Report for the purposes of Appropriate Assessment Screening

Kilmannock 110kV Substation & 110kV Grid Connection

Prepared by: Moore Group – Environmental Services

15 December 2023

On behalf of Kilmannock Battery Energy Storage Ltd.

Project Proponent	Kilmannock Battery Energy Storage Ltd.
Project	Kilmannock 110kV Substation & 110kV Grid Connection
Title	Report for the purposes of Appropriate Assessment Screening Kilmannock 110kV Substation & 110kV Grid Connection

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Abbreviations

AA	Appropriate Assessment
ABP	An Bord Pleanála
CEMP	Construction Environmental Management Plan
EEC	European Economic Community
EPA	Environmental Protection Agency
EU	European Union
FWPM	Freshwater Pearl Mussel
GIS	Geographical Information System
LAP	Local Area Plan
NHA	Natural Heritage Area
NIS	Natura Impact Statement
NPWS	National Parks and Wildlife Service
OSI	Ordnance Survey Ireland
pNHA	proposed Natural Heritage Area
SAC	Special Area of Conservation
SPA	Special Protection Area
SuDS	Sustainable Drainage System
UÉ	Uisce Éireann
WFD	Water Framework Directive

1. Introduction

1.1. General Introduction

This report for the purposes of Appropriate Assessment (AA) Screening contains information required for the competent authority to undertake screening for Appropriate Assessment (AA) in respect of the construction and operation of proposed a 110kV substation and underground grid connection (UGC) at Great Island, Co. Wexford (hereafter referred to as the Proposed Development) to determine whether it is likely individually or in combination with other plans or projects to have a significant effect on any European sites, in light of best scientific knowledge.

Having regard to the provisions of the Planning and Development Act 2000 – 2021 (the "Planning Acts") (section 177U), the purpose of a screening exercise under section 177U of the PDA 2000 is to assess, in view of best scientific knowledge, if the proposed development, individually or in combination with other plans or projects is likely to have a significant effect on a European site.

If it cannot be *excluded* on the basis of objective information that the proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site then it is necessary to carry out a Stage 2 appropriate assessment under section 177V of the Planning Acts.

When screening the project, there are two possible outcomes:

- the project poses no potential for the possibility of a significant effect and as such requires no Stage 2 assessment; or
- the project has potential to have a significant effect (or this is uncertain and therefore cannot be excluded) and therefore a Stage 2 Appropriate Assessment of the project is necessary.

This report has been prepared by Moore Group - Environmental Services to enable the competent authority to carry out AA screening in relation to the Proposed Development. The report was compiled by Ger O'Donohoe B.Sc. Applied Aquatic Sciences (ATU Galway, 1993) & M.Sc. Environmental Sciences (TCD, 1999) who has 30 years' experience in environmental impact assessment and has completed numerous Appropriate Assessment Screening Reports and Natura Impact Statements on terrestrial and aquatic habitats for various development types.

1.2. Legislative Background - The Habitats and Birds Directives

Article 6(3) and 6(4) of the Habitats Directive are transposed into Irish Law inter alia by the Part XAB of the Planning Acts (in particular section 177U and 177V) which governs the requirement to carry out appropriate assessment screening and appropriate assessment, where required, per Section 1.1 above.

The Habitats Directive (Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora) is the main legislative instrument for the protection and conservation of biodiversity in the European Union (EU). Under the Habitats Directive, Member States are obliged to designate Special Areas of Conservation (SACs) which contain habitats or species considered important for protection and conservation in a EU context.

The Birds Directive (Council Directive 2009/147/EC on the conservation of wild birds), transposed into Irish law by the Bird and Natural Habitats Regulations 2011 as amended, and the Wildlife Act 1976, as amended, is concerned with the long-term protection and management of all wild bird species and their habitats in the EU. Among other things, the Birds Directive requires that Special Protection Areas (SPAs) be established to protect migratory species and species which are rare, vulnerable, in danger of extinction, or otherwise require special attention.

SACs designated under the Habitats Directive and SPAs, designated under the Birds Directive, form a pan-European network of protected sites known as Natura 2000. The Habitats Directive sets out a unified system for the protection and management of SACs and SPAs. These sites are also referred to as European sites.

Articles 6(3) and 6(4) of the Habitats Directive set out the requirement for an assessment of proposed plans and projects likely to have a significant effect on Natura 2000 sites.

Article 6(3) establishes the requirement to screen all plans and projects and to carry out an appropriate assessment if required (Appropriate Assessment (AA)). Article 6(4) establishes requirements in cases of imperative reasons of overriding public interest:

> ***Article 6(3):*** *"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 subjected to an appropriate assessment of its implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public."*

2. Methodology

The Commission's methodological guidance (EC, 2002, 2018, 2021 see Section 2.1 below) promotes a four-stage process to complete the AA and outlines the issues and tests at each stage. An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required.

Stages 1 and 2 deal with the main requirements for assessment under Article 6(3). Stage 3 may be part of Article 6(3) or may be a necessary precursor to Stage 4. Stage 4 is the main derogation step of Article 6(4).

Stage 1 Screening: This stage examines the likely effects of a project either alone or in combination with other projects upon a Natura 2000 site and considers whether it can be objectively concluded that these effects will not be significant. In order to screen out a project, it must be excluded, on the basis of objective information, that the Proposed Development, individually or in combination with other plans or projects, will have a significant effect on a European site.

