This building has no roof and presents very little opportunities for wildlife. (Figure 3-6).



Figure 3-6: Derelict building on site

3.4 Protected Fauna

During the site visits evidence of protected species on both national and international level was recorded. Evidence includes visual observations, tracks and prints, setts, droppings, trail camera recordings and sound recordings.

3.4.1 Mammals

Protected mammals recorded on the site of the Proposed Substation Development site include Badger *Meles meles*, bats including Common Pipistrelle *Pipistrellus pipistrellus*, Soprano pipistrelle *P. pygmaeus*, Leisler's bat, *Nyctalus leisleri*.

These species are not considered in this AA screening as they are not QIs for a Natura 2000 site in Ireland. All protected mammal species are addressed in the accompanying ECIA.

3.4.2 Birds

The surveys carried out between December 2024, and October 2025 revealed the presence of 54 species, of which 34 (63%) species are Green listed, 13 (24%) species are Amber listed (20%) and 7 (13%) species are red listed.

Wigeon and Cormorant are QI bird species of the River Shannon and River Fergus Estuaries SPA. Little Egret and Kingfisher are annex 1 species.

Table 3-4: Species recorded across the different surveys.

Species	Scientific name	BoCCi4 (Season)	IUCN Red List	Annex Listing
Wigeon	<i>Mareca penelope</i>	Amber (B/W)	LC	QI
Pheasant	<i>Phasianus colchicus</i>	Green (B/W)	LC	--
Woodpigeon	<i>Columba palumbus</i>	Green (B)	LC	--
Snipe	<i>Gallinago gallinago</i>	Red (B/W)	LC	--
Buzzard	<i>Buteo buteo</i>	Green (B)	LC	--
Kestrel	<i>Falco tinnunculus</i>	Red (B)	LC	--
Magpie	<i>Pica pica</i>	Green (B)	LC	--
Jackdaw	<i>Coloeus monedula</i>	Green (B)	LC	--
Rook	<i>Corvus frugilegus</i>	Green (B)	LC	--
Hooded Crow	<i>Corvus cornix</i>	Green (B)	LC	--
Blue Tit	<i>Cyanistes caeruleus</i>	Green (B)	LC	--
Great Tit	<i>Parus major</i>	Green (B)	LC	--
Swallow	<i>Hirundo rustica</i>	Amber (B)	LC	--
House Martin	<i>Delichon urbicum</i>	Amber (B)	LC	--
Long-tailed Tit	<i>Aegithalos caudatus</i>	Green (B)	LC	--
Willow Warbler	<i>Phylloscopus trochilus</i>	Amber (B)	LC	--
Chiffchaff	<i>Phylloscopus collybita</i>	Green (B)	LC	--

Species	Scientific name	BoCCi4 (Season)	IUCN Red List	Annex Listing
Blackcap	<i>Sylvia atricapilla</i>	Green (B)	LC	--
Goldcrest	<i>Regulus regulus</i>	Amber (B)	LC	--
Wren	<i>Troglodytes troglodytes</i>	Green (B)	LC	--
Starling	<i>Sturnus vulgaris</i>	Amber (B)	LC	--
Song Thrush	<i>Turdus philomelos</i>	Green (B)	LC	--
Mistle Thrush	<i>Turdus viscivorus</i>	Green (B)	LC	--
Redwing	<i>Turdus iliacus</i>	Red (W)	NT	--
Blackbird	<i>Turdus merula</i>	Green (B)	LC	--
Fieldfare	<i>Turdus pilaris</i>	Green (W)	LC	--
Robin	<i>Erithacus rubecula</i>	Green (B)	LC	--
Stonechat	<i>Saxicola rubicola</i>	Green (B)	LC	--
House Sparrow	<i>Passer domesticus</i>	Amber (B)	LC	--
Dunnock	<i>Prunella modularis</i>	Green (B)	LC	--
Pied Wagtail	<i>Motacilla alba</i>	Green (B)	LC	--
Meadow Pipit	<i>Anthus pratensis</i>	Red (B)	LC	--
Chaffinch	<i>Fringilla coelebs</i>	Green (B)	LC	--
Bullfinch	<i>Pyrrhula pyrrhula</i>	Green (B)	LC	--
Linnet	<i>Linaria cannabina</i>	Amber (B)	LC	--
Goldfinch	<i>Carduelis carduelis</i>	Green (B)	LC	--

3.4.3 Fisheries

No rivers are present on the site for the Proposed Substation Development, the Camogue flows adjacent to the Proposed Substation Development site. Drainage ditches (FW4) do not present any fisheries potential due to water not being present.

The Camogue (FW2 habitat) presents opportunities for fish species with some unidentified fish recorded in the Camogue along Parcel 4 during the surveys.

IFI survey data recorded Brown trout, Minnow, Stone loach, Three-spined stickleback and Lamprey sp. at Ballycahill Bridge, adjacent to Parcel 4.

Lamprey are present on site, and Salmonids have been recorded upstream and downstream from the site, and therefore there is potential for them to be impacted should water quality be affected.

3.5 Protected Flora on Site

During the site visits, no signs of flora listed on the Flora (Protection) Order 2022 were recorded. Species composition was determined during the habitat surveys with additional observations on each site visit.

3.6 Alien Invasive Species

No Alien Invasive Species (AIS) were recorded on the site of the Proposed Substation Development during site visits.

AIS were recorded within the boundary of the Overall Project; these are detailed in the associated ecological reports.

3.7 Local Waterbodies in the Vicinity of the Site

3.7.1 Surface Waterbodies

The Proposed Substation Development site is located within the DRUMCOMOGE_SC_010, within the Shannon Estuary South Catchment. The Camogue (DRUMCOMOGE_010) runs adjacent to the site, with field drains connecting the land to the watercourse. The Camogue discharges into the Maigue, which in turn flows into the Shannon Estuary.

The Camogue (Drumcomoge_10) river is classified as At Risk and of 'Poor' ecological status (EPA 2026).

Table 3-5: Waterbodies, types, ecological status and risk status based on EPA data.

Denomination	Waterbody	Type	Ecological status 2019-2024	Risk
Camogue	DRUMCOMOGE_010	River Type 31	Poor	At Risk

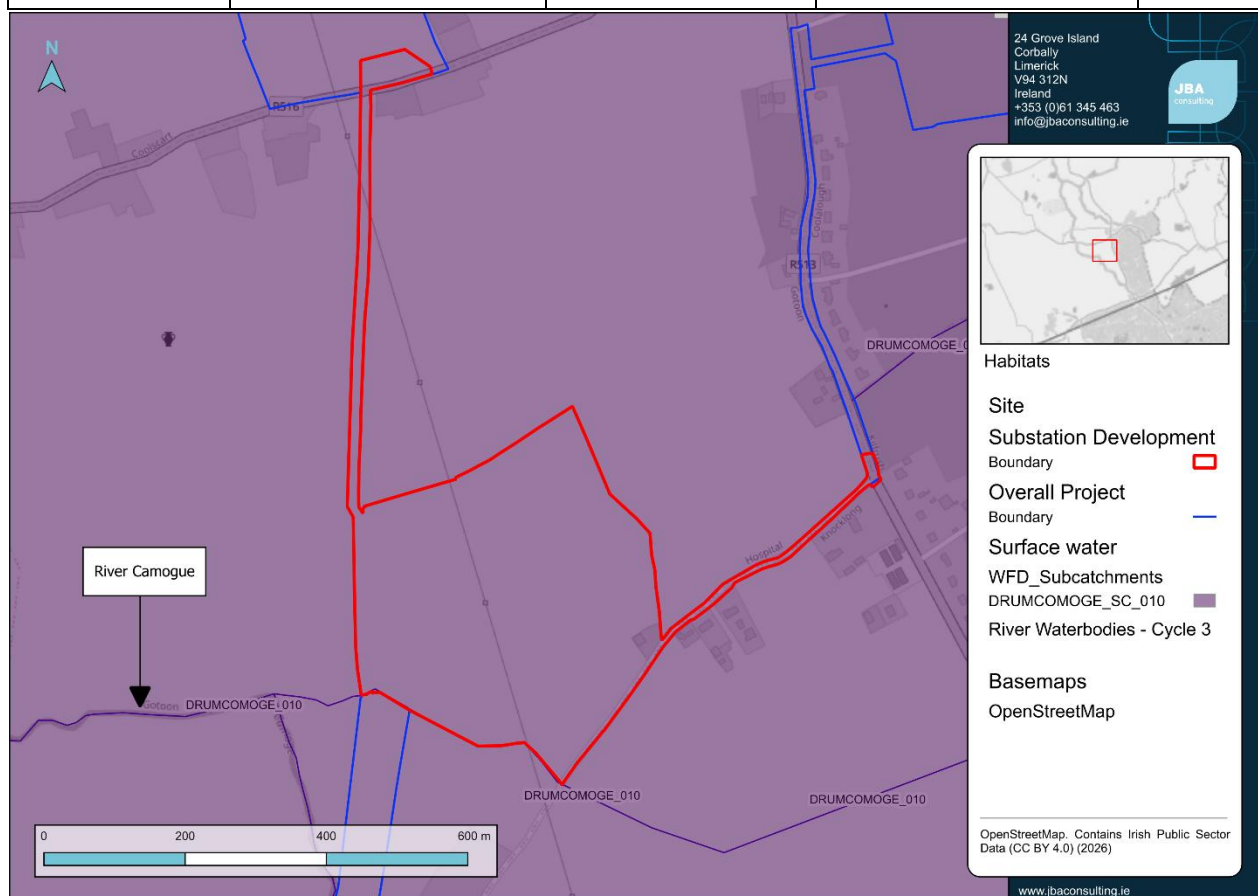


Figure 3-7: Surface water network of the site and the surrounding area.

3.7.2 Groundwater Bodies

The site is located within the Hospital groundwater body (GWB), which is classified as Not At Risk, and of Good ecological status (EPA 2024).