Stage 2 Appropriate Assessment: This stage examines whether it is likely that the project, either alone or in combination with other projects or plans, will have a significant effect upon a European site. In order to 'screen out' a project (i.e. in order to conclude that it is not necessary to move to the 'Stage 2' appropriate assessment stage (see immediately below), the possibility that the Proposed Development (individually or in combination with other plans or projects), will have a significant effect on a European site must be excluded on the basis of objective information.

Stage 3 Assessment of Alternative Solutions: This stage examines alternative ways of implementing the project that, where possible, avoid any adverse impacts on the integrity of the Natura 2000 site.

Stage 4 Assessment where no alternative solutions exist and where adverse impacts remain: Where imperative reasons of overriding public interest (IROPI) exist, an assessment to consider whether compensatory measures will or will not effectively offset the damage to the sites will be necessary.

To ensure that the Proposed Development complies fully with the requirements of Article 6 of the Habitats Directive and all relevant Irish transposing legislation, Moore Group compiled this report to enable the competent authority to carry out AA screening in relation to the Proposed Development to determine whether it can be excluded, on the basis of objective information, that the Proposed Development, individually or in combination with other plans or projects, will have a significant effect on a European site(s).

2.1. Guidance

This report has been compiled in accordance with guidance contained in the following documents:

- Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities. (Department of Environment, Heritage and Local Government, 2010 rev.).
- Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities. Circular NPWS 1/10 & PSSP 2/10.
- Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitat's Directive 92/43/EEC (EC, 2018).
- Guidance document on the strict protection of animal species of Community interest under the Habitats Directive (EC, 2021).
- Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC (EC, 2021).

- Office of the Planning Regulator (OPR) Practice Note PN01 Appropriate Assessment Screening for Development Management (OPR, 2021).

2.2. Data Sources

Sources of information that were used to collect data on the Natura 2000 network of sites, and the environment within which they are located, are listed below:

- The following mapping and Geographical Information Systems (GIS) data sources, as required:
    - National Parks & Wildlife (NPWS) protected site boundary data;
    - Ordnance Survey of Ireland (OSI) mapping and aerial photography;
    - OSI/Environmental Protection Agency (EPA) rivers and streams, and catchments;
    - Digital Elevation Model over Europe (EU-DEM);
    - Google Earth and Bing aerial photography 1995-2023;
- Online data available on Natura 2000 sites as held by the National Parks and Wildlife Service (NPWS) from www.npws.ie including:
    - Natura 2000 - Standard Data Form;
    - Conservation Objectives;
    - Site Synopses;
- National Biodiversity Data Centre records;
    - Online database of rare, threatened and protected species;
    - Publicly accessible biodiversity datasets.
- Status of EU Protected Habitats in Ireland. (National Parks & Wildlife Service, 2019); and
- Relevant Development Plans;
    - Wexford County Development Plan 2022-2028

3. Description of the Proposed Development

The Proposed Development consists of the construction of an electrical infrastructure installation and associated underground grid connection (UGC) on lands within the townland of Great Island measuring approximately 2.58Ha./25812 square metres in overall area. The installation would consist of a 110kV tailfed substation and underground grid connection measuring approximately 838m in overall length. The 110kV substation would consist of a 110kV transformer; house transformer; disconnect, individual current and voltage transformers, combined current/voltage transformer, surge arrestors; circuit breakers and cable sealing end; a blastwall measuring 8.00m in overall height; 4no. lightning masts measuring 18.00m in overall height; palisade fencing measuring 2.60m in overall height; pole-mounted security cameras and lamp posts. An Eirgrid substation building with an overall footprint of approximately 180.00sqm and overall height of 4.20m would be located at

the western end of the substation area. An IPP substation with an overall footprint of 132sqm and height of overall 4.20m would be located at the eastern end. The typical UGC installation would consist of standard ESB ducting details of the following 1no. trench (0.82m wide; 1.31m deep) measuring approximately 838m in overall length to carry 3no. 160mm power ducts and 2no. communication ducts and an ECC duct, connecting the proposed substation to an existing 110kV Eirgrid substation at Great Island. The typical trefoil trench will need to be adapted to a flat formation to accommodate for any service crossings encountered along the route. A typical width of trench for a flat formation trench would be approx. 1.60m with varying depths. A temporary construction compound would be constructed within the site boundary for construction phase of the development, after which it would be removed.

The application site "the Site", which measures 2.58Ha. in overall area and is greenfield, is situated approximately 12.60 kilometres (kms) south of New Ross Town and lies wholly within the townland of Great Island, being located directly east of the SSE Great Island Power Station and north of the Greenlink UK-Ireland Interconnector converter station currently undergoing construction. The village of Campile is approximately 3.1kms east of the Site, as the crow flies. The Site is located in a rural and sparsely populated area.

The Site slopes from South to north, where the existing highest level of +22m ASL is in the south-west of the Site and lowest level of +5m ASL in the north-east of site. The Site is characterised as rough grassland with encroachment of brambles and scrub, bounded by hedgerows on the northern and eastern boundaries. Access to Site from L4033 (entrance road to Great Island Power Station) is shared with Greenlink Interconnector Station, past the Siemens temporary construction compound.

The purpose of the proposed development is to construction electrical plant in the form of a substation capable of to an existing Eirgrid substation on the electrical transmission system. A battery energy storage system "BESS" to be built would provide fast frequency capacity to the grid whilst reducing the need for conventional back up generation. In a pre-app consultation (ABP-318011-23) with An Bord Pleanála it was considered the BESS does not constitute Strategic Infrastructure Development and cannot form part of the proposal.