The area is low-lying or gently hilly and is generally poorly drained. • The GWB comprises low transmissivity and low storativity rocks, although localised zones of enhanced permeability do occur. Groundwater flows along fractures, joints and major faults. The aquifers are unconfined. Most groundwater flow occurs near the surface in a narrow zone comprising a weathered zone of a few metres and a connected fractured zone below this. Flow path lengths are relatively short, and in general are between 30 and 300 m. Groundwater discharges to the numerous small streams and rivers crossing the aquifer. Local flow directions are controlled by local topography. Overall, flow directions are east- and westwards to the major rivers. Due to the shallow groundwater flow in this aquifer the groundwater and surface waters are closely linked. This interaction is rapid and seasonal; due to low storage and the local nature of the flow paths, summer baseflows to the rivers are low (GSI 2004).

The spread of the site means that it overlays different aquifers and subsoil types (Table 3-6). The majority of the site overlays a Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones (GSI, n.d.).

Groundwater Vulnerability is high in the northern section of the plot, and moderate in the south section (Figure 3-8).

Table 3-6: Aquifer type and underlying geology across the different parcels.

Aquifer	Description
Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones	Dark muddy limestone, shale

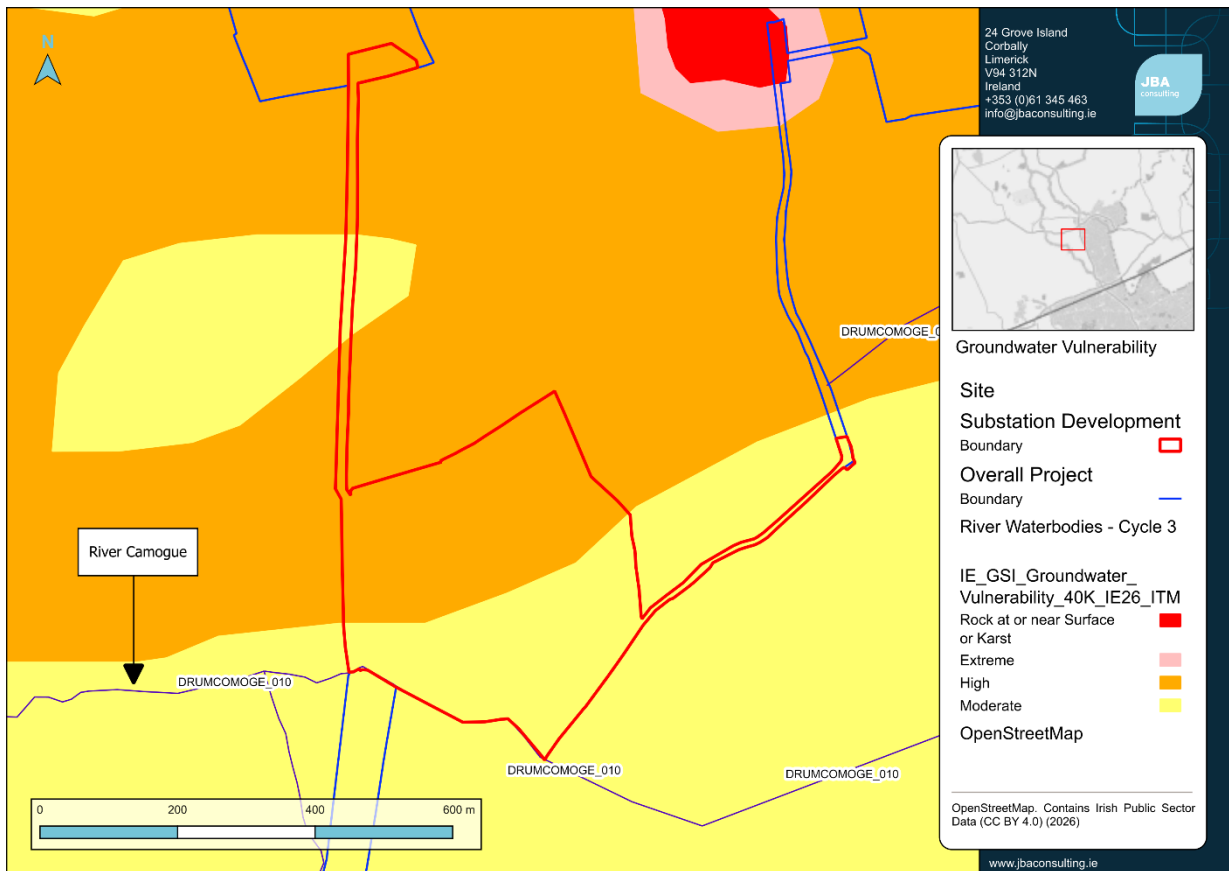


Figure 3-8: Groundwater vulnerability of the proposed site.

4 Natura 2000 Sites

The OPR guidance is to use a SPR model, therefore only directly connected sites will be retained (OPR 2021). Taking this model into consideration, there are a total of eight Natura 2000 sites, that have been identified as being present within the Zol.

These European Natura 2000 sites are shown in Table 4-1 and mapped in Figure 4-1 below. The Natura 2000 site descriptions, QIs/ SCIs, respective project-relevant threats/pressures for the sites and Conservation Objectives are also discussed. Distance between the site of the Proposed Substation Development and the designated sites is shortest direct route.

Table 4-1: Natura 2000 sites within the Proposed Substation Development's Zol.

Natura 2000 site	Site Code	Approximate distance from site	Hydrological distance from site
Glen Bog SAC	IE0002047	4km	Shared GWB
Tory Hill SAC	IE0000439	17km	Shared Catchment, but no hydrological connection.
Barrigone SAC	IE0000439	42km	Shared Catchment, but no hydrological connection.
Askeaton Fen Complex SAC	IE0002279	34km	Shared Catchment, but no hydrological connection.
Curraghchase Woods SAC	IE0000174	31km	Shared Catchment, but no hydrological connection.
Lower River Shannon SAC	IE0002165	42km	Surface water connection; Shared Catchment
River Shannon and River Fergus Estuaries SPA	IE0004077	38km	Surface water connection; Shared Catchment
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA	IE0004161	43km	Shared Catchment, but no hydrological connection.

Tory Hill SAC, Askeaton Fen Complex SAC, Barrigone SAC, Curraghchase Woods SAC all share the same catchment as the Proposed Substation Development. However, there is no hydrological connection through surface waters or groundwater, and these sites are physically separated from the Proposed Substation Development. Therefore, there is no realistic viable pathway between the Designated Sites and the Proposed Substation, thus it is unlikely for there to be a significant effect of the development on these SACs. Tory Hill SAC, Askeaton Fen Complex SAC, Barrigone SAC, Curraghchase Woods SAC are all screened out.

Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA is designated for Hen Harrier *Circus cyaneus*. Hen Harrier is a ground nesting bird that tend to breed on moorland and young forestry plantation. During the breeding season, they tend to forage of

similar types of habitats. Whilst in the winter, they occur in coastal and lowland areas and may forage in agricultural grasslands. The Proposed Substation Development site is dominated by agricultural grassland, with some hedgerows, and does not present any suitable breeding habitat for Hen Harrier. Whilst the grassland may be used during winter months for foraging, no evidence of Hen Harrier was recorded during any of the site surveys. The Proposed Substation Development site is unlikely to host Hen Harrier. Furthermore, there is no hydrological connection between the Proposed Substation Development site and the SPA, and therefore, Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA is unlikely to be significantly impacted by the Proposed Substation Development. Therefore, Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA is screened out.

Glen Bog SAC does not have a direct surface water hydrological connection but shares the same groundwater body as the Proposed Substation Development site. The hydrological connection needs further investigation and therefore Glen Bog SAC is brought forward for further examination.

The Proposed Substation Development site is adjacent to the Camogue (Drumcomogue), which ultimately discharges into the Shannon Estuary. The Proposed Substation Development site is therefore hydrologically – albeit at a distance of approximately 42km – connected to the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA.

Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA are therefore brought forward for further examination.

4.1 Glen Bog SAC 001430

Glen Bog comprises a wet woodland occupying the site of a former lake, as well as the summit and southern side of Knockderc, a low hill rising to 143 m. Knockderc is composed of an igneous intrusive porphyritic rock while the rest of the site is underlain by Lower Carboniferous limestone. Peregrine Falcon, an Annex I species of the E.U. Birds Directive, forage within the site (NPWS 2016).

Glen Bog is a site of considerable conservation importance because it includes a fine example of mature and relatively undisturbed wet woodland, a habitat that is listed with priority status on Annex I of the E.U. Habitats Directive.

The site is designated for:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0]

The site faces pressures from human induced changes in hydraulic conditions and shooting (BISE, n.d.).

For the designated habitat occurring in the SAC, the Conservation Objectives are to maintain their favourable conservation condition. This is defined by habitat area, distribution and physical characteristics, with stable or increasing areas. Full description is provided in the Conservation Objectives documentation (NPWS 2017).

4.2 Lower River Shannon SAC 002165

This very large site stretches along the Shannon valley from Killaloe in Co. Clare to Loop Head/ Kerry Head, a distance of some 120 km. The site thus encompasses the Shannon, Feale, Mulkear and Fergus estuaries, the freshwater lower reaches of the River Shannon, the freshwater stretches of much of the Feale and Mulkear catchments and the marine area between Loop Head and Kerry Head. This site is of great ecological interest as it contains a high number of habitats and species listed on Annexes I and II of the Habitats Directive, including the priority habitats lagoon and alluvial woodland, the only known resident population of Bottle-nosed Dolphin in Ireland and all three Irish lamprey species. A good number of Red Data Book species are also present, perhaps most notably the thriving populations of Triangular Club-rush. A number of species listed on Annex I of the E.U. Birds Directive are also present, either wintering or breeding. Indeed, the Shannon and Fergus Estuaries form the largest estuarine complex in Ireland and support more wintering wildfowl and waders than any other site in the country. Most of the estuarine part of the site has been designated a Special Protection Area (SPA), under the Birds Directive, primarily to protect the large numbers of migratory birds present in winter (NPWS 2013).