The 110kV substation, measuring 0.3Ha in overall area, would be sited at ground level of 16.00m ASL and would consist of the following infrastructure: 110kV transformer; House transformer; Disconnect; Individual current and voltage transformers; Combined current/voltage transformer; Surge arrestors; Circuit breakers; Cable sealing end; 4no. lightning masts measuring 18.00m in overall height. 2no. substations (Eirgrid and IPP) would be included in the substation, each building having an overall height of 4.20m. A blastwall measuring 8.00m in overall height located on the eastern side of 110kV transformer, between transformer and IPP substation. Ancillary development to the main substation infrastructure would include palisade fencing measuring 2.60m in overall height, pole mounted security cameras and lamp posts.

The underground grid connection would serve to connect an existing Eirgrid 110kV substation at the SSE Great Island Power Station to the proposed substation. Measuring approximately 838.00m in overall length. The connection would consist of 1 no. typical trefoil trench measuring approximately 0.82m wide and 1.31m m deep

to house 3no. power ducts, 2no. communications ducts and 1 ecc duct. A precast communications chamber measuring approximately 1.30m in length, 1.03m in width and 1.20m in height would be installed outside both substations. The UGC would be wholly on private land.

In October 2023 an application was made to Wexford County Council for development generally described as a 38kV substation, 38kV BESS (consisting of 16no. battery units), 38kV underground grid connection and associated ancillary development. The application (LPA Ref. 231294) was validated on October 27th, 2023.

The proposed development areas located east of the existing Great Island Power Station, were surveyed on 27 July 2023 by conducting a study area walkover covering the main ecological areas identified in the desktop assessment. The survey date is within the optimal botanical survey period. A photographic record was made of features of interest.

The site is bounded to the north by the Waterford-Rosslare railway line, to the east by a local road and to the south by the new Greenlink development. The underground grid connection (UGC) will be along the permitted access road to the Greenlink site. From the access track the UGC turns south into the Great Island site cutting through the edge of Mixed broadleaved woodland and Gorse Scrub (WD1) and into rank grassland that has been historically disturbed for pylon and twin pole set placement.

The substation works areas consists of a field of Improved agricultural grassland (GA1) with a thin strip of Recolonising Bare Ground (ED3) along the northern boundary where earth has been disturbed in the past year. The field slopes down from south to north toward the railway line.

The grassland areas have typical species of improved grassland, including Perennial Rye Grass (*Lolium perenne*) Meadow Foxtail (*Alopecurus pratensis*), Crested Dogs Tail (*Cynosusrus cristatus*), False Oat-Grass (*Arrhenatherum elatius*) with Broad-leaved Dock (*Rumex obtusifolius*) and Creeping Thistle (*Cirsium arvense*). Bare patches from machinery have been colonised by Knotgrass (*Polygonum* spp.) and Redshank (*Persicaria maculosa*).

A narrow portion of the north of the site been disturbed in the recent past, presumably during scrub clearance and has recolonised (ED3) with vigorous tall herb growth, with Nettle (*Urtica dioica*), Spear Thistle (*Cirsium vulgare*), Great Willowherb (*Epilobium hirsutum*) and Rosebay Willowherb (*Chamerion angustifolium*).

The railway corridor comprises Mixed broadleaved woodland and Scrub (WD1) with Sycamore and Ash predominating along with Hawthorn and Gorse Scrub. This woodland type is also present under the route of the UGC with Gorse Scrub having succeeded to woodland.

There were no invasive species recorded at the proposed development site.

The nearest SPA to the subject site is the Bannow Bay SPA (Site Code 004033) located c. 11.36km to the southeast. The proposed site was surveyed for wintering waders and no Conservation Objective species

associated with the SPA were recorded within the site. The River Barrow and River Nore SAC located 370m to the west listed 22 bird species that utilise the river and estuary. None of these birds were recorded from within the subject site. While the surrounding agricultural lands provide good feeding and roosting areas, the subject site has lower potential given the enclosed nature of the site; the existing power-station to the west, railway bank to the north, treeline to the east and construction site to the south. These barriers prevent the site from offering ex site effects on the SPAs and birds associated with SAC's located in the wider vicinity of the Proposed Development.

Figure 1 shows the Proposed Development location and Figure 2 shows a detailed view of the Proposed Development boundary on recent aerial photography. Figure 3 shows the layout of the Proposed Development.