The site is designated for:

- Sandbanks which are slightly covered by sea water all the time [1110]
- Estuaries [1130]
- Mudflats and sandflats not covered by seawater at low tide [1140]
- Coastal lagoons [1150]
- Large shallow inlets and bays [1160]
- Reefs [1170]
- Perennial vegetation of stony banks [1220]
- Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]
- *Salicornia* and other annuals colonising mud and sand [1310]
- Atlantic salt meadows *Glaucopuccinellietalia maritimae* [1330]
- Mediterranean salt meadows *Juncetalia maritimi* [1410]
- Water courses of plain to montane levels with *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation [3260]
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils *Molinion caeruleae* [6410]
- Alluvial forests with Black Alder *Alnus glutinosa* and European Ash *Fraxinus excelsior* *Alno-Padion*, *Alnion incanae*, *Salicion albae* [91E0]
- Freshwater Pearl Mussel *Margaritifera margaritifera* [1029]
- Sea Lamprey *Petromyzon marinus* [1095]
- Brook Lamprey *Lampetra planeri* [1096]
- River Lamprey *Lampetra fluviatilis* [1099]
- Salmon *Salmo salar* [1106]
- Common Bottlenose Dolphin *Tursiops truncatus* [1349]
- Otter *Lutra lutra* [1355]

The site is under pressure from air pollution, air-borne pollutants, discharges, eutrophication (natural), fertilisation, grazing, polderisation, reclamation of land from sea, estuary or marsh,

urbanised areas, human habitation, hand cutting of peat, hunting, invasive non-native species, management of aquatic and bank vegetation for drainage purposes, marine and freshwater aquaculture, nautical sports paths, tracks, cycling tracks, removal of beach materials, sea defence or coast protection works, tidal barrages, silviculture, forestry.

For each of the designated habitats occurring in the SAC, the Conservation Objectives are to maintain their favourable conservation condition. This is defined by habitat area, distribution and physical characteristics, with stable or increasing areas. For each of the designated species occurring in the SAC, the Conservation Objectives are to maintain their favourable conservation condition. This is broadly defined by long term increasing population trends. Full description is provided in the Conservation Objectives documentation (NPWS 2012a).

4.3 River Shannon and River Fergus Estuaries SPA 004077

The estuaries of the River Shannon and River Fergus form the largest estuarine complex in Ireland. The site comprises the entire estuarine habitat from Limerick City westwards as far as Doonaha in Co. Clare and Dooneen Point in Co. Kerry. The site has vast expanses of intertidal flats which contain a diverse macroinvertebrate community, e.g. *Macoma*-*Scrobicularia*-*Nereis*, which provides a rich food resource for the wintering birds. Salt marsh vegetation frequently fringes the mudflats and this provides important high tide roost areas for the wintering birds. Elsewhere in the site the shoreline comprises stony or shingle beaches (NPWS 2015).

The site is designated for:

- Cormorant *Phalacrocorax carbo* [A017]
- Whooper Swan *Cygnus cygnus* [A038]
- Light-bellied Brent Goose *Branta bernicla hrota* [A046]
- Shelduck *Tadorna tadorna* [A048]
- Teal *Anas crecca* [A052]
- Pintail *Anas acuta* [A054]
- Scaup *Aythya marila* [A062]
- Ringed Plover *Charadrius hiaticula* [A137]
- Golden Plover *Pluvialis apricaria* [A140]
- Grey Plover *Pluvialis squatarola* [A141]
- Lapwing *Vanellus vanellus* [A142]
- Knot *Calidris canutus* [A143]
- Dunlin *Calidris alpina* [A149]
- Black-tailed Godwit *Limosa limosa* [A156]
- Bar-tailed Godwit *Limosa lapponica* [A157]
- Curlew *Numenius arquata* [A160]
- Redshank *Tringa totanus* [A162]
- Greenshank *Tringa nebularia* [A164]
- Black-headed Gull *Chroicocephalus ridibundus* [A179]
- Wigeon *Mareca penelope* [A855]

- Shoveler *Spatula clypeata* [A857]
- Wetland and Waterbirds [A999]

The site is under pressure from discharges, fertilisation, industrial or commercial areas, urbanised areas, human habitation, marine and freshwater aquaculture, nautical sports, shipping lanes.

For each of the designated bird species occurring in the SPA, the Conservation Objectives are to maintain their favourable conservation condition. This is defined by long term increasing population trends, and no significant decrease in range timing or intensity of use of the area. Furthermore, the objectives are to maintain the favourable conservation condition of the wetland [A999] habitat as a resource for the regularly occurring migratory waterbirds that utilise it. This is to be achieved by a stable area of habitat of no less than 32,261 hectares. Full details are presented in the Conservation Objectives documentation (NPWS 2012b).

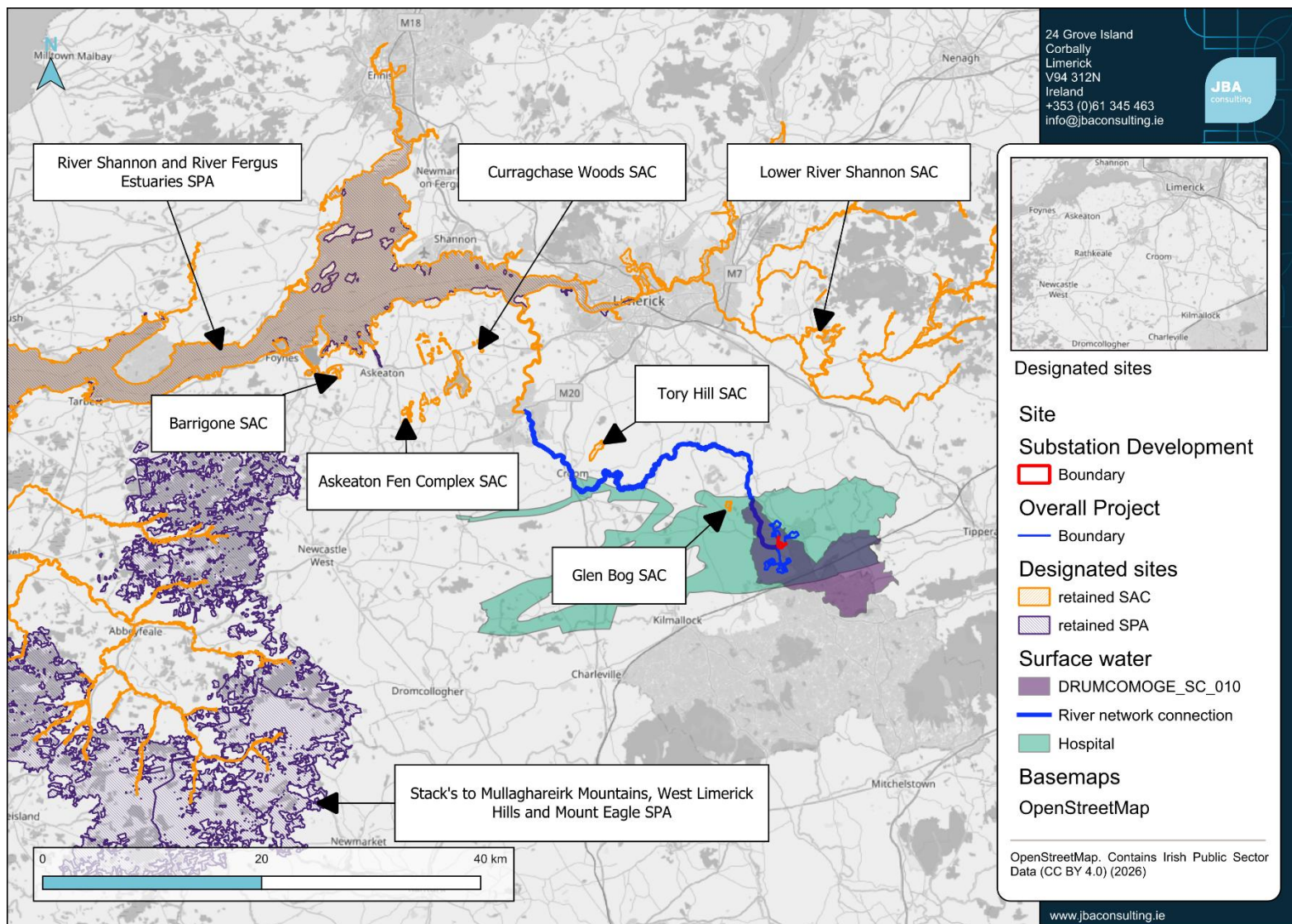


Figure 4-1: Natura 2000 sites in relation to the Overall Project and Proposed Substation Development.

5 Other Relevant Plans and Projects

5.1 Cumulative and Combined Effects

Cumulative effects are the combined impacts on ecosystems, habitats, species, or ecological processes that result from the incremental effects of a proposed project or activity, when added to other past, present, or reasonably foreseeable future actions. These effects may be the sum of individual impacts; their interactions or a combination leading to outcomes that are greater, more persistent, or more widespread than anticipated.

The Proposed Substation Development is not a project that will have operational discharge such as those operated under EPA Licence; there are no anticipated discharges of substances listed under the specific pollutants or Schedule 6 priority substances and certain other pollutants of the Surface Water Regulations (European Communities Environmental Objectives (Surface Waters) Regulations 2009). No discharges of any substance such as those which bioaccumulation are reasonably foreseeable. No operational discharges are anticipated from the project; runoff rates from the site once the Proposed Substation Development is completed are not anticipated to adversely affect existing surface water drainage patterns (see associated Drainage Management Plan), therefore once the Proposed Substation Development is past the construction stage, the risk to the integrity of downstream habitats is negligible.

The lack of operation discharges allows the ZOI for cumulative impacts to be kept to a discrete size, rather than examining all projects downstream.

The impacts from the Proposed Substation Development will be spatially and temporally localised with impacts likely to affect ex-situ habitats and species within the footprint of the Proposed Substation Development, and not within any SAC. This is due to the hydrological distance of 42km providing separation between the Proposed Substation Development and the SAC.

Therefore, restricting a 2km buffer around the Proposed Substation Development site for other projects which could result in discharges to the river is considered proportionate to the Proposed Substation Development.