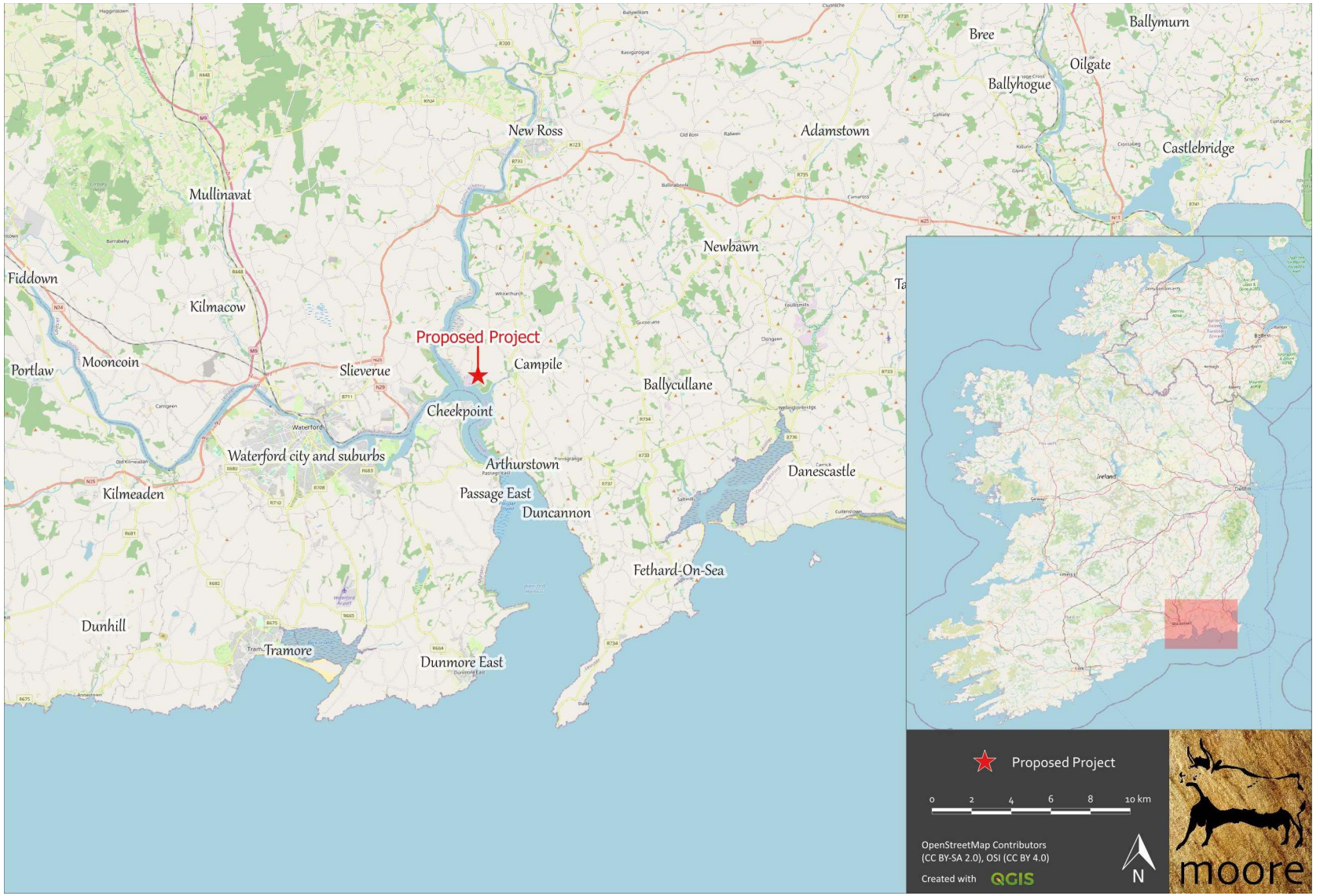

Figure 1. Showing the Proposed Development location at Great Island, Co. Wexford.