The following projects or plans were identified as potential sources of cumulative impacts:

- Limerick Development Plan 2022-2028
- Limerick Biodiversity Action Plan 2025-2030
- River Basin Management Plan 2022-2027
- Climate Action Plan 2025
- Climate Action and Low Carbon Development Act 2015
- Other projects granted planning permission in the vicinity of the site

5.2 Plans

5.2.1 Limerick Development Plan 2022-2028

The Limerick Development Plan 2022–2028 sets out a six-year strategy for the sustainable development of Limerick City and County. The plan puts emphasis on compact growth, integrated land use and transport planning, and climate action to support a transition to a low-carbon economy. The plan seeks to accommodate significant population and housing growth, with projections for an additional 56,000 people in the city and suburbs by 2040.

The plan focuses on economic development, sustainable communities, and climate actions. This includes reducing carbon emissions, improving energy efficiency, and promoting renewable energy sources.

Policy EH P1 - Protection of Natural Heritage and Biodiversity - is a policy of the Council to:

a) Protect and conserve Limerick's natural heritage and biodiversity, in particular, areas designated as part of the European Sites Natura 2000 network, such as Special Protection Areas (SPAs) and Special Areas of Conservation (SACs), in accordance with relevant EU Directives and national legislation and guidelines. b) Maintain the conservation value of all Natural Heritage Areas and proposed Natural Heritage Areas (pNHAs) for the benefit of existing and future generations.

Whilst the plan promotes development and growth, it does so keeping focus on sustainability and the protection of natural heritage and biodiversity. In doing so development carried out within the framework of the Limerick Development Plan will necessarily have to comply with policy EH P1, and mitigate where necessary against any potential effect on Natura 2000 sites. The size, scale and location of the Proposed Substation Development make it unlikely for there to be in-combination effects with developments carried out under the Limerick Development Plan.

5.2.2 Limerick Biodiversity Action Plan 2025-2030

The Limerick Biodiversity Action Plan 2025-2030 sets out a five-year framework for urgent conservation, restoration, and community engagement, focusing on halting biodiversity loss and promoting ecosystem services across the region. It aims to create a Limerick where biodiversity thrives, with all sectors and stakeholders collaborating to restore, protect, and enhance nature. The plan is designed in a way that actions are aligned with national and international requirements and compliant with legislation. Actions designed to protect and enhance biodiversity by for example restoring habitats, or removing invasive species may have unforeseen consequences on Natura 2000 sites. However, these actions would unlikely be at such a scale that they would have significant effects on the Natura 2000 network, but they are likely to be more localised.

The LBAP 2025-2030 itself was determined in the AA Screening to not likely have a significant effect on any European sites in Limerick (Fehily Timoney & co 2024). Therefore, the size and scale of any action carried out under this plan, is not anticipated to have negative effects on Natura 2000 sites. As such, they are not expected to act in combination with the Proposed Substation Development due to the spatio-temporal separation and scale of the works.

Hence, this plan is not anticipated to have in-combination or cumulative effects with the Proposed Substation Development.

5.2.3 River Basin Management Plan 2022-2027

The River Basin Management Plan (RBMP) for Ireland 2022-2027 sets out the actions that Ireland will take to improve water quality and achieve 'good' ecological status in water bodies (rivers, lakes, estuaries and coastal waters) by 2027 (DoHLGH 2022).

The WFD RBMP plans aimed to identify catchment measures to safeguard waters and meet the following environmental objectives of the WFD:

- Prevent deterioration of water body status
- Restore good status to water bodies
- Achieve protected areas objectives
- Reduce chemical pollution of water bodies

Although Ireland is not on target to meet the objectives of the WFD, the River Basin Management Plan for Ireland 2022-2027.

Actions to meet WFD objectives are not anticipated to have significant negatives effects on watercourses and dependent organisms and ecosystems. Furthermore, these actions are necessary for ecological restoration.

The RBMP is not anticipated to act in-combination with the Proposed Substation Development due to the size, scale, location and types of activity involved.

5.2.4 Climate Action Plan 2025

The Climate Action Plan 2025 (CAP25) is the latest update to Ireland's Climate Action Plan under the Climate Action and Low Carbon Development (Amendment) Act 2021.

The Plan sets out the steps required to meet the national climate objective of pursuing and achieving, by no later than the end of the year 2050, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy. It aligns with the legally binding economy-wide carbon budgets and sectoral emissions ceilings that were agreed by Government in July 2022.

CAP 25 was determined not likely to have significant effect on specific Natura 2000 sites, either individually or in combination with other plans or projects, and that an AA is not required (Whitlow 2024).

The Proposed Substation Development is a project that contributes to the objectives of the CAP 25. The Proposed Substation Development may act in-combination with other similar projects (e.g. renewable energy) located within the retained ZOI.

5.2.5 Climate Action and Low Carbon Development Act 2015

The Climate Action and Low Carbon Development Act 2015 establishes Ireland's first statutory framework for transitioning to a low-carbon, climate-resilient economy by 2050. It sets out a national transition objective and requires the government to prepare recurring national mitigation, and adaptation plans to guide emissions reduction and climate-impact preparedness across key sectors. The Act also creates the independent Climate Change Advisory Council to provide expert analysis and monitor progress. While the legislation marks a foundational step in formalising Ireland's climate governance, it originally lacked

binding emissions targets or enforceable pathways, prompting later strengthening through subsequent amendments.

The Proposed Substation Development will help support the targets set out under the Climate Action legislation. The Proposed Substation Development may act in-combination with other similar projects (e.g. renewable energy) located within the retained ZOI.

5.3 Local Authority Planning Applications

A search of planning applications was carried out on 19/08/2026. The search was carried out on the National Planning Application website (Tailte Éireann 2026). The online filter tools were used to select only planning applications submitted to Limerick City and County Council (i.e. excluding all application made to the other local authorities), and only applications received after 01/01/2020. A broad area covering lands surrounding the Proposed Substation Development site and leading to the River Shannon was selected, and the filtered data downloaded in shapefile format. This resulted in 2370 planning applications.

A 1km buffer along the watercourse connection from the Proposed Substation Development to the Lower River Shannon SAC was applied, and all planning applications within this buffer were retained for further investigation. This is because these applications are the most likely to have an effect on watercourses connected to the SAC, and therefore, they could potentially act in combination with the Proposed Substation Development. This resulted in 189 applications. The retained planning applications were further filtered to exclude all planning applications that had been refused (with no appeal) or withdrawn. 145 planning application granted conditional permission or outline permission are retained (Figure 5-1).

Due to the size and scale of the Proposed Substation Development, the 2km ZOI is applied around the Proposed Substation Development site itself. This results in 18 planning applications; for these to act in-combination, they need to be connected to the watercourses that interact with the Proposed Substation Development, these planning application were visually checked for direct watercourse connections as these are the most likely to provide a viable pathway (Figure 5-2 and Table 5-1).

5.4 Proposed Solar Farm

The 'Overall Project' has been considered throughout this Planning Application.

The Proposed Solar Farm forms an integral component of the Overall Project and has been assessed, insofar as reasonably practicable, using the best available information regarding its location, scale, function, design principles and likely environmental characteristics. Relevant assessments supporting this application have considered the potential environmental effects of the Overall Project as a whole.

The Proposed Solar Farm is subject to planning consent sought from Limerick City and County Council under Section 34 of the Planning and Development Act 2000 (as amended).

5.5 Strategic Infrastructure Development (SID)

5.5.1 Renewable Energy Applications/Appeals Lodged by Month

An Coimisiún Pleanála website was searched (August 2026) for Renewable Energy Applications/Appeals Lodged by Month with summary statics available for applications from January 2025. A total of 91 applications were recorded including solar farms and wind farms. Of these, four applications were in County Limerick, in Ballynisky, Garrane, and Ballinlee. Two applications apply to the same site, Garrane.

Summary statics are also available for decisions made with one application for a solar farm in Rathkeale approved in March 2025, and one application in Garrane for a wind farm deemed incomplete.

5.5.2 Map search

Strategic Infrastructure Development (SID) planning applications submitted to ACP were manually checked (ACP 2026); This website does not have Application Programming Interface (API), and therefore data cannot be automatically extracted and downloaded. Therefore, preliminary processing was carried out using tools built into the website. The website filtering tools were used to retain planning applications in County Limerick, that were submitted as part of an SID application. This led to eight SID planning applications being retained (Table 5-2). Of these eight applications (Figure 5-3) one is within a Zol of the Proposed Substation Development and therefore retained for potential cumulative effects. This is application 323780 (highlighted in Table 5-2) for Ballinlee Wind Farm consisting of 17 no. wind turbines, a permanent 110kV substation and ancillary development. All other applications were beyond the Zol and will not act in combination with the Proposed Substation Development.

The other applications are not within the ZOI of the Proposed Substation Development and are at such distance that they are not likely to have any cumulative effects with this proposed application.

5.6 Summary

The Proposed Solar Farm aspect of the Overall Project, and the Proposed Wind Farm Development (application 323780) may act in-combination with the Proposed Substation Development.