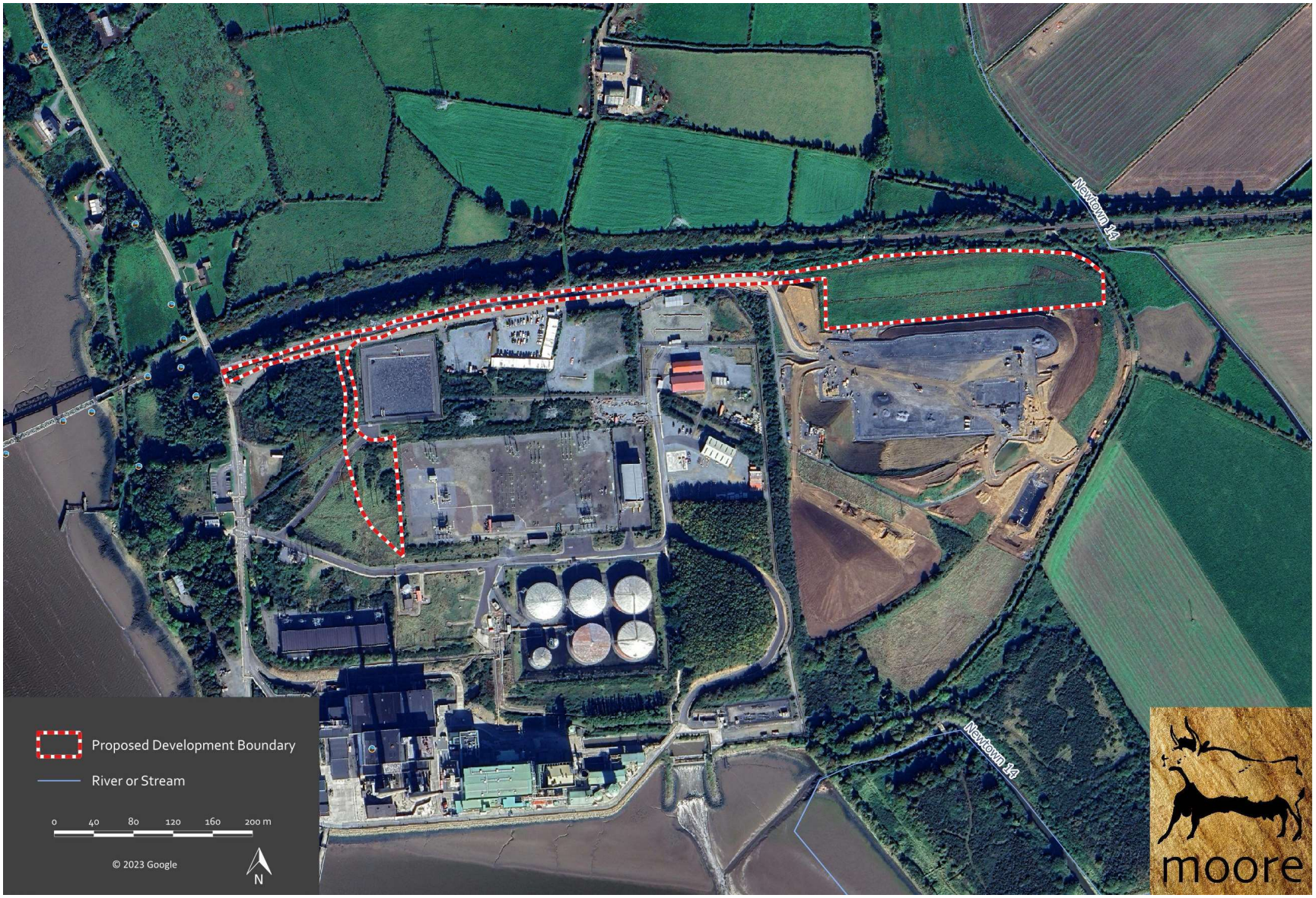

Figure 2. Showing the overall combined Proposed Development boundary on recent aerial photography.

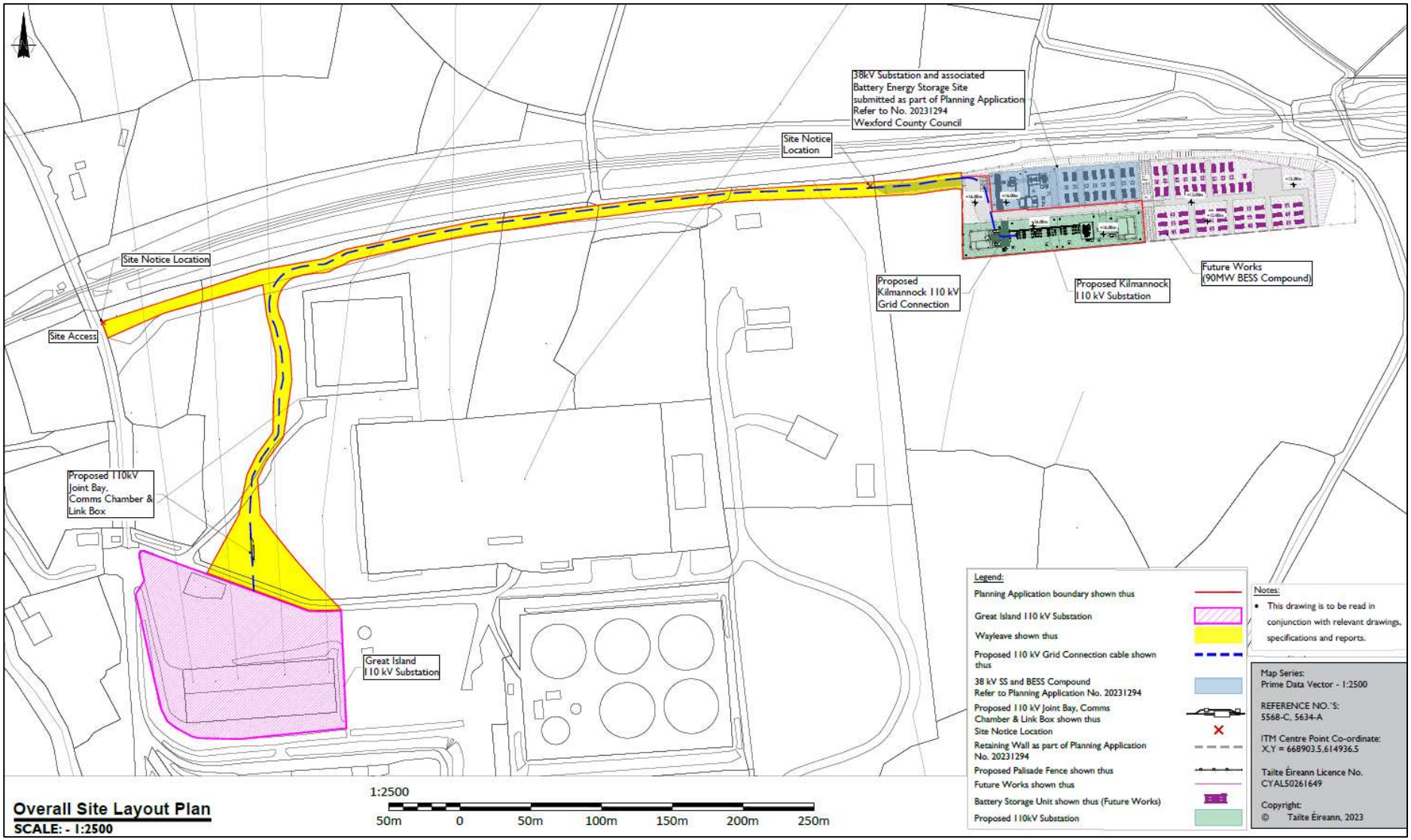

Figure 3. Plan of the Proposed Development.

4. Identification of Natura 2000 Sites

4.1. Description of Natura Sites Potentially Significantly Affected

A Zone of Influence (ZoI) of a proposed development is the geographical area over which it could affect the receiving environment in a way that could have significant effects on the Qualifying Interests of a European site. In accordance with the OPR Practice Note (2021), PN01, the ZoI should be established on a case-by-case basis using the Source- Pathway-Receptor framework.