Table 5-1 Retained Planning Applications

Application	Development	Location
2110	construction of an entrance, a single storey dwelling house, installation of a waste water treatment system and all associated site works	Kilfrush , Knocklong , Co. Limerick
20380	the construction of a dwelling, domestic garage, ste entrance, install effluent treatment system including all associated site development works	Millfarm , Hospital , Co. Limerick
20460	the construction of extensions to the sides & rear of existing dwelling house to include rooms at first floor level, alterations to elevations including porch, new replacement domestic waste water treatment system with polishing filter together with all	Knockainey West , Knockainey , Co. Limerick
20788	the construction of an equine feeding shed, adjoining exercise yard, a haybarn and all associated site works within the curtilage of a Protected Structure, Country House B40(19)	Knockainey West , Hospital , Co. Limerick
21262	a dwelling, entrance, garage, boundary walls, installation of septic tank or polishing filter and all associated site works	Knockainey West , Hospital , Co. Limerick.
22262	the demolition of existing dwelling house and for the construction of a replacement dwelling house, septic tank and percolation area, entrance and all ancillary site works	Gortacloona , Knockainey , Co. Limerick
22318	a 2-storey dwelling house, garage, advanced treatment system, tertiary filter, a new entrance and all associated site works	Kilfrush , Knocklong , Co. Limerick
201157	the construction of a shared entrance, dwelling house, garage, domestic waste water treatment system with polishing filter together with all associated site works	Ballycahill , Knocklong , Co. Limerick
201158	the construction of a shared entrance, dwelling house, garage, domestic waste water treatment system with polishing filter together with all associated site works	Ballycahill , Knocklong , Co. Limerick
201197	construction of an extension to existing cubicle house, new dungstead and ancillary site works	Rathanny , Hospital , Co. Limerick
201229	construction of a dwelling, garage, site entrance, install on-site effluent treatment system including all associated site development works	Bottomstown , Knockainey , Co. Limerick

Application	Development	Location
211534	the construction of an entrance, dwelling house, garage, septic tank & percolation area together with all associated site works	Rathanny , Hospital , Co. Limerick
211667	construction of a vehicular entrance, dwelling house, domestic waste water treatment system with polishing filter together with all associated site works	Gortacloona , Knockainey , Co. Limerick
221142	cattle underpass, effluent tank and all associated concrete works	Knockainey West , Hospital , Co. Limerick
2460885	the construction of a Cattle handling facility and Manure pit with underground Concrete tank and all Associated works and Retention permission for a Loose house including 3 stables	Gorteenacreeagh , Knockainey , Hospital
2561282	the development will comprise retention of existing domestic garage with carport and associated site works	Knockainey West , Hospital , Co. Limerick
2561347	the construction of a dwelling house, waste water treatment system and percolation area, entrance and all ancillary site works	Kilfrush , Knocklong , Co. Limerick
2660364	the construction of a dwelling house, waste water treatment system and percolation area, entrance and all ancillary site works	Knockainey West , Hospital , Co. Limerick

Table 5-2 Strategic Infrastructure Development Applications

Reference	Description	Location	Decision
323635	9 no. wind turbines, grid connection and all associated site works	located in the townlands of Garrane, Ballynagoul, Creggane and Charleville, Co. Limerick.	Case is due to be decided by 07/10/2026
323780	10 year planning permission for Ballinlee Wind Farm consisting of 17 no. wind turbines, a permanent 110kV substation and ancillary development	located in Ballincurra, Ballingayrour, Ballinlee North & South, Ballinrea, Ballyreesode, Camas North & South, Carrigeen, Knockuregare, Ballybane and other townlands in County Limerick.	Case is due to be decided by 03/11/2026
324164	A renewable energy development including 14 wind turbines, 110kV underground cabling connection, and all associated infrastructure and works	in the townlands of Carrow, Moheragh, Gortaderry, Co. Tipperary; Toomaline Lower, Toomaline Upper, Doon South, Lisgaugh, Cooga Upper, Coolyhenan, Milltown and Killonan, Co. Limerick.	Case is due to be decided by 29/04/2027
323893	Proposed construction of a new 110 kV substation	Located on Roches Avenue, Raheen Business Park, Limerick, County Limerick	Approve with Conditions 28/05/2026
318302	Expansion of the Bauxite Disposal Area, extension to the existing Salt Cake Disposal Cell and extension of the permitted borrow pit at Aughinish Alumina Limited	In the townlands of Aughinish East, Aughinish West, Island Mac Teige, Glenbane West, and Fawnamore at or adjacent to Aughinish Island, Askeaton, Co. Limerick	Grant Perm. w Conditions 31/03/2025
316168	Proposed upgrade of the existing Castletroy Wastewater Treatment Plant	Dromore, Castletroy, County Limerick	Grant Perm. w Conditions 12/10/2023
313816	A new 110kV substation to feed into the existing Aughinish - Kilpaddoge 110kV overhead line situated within lands at Ballinknockane and Ellaha, Co. Limerick	Townlands of Ballinknockane and Ellaha, Co. Limerick	Approve with Conditions 09/03/2023
301561	Port capacity extension to consist of modifications to the existing jetties and quays, phased expansion of the port estate and all associated site development works	Port of Foynes, in the townlands of Corrig and Durnish, Foynes, Co. Limerick	Grant Perm. w Conditions 21/12/2018

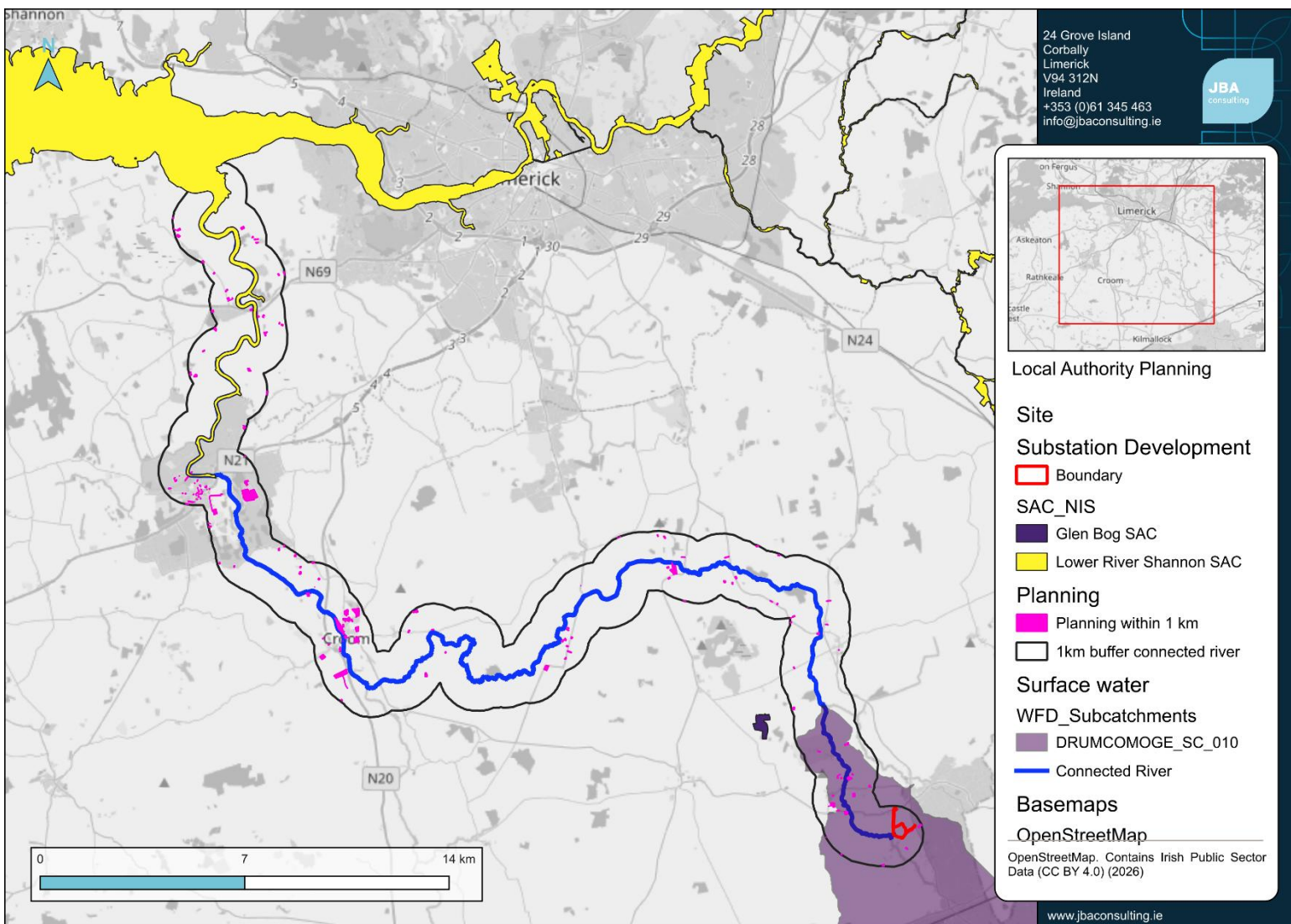


Figure 5-1 Extent of the planning applications in relation to the Proposed Substation Development

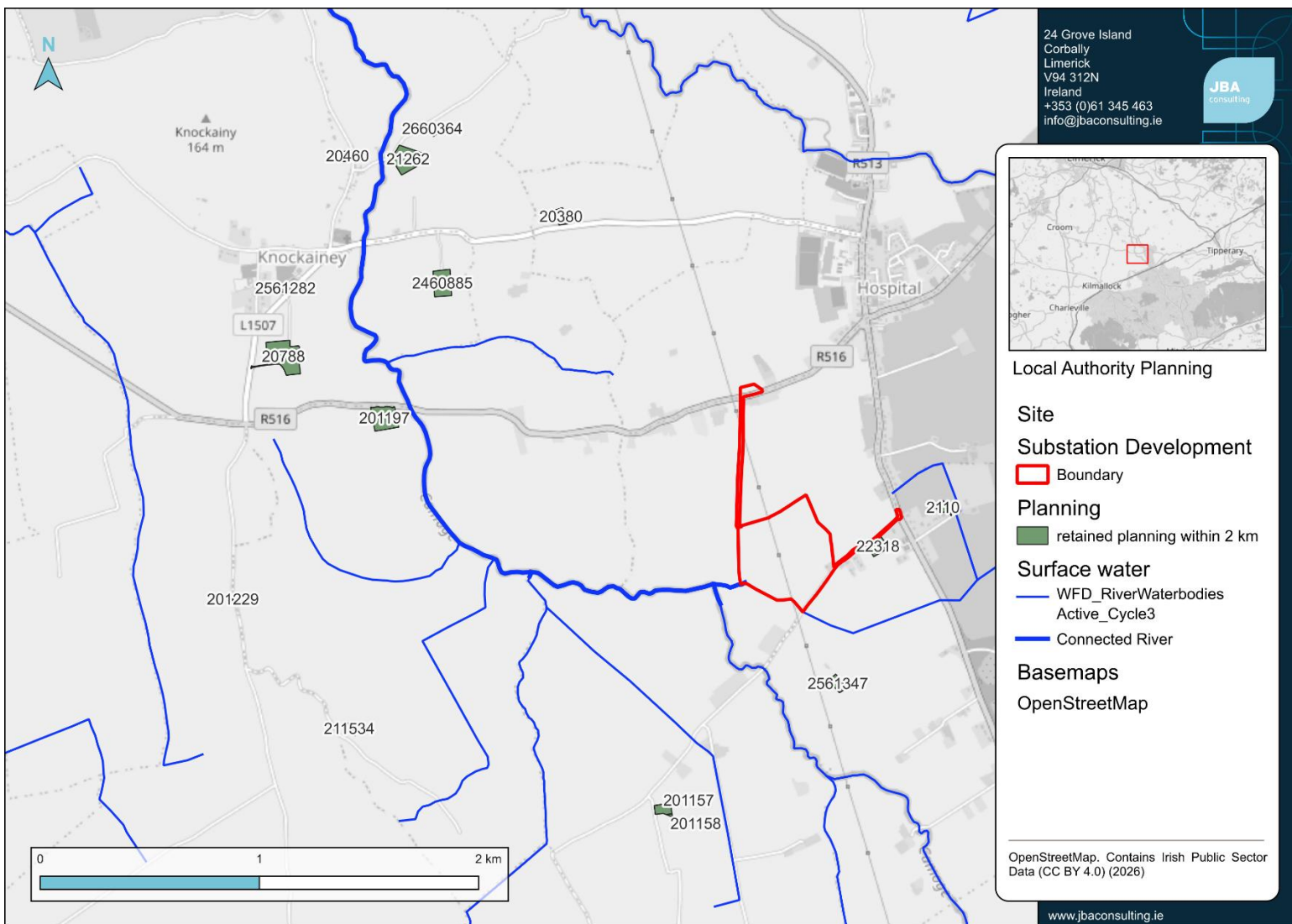


Figure 5-2: Retained planning applications that may act in combination with the Proposed Substation Development

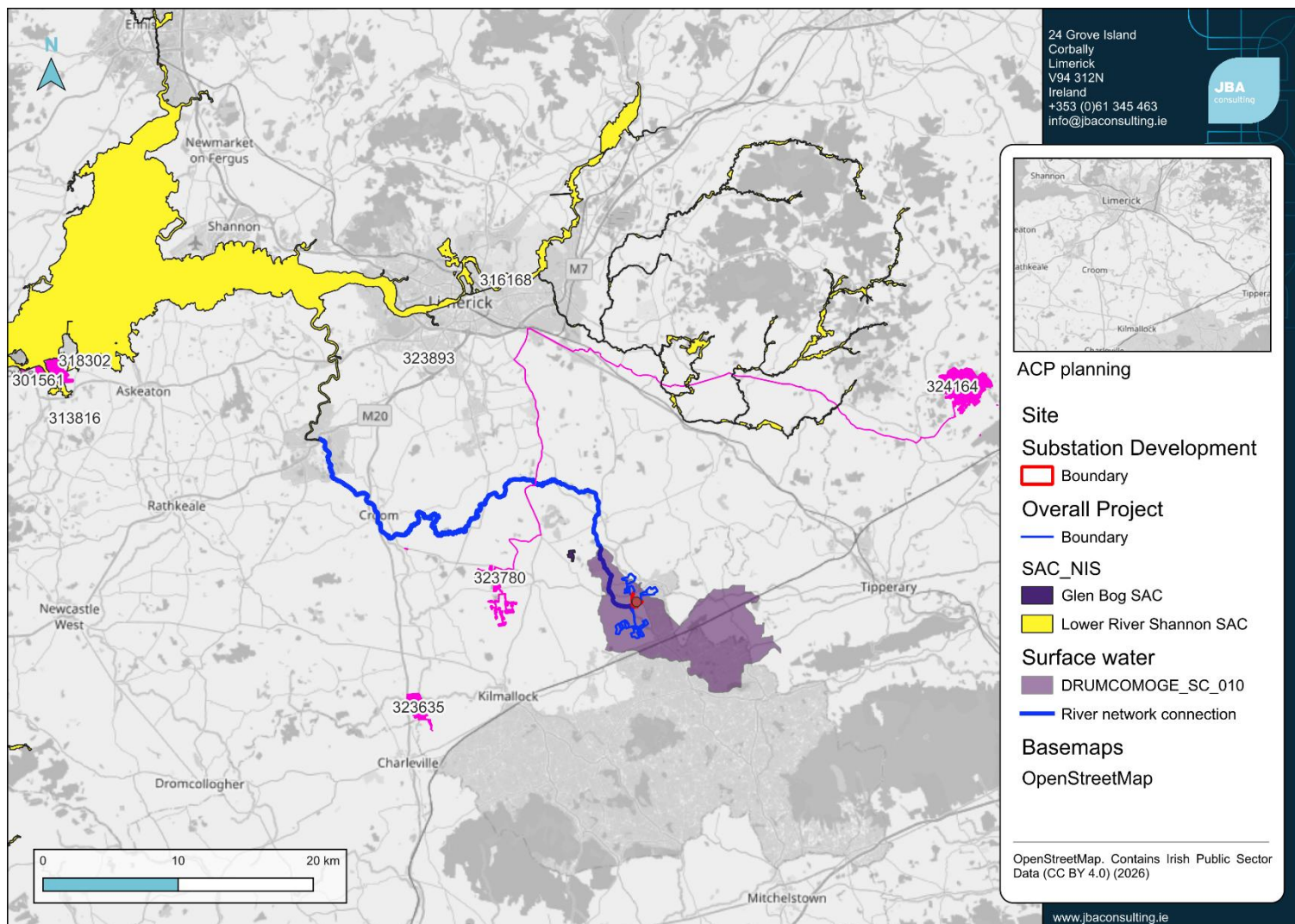


Figure 5-3: Planning application submitted to ACP.

6 Screening Assessment

6.1 Introduction

This section identifies the potential likely significant effects which may arise as result of the Proposed Substation Development. It then goes on to identify how these impacts could potentially impact on the Natura 2000 sites. The significance of likely effects is also assessed, with any potential in-combination effects also identified.

The Natura 2000 sites to be assessed are:

- Glen Bog SAC
- Lower River Shannon SAC
- River Shannon and River Fergus Estuaries SPA

6.2 Assessment Criteria

6.2.1 Individual Elements of the Project Likely to Give Rise to Impacts on the Natura 2000 Sites

Adverse impacts that have the potential to cause a significant effect on the QIs / SCIs of Glen Bog SAC, Lower River Shannon SAC, and River Shannon and River Fergus Estuaries SPA, during the construction and operational phases of the project, could negatively impact the sites via the surface water pathways, groundwater pathways, land and air pathways. Surface water pathways can impact on surface water quality and surface water dependent habitats and species. Groundwater pathways can impact on groundwater quality and quality of groundwater dependent habitats and species. Land and air pathways can impact by direct physical disturbance of in-situ or *ex-situ* habitats and dust or other air-based emissions. The following elements are those which have been identified as having the potential to effect sensitive receptors – this list is not intended to be exhaustive at this stage in the AA process, and individual sources of potential impacts also identified within Sections 6.2.3, 6.2.4, 6.2.5 and 6.2.6.

Excavation works: potential for release of dust and sediment through creation of bare earth, potential for groundwater strike and groundwater contamination.

Cabling works: some potential for impacts through excavations releasing sediment, causing entrapments for Otter, and water pollution through release to surface waters and groundwater strike.

Noise and vibration: disturbance through excavation and construction works.

Release of contaminant to ground or surface water: Accidental release of pollutants such as fuel or cementitious products. Works in the vicinity of watercourses have the potential for release of contaminants entering the surface water system.

Habitat fragmentation: habitat loss and change in habitat configuration leading to the loss of protected habitats or supporting habitats / and or species. Installation of infrastructure may

cause changes in microhabitats and affect plant and species composition. Installation of permanent structures may cause the permanent loss of habitats.

Infrastructure: aerial masts and power lines may result in collision risks for birds.

BESS: storage of materials and fire risk.

6.2.2 Receptors

Lower River Shannon SAC QIs include a suite of coastal, marine and estuarine habitats, including Sandbanks which are slightly covered by sea water all the time [1110], Estuaries [1130], Mudflats and sandflats not covered by seawater at low tide [1140], Coastal lagoons [1150], Large shallow inlets and bays [1160], Reefs [1170]. These habitats are highly dynamic due to the marine influence and tidal conditions; they are not found on site. Following the most direct hydrological pathway, the closest point of the Proposed Substation Development site is approximately 52km away from the closest point of the estuary, with the Camogue having varying river flows of between 0.2m³/s and more than 20 m³/s – with 50th percentile of 1.5 m³/s – as recorded at Grays Bridge (OPW 2026); the river flow fluctuations are seasonal with summer flows lower than winter flows under normal conditions. the daily water flow at Loop Head in the Shannon estuary is approximately 300m³/s. The distance and dilution factors are such that these habitats cannot be significantly impacted by the development and are not considered further.

Perennial vegetation of stony banks [1220], Vegetated sea cliffs of the Atlantic and Baltic coasts [1230], Salicornia and other annuals colonising mud and sand [1310], Atlantic salt meadows (*Glaucopuccinellietalia maritima*) [1330], Mediterranean salt meadows (*Juncetalia maritimi*) [1410] could be impacted by direct physical disturbance and or through impacts on surface water. However, these habitats are over 40km away from the Proposed Substation Development site, with no suitable *ex-situ* habitats. Therefore, direct physical disturbance will not occur. Furthermore, the length of the hydrological pathway means that any pollutant that enters the waters at the development site will be diluted before it reaches the SAC. These habitats cannot be affected by the Proposed Substation Development and are not considered any further.

Freshwater Pearl Mussel (FWPM) are found in the Cloon River (Co. Clare), that flows into the Shannon estuary on its right bank. An inland development on the opposite bank of the estuary cannot have any effect on this species. FWPM are therefore screened out of further consideration.

Lamprey species and Salmon are recorded in the river Maigue, downstream from the site, which connects to the Lower River Shannon SAC. These fish are sensitive to water quality and therefore any pollutant entering the waterways may result in detrimental effects to these fish species. These species are retained for further assessment.

Otter [1355] use waterways of a range of sizes including drainage ditches, stream, rivers, estuaries and nearshore marine environment. No evidence of Otter using the river Camogue was recorded, however Otter are recorded in NBDC records and within the footprint of the Overall Project. Otter is a QI species of the Lower River Shannon SAC, and an Annex IV species. Therefore, protection measures are necessary, including protection against

deliberate disturbance, killing, and damage to breeding or resting sites. This species is retained for further assessment.