The European Commission's "*Assessment of plans and projects in relation to Natura 2000 sites guidance on Article 6(3) and (4) of the Methodological Habitats Directive 92/43/EEC*" published 28 September 2021 states at section 3.1.3, that:

"Identifying the Natura 2000 sites that may be affected should be done by taking into consideration all aspects of the plan or project that could have potential effects on any Natura 2000 sites located within the zone of influence of the plan or project. This should take into account all of the designating features (species, habitat types) that are significantly present on the sites and their conservation objectives. In particular, it should identify:

- *any Natura 2000 sites geographically overlapping with any of the actions or aspects of the plan or project in any of its phases, or adjacent to them;*
- *any Natura 2000 sites within the likely zone of influence of the plan or project Natura 2000 sites located in the surroundings of the plan or project (or at some distance) that could still be indirectly affected by aspects of the project, including as regards the use of natural resources (e.g. water) and various types of waste, discharge or emissions of substances or energy;*
- *Natura 2000 sites in the surroundings of the plan or project (or at some distance) which host fauna that can move to the project area and then suffer mortality or other impacts (e.g. loss of feeding areas, reduction of home range);*
- *Natura 2000 sites whose connectivity or ecological continuity can be affected by the plan or project".*

The range of Natura 2000 sites to be assessed, i.e. the zone in which impacts from the plan or project may arise, will depend on the nature of the plan or project and the distance at which effects may occur. For Natura 2000 sites located downstream along rivers or wetlands fed by aquifers, it may be that a plan or project can affect water flows, fish migration and so forth, even at a great distance. Emissions of pollutants may also have effects over a long distance. Some projects or plans that do not directly affect Natura 2000 sites may still have a significant impact on them if they cause a barrier effect or prevent ecological linkages. This may happen, for example, when plans affect features of the landscape that connect Natura 2000 sites or that may obstruct the

movements of species or disrupt the continuity of a fluvial or woodland ecosystem. To determine the possible effects of the plan or project on Natura 2000 sites, it is necessary to identify not only the relevant sites but also the habitats and species that are significantly present within them, as well as the site objectives.

The Zone of Influence may be determined by considering the Proposed Development's potential connectivity with European sites, in terms of:

- Nature, scale, timing and duration of all aspects of the proposed works and possible impacts, including the nature and size of excavations, storage of materials, flat/sloping sites;
- Distance and nature of potential pathways (dilution and dispersion; intervening 'buffer' lands, roads etc.); and
- Location of ecological features and their sensitivity to the possible impacts.

The potential for source pathway receptor connectivity is firstly identified through GIS interrogation and detailed information is then provided on sites with connectivity. European sites that are located within a potential Zone of Influence of the Proposed Development are listed in Table 1 and presented in Figures 4 and 5, below. Spatial boundary data on the Natura 2000 network was extracted from the NPWS website (www.npws.ie) on 15 December 2023. This data was interrogated using GIS analysis to provide mapping, distances, locations and pathways to all sites of conservation concern including pNHAs, NHA and European sites.

Table 1 European Sites located within the potential Zone of Influence[1] of the Proposed Development.

Site Code	Site name	Distance (km)[2]
002137	Lower River Suir SAC	1.67
002162	River Barrow and River Nore SAC	0.37

The nearest European sites to the Proposed Development are the River Barrow and River Nore SAC (Site Code 002162) c. 370m to the southeast and the Lower River Suir SAC (Site Code 002137) c. 1.67km to the southwest.

The Proposed Development is located to the northeast of the existing Great Island Power Station and is bounded to the north by the Waterford to Rosslare railway line. A review of aerial photography, Ordnance Survey Ireland (OSI) mapping and OSI Geographical Information System (GIS) data for rivers and streams indicates that there are no notable surface water features onsite and no direct hydrological pathways to offsite surface water bodies. This was confirmed during fieldwork on habitat assessment on 27 July 2023.

The nearest SPA is the Bannow Bay SPA (Site Code 004033) located c. 11.36km to the southeast. The site was surveyed for wintering species and no Annexed species was recorded. There are no predicted ex site effects on the SPAs located in the wider vicinity of the Proposed Development. The Barrow River Estuary and associated

[1] All European sites potentially connected irrespective of the nature or scale of the Proposed Development.
[2] Distances indicated are the closest geographical distance between the Proposed Development and the European site boundary, as made available by the NPWS.

European sites are located at a distance of at least 370m from the site boundary which is outside a distance whereby disturbance effects are not considered a concern.

The Qualifying Interests (QIs) and Special Conservation Interests (SCIs) of the European sites in the Zone of influence of the Proposed Development are provided in Table 2 below.