Common Bottlenose Dolphin [1349] have a near-global distribution and are widely distributed in the North Atlantic; the Shannon estuary population is resident, and generically distinct from other populations (Mirimin et al. 2011) and therefore impacts to individuals of this population may have wide ranging effects. However, due to the 52 km distance following the hydrological pathway between the Proposed Substation Development and the estuarine waters, and the fact that the river habitat connecting the estuary to the Proposed Substation Development is not suitable for Dolphin direct physical effects will not occur; indirect effect such as loss of foraging opportunities due to impacts on fish are will not impact on individual dolphins or the population. Dolphins are therefore screened out.

Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation [3260] encompasses stretches of the river Mague which is directly connected to the development. Impacts to water quality may indirectly impact QI habitats and species. This habitat is retained for further assessment.

Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0] are dependent on flood regime and a groundwater dependent ecosystem. The Proposed Substation Development is not anticipated to impact on downstream flood regimes as there are no instream works, and there are no anticipated barriers to surface water flows. This habitat does not occur on the site of the Proposed Substation Development. The Proposed Substation Development site sits in a different groundwater body to the Lower River Shannon SAC.

This QI is the main feature of the Glen Bog SAC, which shares the groundwater body with the development site. This SAC is 3.8km away at the nearest point. Glen Bog SAC is not connected to the Proposed Substation Development through surface water pathways and is at distance from the Proposed Substation Development. This SAC requires further assessment.

Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinia caerulea*) [6410] typically develops on nutrient-poor, damp soils, which occur along the margins of lakes and rivers which experience periodic flooding during the winter months. The development is unlikely to affect overall river flows or naturally occurring flooding regimes. This habitat was not recorded on site during the surveys. This habitat is not considered for further assessment.

The different QI bird species of the River Fergus and River Shannon Estuaries SPA have differing habitat requirements both for breeding and wintering. These bird species tend to be long lived and therefore impacts may have long lasting effects on populations. The site presents some habitats that may be used by QI birds including watercourses and grasslands; however, these are widespread habitats. Importantly, few QI bird species were recorded during the site visit, and no evidence of widespread use by QI birds was noted. An existing powerline cuts across the site. The area is not a known migratory route for large birds (e.g. Swan) that could collide with the powerline. The change in design from existing layout of one lattice tower to two towers, will not significantly alter the current conditions of the site.

Whilst the grasslands could support Brent Geese or Whooper Swans no evidence of them using the site was recorded. Shoveler, Wigeon, Pintail, Teal, Scaup require aquatic habitats

with lakes, ponds and watercourses that have wetland vegetation to provide shelter and foraging opportunities. The aquatic habitats present on site tend not to present the required characteristics for these species making it unlikely for them to be found on site. Furthermore, winter bird surveys, and the subsequent site visits did not record these QI birds or when present these were in numbers not meeting All-Ireland threshold (Burke et al. 2018) numbers of these QI birds. Local known wintering bird sites (Lough Gur) do not host nationally or internationally significant numbers -i.e. not meeting threshold numbers - of wintering birds. Therefore, these species are unlikely to be affected by the development and are not considered any further.

Shelduck, Bar-tailed Godwit, Knot, Dunlin, Redshank, Greenshank, Grey Plover, Ringed Plover are likely to be found in estuarine and coastal habitats. None of these habitats are present on site. Winter bird surveys, and the subsequent site visits did not find significant numbers of these QI birds. Local known wintering bird sites (Lough Gur) do not host nationally or internationally significant numbers of wintering birds (I-WeBS 2024). Due to the distance of at least 50km between the site and the preferred habitat and the lack of ecological features of interest for these birds, these species are unlikely to be affected by the development and are not considered any further.

Lapwing, Golden Plover, Curlew, Black-tailed Godwit Grey Plover, may be found in agricultural grasslands either breeding or wintering or both. No evidence of use of the site either in the winter or in the summer was recorded. Due to the absence of optimal foraging and or breeding habitat and breeding these species are not considered any further.

Black-headed Gull may use the site for foraging but no evidence of use of the site either in winter or summer was recorded. Furthermore, there are no large waterbodies providing adequate breeding habitat for this species. This species is unlikely to be affected by the development and is not considered any further.

Cormorant may forage along the river, however this particular stretch is generally narrow and offers little suitability for these birds. This species is unlikely to be affected by the development and is not considered any further.

Wetlands [A999] *ex-situ* habitats are not present on site; the watercourses do not hold swathes of wetland habitat that may host significant numbers of QI birds. The distance between the site and the River Shannon and River Fergus Estuaries SPA make it unlikely for these habitats to be affected by the Proposed Substation Development. These habitats are not considered any further.

Therefore, the retained QIs assessed for potential impacts from the development are:

- Lower River Shannon SAC:
 - Water courses of plain to montane levels with the *Ranunculus fluitans* and *Callitriche-Batrachium* vegetation [3260]
 - Sea Lamprey *Petromyzon marinus* [1095]
 - Brook Lamprey *Lampetra planeri* [1096]
 - River Lamprey *Lampetra fluviatilis* [1099]
 - Salmon *Salmo salar* [1106]
 - Otter *Lutra lutra* [1355]
- Glen Bog SAC:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0]

6.2.3 Surface Water Pathways

The Camogue runs at the southwest of the Proposed Substation Development site. Field drains are connected to this river. This watercourse flows into the Maigue which is part of the Lower River Shannon SAC. Despite the distance between the development site and the Maigue river, due to the direct surface water connection impact on retained QIs cannot be excluded without mitigation.

Construction

Site compounds: the site compounds are expected to be temporary in nature and not require any excavations. However, canteen and welfare facilities will be necessary. Wastewater from these is due to be collected by a licensed contractor.

Access tracks: the access tracks will lead to stripping of the surface soil exposing bare soil. Material used for the construction of the tracks may lead to dust generation, and alteration of water chemistry if unsuitable materials are used for the area.

Cabling: cabling will require excavations causing exposure of bare soil, leading to potential sediment runoff and contamination of surface waters.

Machinery refuelling and maintenance: Due to the size and scale of the development machinery will need to be refuelled on site, and maintenance operations may be necessary. This leads to a risk of hydrocarbon pollution of surface waters.

Foundations: excavations may lead to groundwater strikes, and sediment runoff.

Site levelling: cut and fill will lead to exposed bare grounds creating a risk of runoff and groundwater strike.

Pylon Removal and new installations: removal will lead to the creation of large amount of waste material that will need to be removed from site. Groundworks may lead to groundwater pollution and surface water contamination through runoff.

Operational

On completion of the project construction, the main western access tracks will be retained, whilst the temporary eastern track will be removed. Therefore, there is a risk of water runoff from the tracks to open drains. However, these tracks are only expected to be used infrequently (typically once per month). Material used to construct the access tracks may cause long term leachate that may affect local water chemical properties.

On the basis of the source-pathway-receptor analysis above, the possibility of likely significant effects on Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation [3260], Sea Lamprey *Petromyzon marinus* [1095], Brook Lamprey *Lampetra planeri* [1096], River Lamprey *Lampetra fluviatilis* [1099], Salmon *Salmo salar* [1106], Otter *Lutra lutra* [1355] of the Lower River Shannon SAC cannot be excluded. The matter is accordingly carried forward for further assessment at Stage 2.

6.2.4 Groundwater Pathways

Construction

Over the extent of the Proposed Substation Development site, excavations will be required and the risk of groundwater strike cannot be excluded. Groundwater vulnerability varies across the Proposed Substation Development and there is some potential for contamination of groundwater through pollutants such as hydrocarbons and cementitious materials. Groundwater contamination would likely lead to discharge into the surface waters.

Operational

The main operational impact of this project on the groundwater would be the potential permanent impact on the storage and movement of water in the groundwater aquifer, depending on excavation depth and the height of the groundwater table. The replacement of the current natural habitats with hard surfaces can sometimes create an impervious barrier that may prevent groundwater recharge at this location. However, the track design and grass buffers either side of the tracks and hardstanding areas, along with porous material usage, will lead to minimal disruption to the groundwater recharge or flows. An attenuation pond is proposed to allow for all runoff water to filter back into the environment. Additionally, no groundwater abstraction is anticipated, and so no operational impacts are anticipated.

On the basis of the source-pathway-receptor analysis above, the possibility of likely significant effects on Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation [3260], Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0], Sea Lamprey *Petromyzon marinus* [1095], Brook Lamprey *Lampetra planeri* [1096], River Lamprey *Lampetra fluviatilis* [1099], Salmon *Salmo salar* [1106], Otter *Lutra lutra* [1355] of the Lower River Shannon SAC cannot be excluded. The matter is accordingly carried forward for further assessment at Stage 2.

6.2.5 Land Impact Pathways

The loss or degradation of supporting habitats within and outside the identified Natura 2000 sites via direct land-based impacts (e.g., physical habitat disturbance and/or loss) could have potential adverse impacts on a number of the QIs/SCIs associated with these Natura 2000 sites.

The Camogue River present suitable river habitat and associated riverbanks for Otter, and Lamprey species, and Salmon. Therefore, there is *ex-situ* habitat that may support the QIs of the Lower River Shannon SAC. The site is overall not suitable for the QI birds of the nearby SPA, and unlikely to support any significant number of QI birds.

By design no works are planned to occur in-stream; in-line with EH O18 requirement of the county development plan, a 20m buffer along the Camogue will be maintained at all times. This is an inherent project design feature.

The proposed works and operations associated with the Proposed Substation Development will not physically disturb, degrade or remove the QI / SCI supporting habitats within the Natura 2000 sites due to the distance from the Proposed Substation Development to the

Natura 2000 sites within the ZOI. Some disturbance to *ex-situ* habitats for QI species may occur.

On the basis of the source-pathway-receptor analysis above, the possibility of likely significant effects on Otter *Lutra lutra* [1355] of the Lower River Shannon SAC cannot be excluded. The matter is accordingly carried forward for further assessment at Stage 2.

6.2.6 Air Impact Pathways

Due to the distance between the Proposed Substation Development site and Lower River Shannon SAC direct air impact pathways are not anticipated, however retained *ex-situ* habitats and species may be affected.

6.2.6.1 Visual and Audible Disturbance (QI /SCI Species)

The only retained QI that could be disturbed by visual contact or noise is Otter. The Proposed Substation Development is partially within a 150m buffer from the river. The Camogue presents suitable habitat for Otter, but no evidence of them using the river was recorded at the time of surveys. To date, no known holts are present within the Proposed Substation Development site, mitigation measures to minimise disturbance to Otter may be required.

On the basis of the source-pathway-receptor analysis above, the possibility of likely significant effects on Otter *Lutra lutra* [1355] of the Lower River Shannon SAC cannot be excluded. The matter is accordingly carried forward for further assessment at Stage 2.

6.2.6.2 Air Pollution (Emissions and Dust)

Air (Chemical emissions)

There may be a temporary increase in the number of vehicles in the area to facilitate construction, but this is not anticipated to be substantial. Vehicles and generators are expected to meet current emission standards. Therefore, emissions from construction work vehicles or generators are unlikely to alter the emissions in the local area. The solar panels are composed of non-reactive materials, that will not emit gaseous emissions to the atmosphere. There is no need for, and there is no anticipated use of chemicals that may cause air pollution. Therefore, no chemical emissions are anticipated.

On the basis of the source-pathway-receptor analysis above, the possibility of likely significant effects on QIs of the Lower River Shannon SAC can be excluded. The matter is accordingly not considered any further.

Air (Dust settlement)

Dust particles can be classified into those that are easily deposited and those that remain suspended in the air for extended periods. This division is useful as deposited dust is usually the coarse fraction of particulates that causes dust annoyance, whereas suspended particulate matter is implicated more in exposure impacts. Airborne particles have a broad range of diameters, from nano-particles and ultrafine particles (diameters less than 0.1 microns (µm)) to the very large particles with diameters up towards 100µm. There is no clear dividing line between the sizes of suspended particulates and deposited particulates,

although particles with diameters $>50\mu\text{m}$ tend to be deposited quickly and particles of diameter $<10\mu\text{m}$ (PM10) have an extremely low deposition rate in comparison. Therefore, the size of suspended and deposited dust particles affects their distribution and as such requires different approaches to sampling these fractions. PM10 is the fraction of airborne (suspended) particulates which contains particles of diameter less than $10\mu\text{m}$. PM2.5 is the fraction of airborne (suspended) particulates which contains particles of diameter less than $2.5\mu\text{m}$. PM10 is most commonly associated with road dust and construction activities. Wear and tear of brakes and tyres on vehicles and crushing activities at construction sites can all contribute to a rise in PM10. Larger particles ($100\mu\text{m}$ diameter) are likely to settle within 5-10m of their source under a typical mean wind speed of 4-5 metres per second (m/s), and particles between 30-100 μm diameter are likely to settle within 100m of the source. Smaller particles, particularly those $<10\mu\text{m}$ in diameter, i.e., PM10, have a greater potential to have their settling rate impeded by atmospheric turbulence and to be transported further from their source. Dust emissions are exacerbated by dry weather and high wind speeds.

Excavations and clearance of grassland to facilitate construction may lead to increased dust production. Access tracks are likely to be a source of dust during construction.

On the basis of the source-pathway-receptor analysis above, the possibility of likely significant effects on Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation [3260], Sea Lamprey *Petromyzon marinus* [1095], Brook Lamprey *Lampetra planeri* [1096], River Lamprey *Lampetra fluviatilis* [1099], Salmon *Salmo salar* [1106], Otter *Lutra lutra* [1355] of the Lower River Shannon SAC cannot be excluded. The matter is accordingly carried forward for further assessment at Stage 2.

6.2.7 Cumulative Impact

Developments carried out under CAP 25 or to fulfil the targets of the Climate Action and Low Carbon Development Act may act in combination with the Proposed Substation Development due to the similarity in nature of the projects, potential locations, size and scale, and types of works expected. The plans in themselves are unlikely to act in combination with the Proposed Substation Development.

Application 323780 (see Table 5-2) for Ballinlee Wind Farm may act in-combination due to the proposed timeframe (10-year planning), and the crossing of the river Camogue. This crossing point is approximately 13 km downstream from the closest point of the Proposed Substation Development.

Any Otter using the river along the boundary of the Proposed Substation Development site are unlikely to be interacting with the Otter around the Ballinlee Wind Farm river crossing and with the population within the SAC due to the distances involved (~13km and ~42km respectively) in relation to expected territory size ($<10\text{km}$).

Work on the Proposed Solar Farm as part of the Overall Project may act in-combination with the Proposed Substation Development with identified risks to the watercourses and to Otter. Evidence of Otter was recorded on the Mahore, but not on the Camogue.

None of the retained planning applications made to the local authority are likely to act in combination with the Proposed Substation Development as they are not directly connected to a watercourse and are small scale distinct structures.

6.3 Summary

The proposed site is dominated by agricultural grasslands typical of the East Limerick landscape.

During the works dust emissions, noise, sediment and water runoff are likely to occur, especially during the construction phase. Using the precautionary principle runoff and impacts on water may negatively impact on the qualifying interests of the Lower River Shannon SAC, and groundwater impacts on the Glen Bog SAC cannot be excluded.

6.3.1 Description of Likely Impacts of the Project

Project Elements	Comment		
Size and scale	17ha of lands		
Land-take	There will be no direct land take from any Natura 2000 sites.		
Distance from Natura 2000 sites or key features of the site	Natura 2000 site	Approximate direct distance	Approximate hydrological distance
	Lower River Shannon SAC	12km (closest overland distance, no pathway)	~42km via surface water
	Glen Bog SAC	3.5km	Groundwater connection only
Resource requirements (water abstraction etc.)	There will be no surface water or groundwater abstraction on-site during operations. There will be an input of materials for the construction of the land tracks, fencing and the substation and associated infrastructure.		
Emissions (disposal to land, water or air)	Construction Phase: Water: Potential runoff from site leading to contaminants entering the surface water system and thereby reaching the Lower River Shannon SAC or <i>ex-situ</i> habitats and QI species. Potential for groundwater contamination. Air: Potential release of dust settling on watercourses. Noise: Potential disturbance to Otter Operation Phase: Water: Buffers to all water courses. Attenuation pond. Air: No negative change to current situation anticipated, as there are no operational emissions; provision of carbon free electricity operationally. Noise: No significant change to current levels of noise anticipated		
Excavation	The maximum excavation depth of the Proposed Substation Development is		

Project Elements	Comment
requirements	approximately 3.6m.
Transportation requirements	Transportation requirements Temporary Impacts: There will be a change to the type of traffic to the site during the construction phase, with construction machinery being required. Transportation of materials will require some mitigation (e.g. covering of loads, wheel wash) to avoid dust and sediment emissions. Permanent Impacts: There will be little vehicular movements once the site is operational; this will largely be limited to site checks and maintenance activities.
Duration of construction, operation, decommissioning etc.	The expected duration of construction is 18 months.

6.3.2 Likely Changes to the Natura 2000 Sites

Potential Impact	Comments
Reduction of habitat area	There will be no temporary or permanent reduction in habitat area (including supporting <i>ex-situ</i> habitats) for any of the Natura 2000 sites.
Disturbance to key species	Temporary Impacts The construction works will temporarily increase the noise level and disturbance locally, but this is unlikely to have significant effects on QI bird species. This may impact on Otter. Permanent Impacts No disturbance to key species is anticipated during operation of the project.
Habitat or species fragmentation	There will be no temporary or permanent habitat or species fragmentation within any Natura 2000 sites.
Reduction in species density	There will be no temporary or permanent reduction in species density within any Natura 2000 sites, or any QIs / SCIs of these sites.
Changes in key indicators of conservation value (water quality etc.)	Without mitigation, there may be some impacts on water quality with impacts on <i>ex-situ</i> habitats supporting fish and Otter.
Climate change	Potential temporary increase in vehicle use during construction, long term production of carbon neutral electricity.

6.3.3 Description of Likely Impacts to the Natura 2000 Sites as a Whole

Potential Impact	Comments
Interference with the key relationships that define the structure of the site	Interference with the key relationships that define the structure of the sites are not anticipated.
Interference with key relationships that define the function of the site	Interference with the key relationships that define the structure of the sites are not anticipated.

6.3.4 Significance of the Effects

Potential Impact	Indicators
Loss (Estimated percentage of lost area of habitat)	No Natura 2000 sites will experience a direct loss in habitat area.
Fragmentation	Fragmentation of habitat and/or species is not anticipated.
Disruption & disturbance	Disruption and/ or disturbance is not anticipated for QI / SCI species in Natura 2000 sites. Some impacts on supporting <i>ex-situ</i> QI species may occur.
Change to key elements of the site (e.g., water quality)	Without mitigation water quality may be affected during construction; no impacts on water quality are anticipated during operation.

6.3.5 Scale and Magnitude of Impacts.

In the absence of mitigation measures impacts on water quality may occur through runoff and excessive dust deposition. The distance between the proposed site of works and the retained Natura 2000 site is such that any impacts are likely to be negligible.

Freshwater aquatic receptors have been retained for further Stage 2 assessment because likely significant effects cannot be excluded on the basis of the precautionary principle.

6.4 Conclusion

In carrying out this AA screening, mitigation measures have not been taken into account.

On the basis of the screening exercise carried out above including the use of the precautionary principle, the possibility of any significant impacts on any Natura 2000 sites cannot be excluded. Therefore, a Stage 2 Natura Impact Statement and appropriate mitigation is required.

The retained qualifying interests requiring mitigation are:

- Lower River Shannon SAC:
 - Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation [3260]
 - Sea Lamprey *Petromyzon marinus* [1095]
 - Brook Lamprey *Lampetra planeri* [1096]
 - River Lamprey *Lampetra fluviatilis* [1099]
 - Salmon *Salmo salar* [1106]
 - Otter *Lutra lutra* [1355]
- Glen Bog SAC:
 - Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0]

If any changes occur in the design of these works, a new Screening for Appropriate Assessment is required.

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