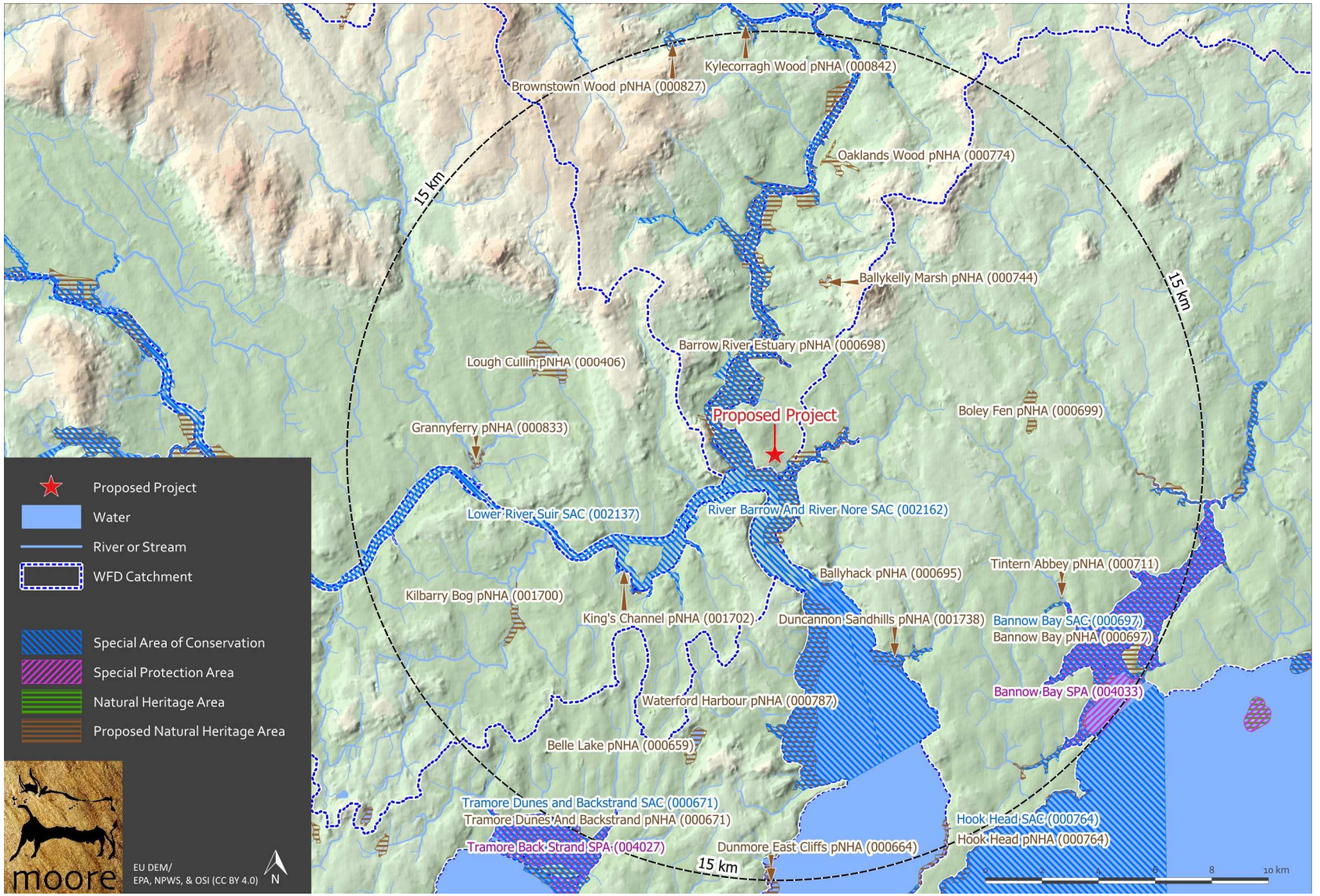

Figure 4. Showing European sites and NHAs/pNHAs within the wider Potential Zone of Influence of the Proposed Development.

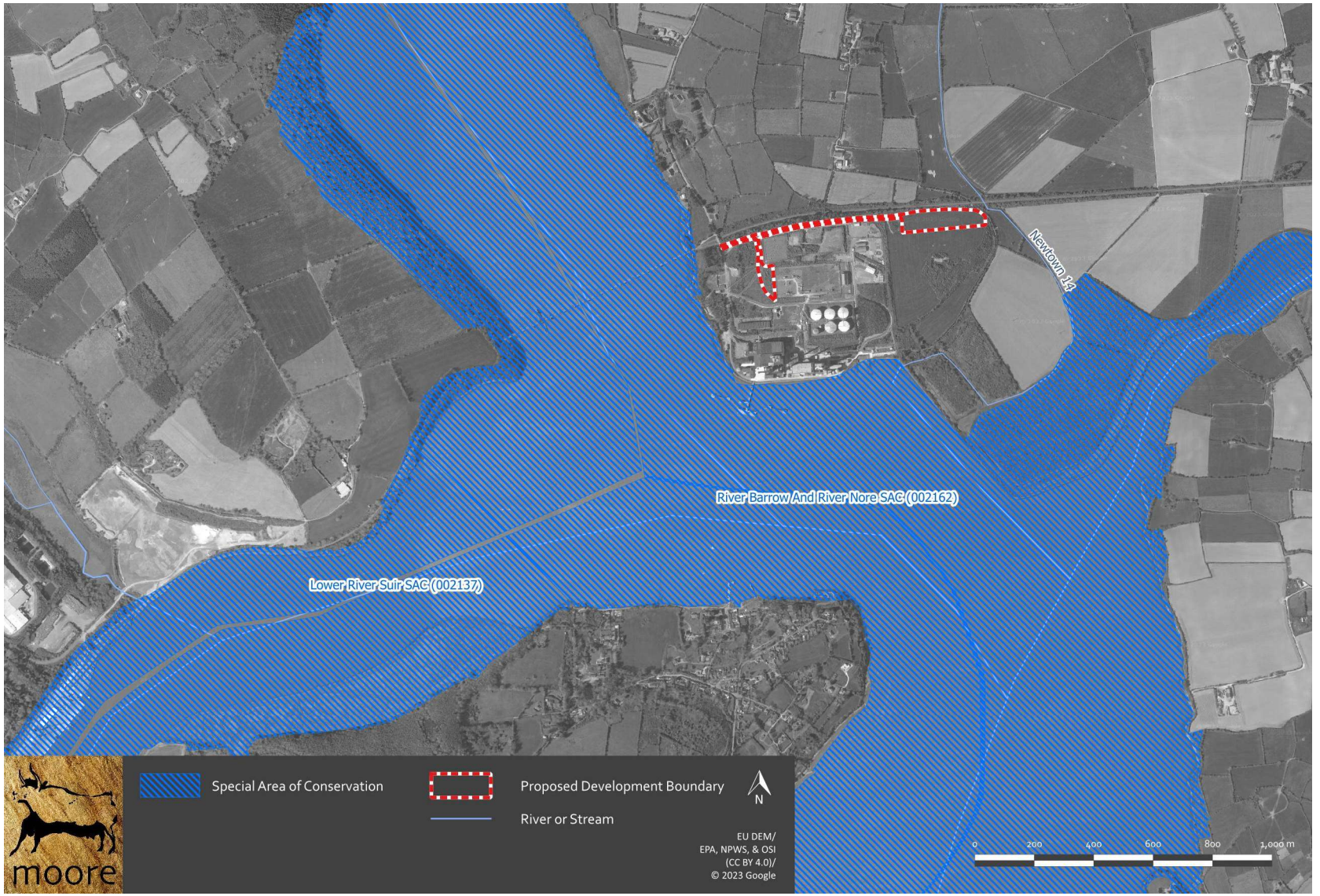

Figure 5. Detailed view of European sites in the nearer Potential Zone of Influence of the Proposed Development.

*Table 2 Identification of relevant European sites using Source-Pathway-Receptor model and compilation of information on QIs and conservation objectives. *Priority Habitats*

European Site name, Site code and Conservation Objectives	Location Relative to the Proposed Development Site	Connectivity – Source-Pathway-Receptor	Considered further in Screening – Y/N
Lower River Suir SAC (002137) The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest: 1029 Freshwater Pearl Mussel *Margaritifera margaritifera* 1092 White-clawed Crayfish *Austropotamobius pallipes* 1095 Sea Lamprey *Petromyzon marinus* 1096 Brook Lamprey *Lampetra planeri* 1099 River Lamprey *Lampetra fluviatilis* 1103 Twaite Shad *Alosa fallax fallax* 1106 Salmon *Salmo salar* 1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae) 1355 Otter *Lutra lutra* 1410 Mediterranean salt meadows (Juncetalia maritimi) 3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation 6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels 91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles 91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) 91J0 *Taxus baccata* woods of the British Isles NPWS (2017) Conservation Objectives: Lower River Suir SAC 002137. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.	1.67km to the southwest of the Proposed Development	No There are no pathways or connectivity to the habitats and/or species of this site. There are no surface water courses and no hydrological links to the River Barrow or to the Newtown Stream nearby.	No
River Barrow and River Nore SAC (002162) The overall aim of the Birds Directive is to maintain or restore the favourable conservation status of habitats and species of community interest: 1016 Desmoulin's whorl snail *Vertigo moulinsiana*	0.37km to the southeast of the Proposed Development	No There are no pathways or connectivity to the habitats and/or species of this site.	No

European Site name, Site code and Conservation Objectives	Location Relative to the Proposed Development Site	Connectivity – Source-Pathway-Receptor	Considered further in Screening – Y/N
1029 Freshwater pearl mussel *Margaritifera margaritifera* 1092 White-clawed crayfish *Austropotamobius pallipes* 1095 Sea lamprey *Petromyzon marinus* 1096 Brook lamprey *Lampetra planeri* 1099 River lamprey *Lampetra fluviatilis* 1103 Twaite shad *Alosa fallax* 1106 Atlantic salmon (*Salmo salar*) (only in fresh water) 1130 Estuaries 1140 Mudflats and sandflats not covered by seawater at low tide 1310 *Salicornia* and other annuals colonizing mud and sand 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) 1355 Otter *Lutra lutra* 1410 Mediterranean salt meadows (*Juncetalia maritimi*) 1421 Killarney fern *Trichomanes speciosum* 1990 Nore freshwater pearl mussel *Margaritifera durrovensis* 3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation 4030 European dry heaths 6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels 7220 * Petrifying springs with tufa formation (*Cratoneurion*) 91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles 91E0 * Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) NPWS (2011) Conservation Objectives: River Barrow and River Nore SAC 002162. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht		There are no surface water courses and no hydrological links to the River Barrow or to the Newtown Stream nearby.	

4.2. Ecological Network Supporting Natura 2000 Sites

A concurrent GIS analysis of the proposed Natural Heritage Areas (pNHA) and designated Natural Heritage Areas (NHA) in terms of their role in supporting the species using Natura 2000 sites was undertaken along with GIS investigation of European sites. These supporting roles mainly relate to mobile fauna such as mammals and birds which may use pNHAs and NHAs as ecological corridors or "stepping stones" between Natura 2000 sites.

Article 10 of the Habitats Directive and the Habitats Regulations 2011 place a high degree of importance on such non-Natura 2000 areas as features that connect the Natura 2000 network. Features such as ponds, woodlands and important hedgerows were taken into account in the decision process and during the preparation of this AA Screening report.

The NHAs and pNHAs identified in Figure 4 are located outside the Zone of Influence, with the exception of those which share the boundaries of European sites. Accordingly, the Barrow River Estuary pNHA is considered under its higher conservation status as a European site.

5. Identification of Potential Impacts & Assessment of Significance

The Proposed Development is not directly connected with or necessary to the management of the sites considered in the assessment and therefore potential impacts must be identified and considered.

5.1. Assessment of Likely Significant Effects

The Proposed Development is located to the northeast of the existing Great Island Power Station and is bounded to the north by the Waterford to Rosslare railway line. A review of aerial photography, Ordnance Survey Ireland (OSI) mapping and OSI Geographical Information System (GIS) data for rivers and streams indicates that there are no notable surface water features onsite and no direct hydrological pathways to offsite surface water bodies. This was confirmed during fieldwork on habitat assessment on 27 July 2023.

The nearest watercourse to the application is the Newtown Stream (EPA Newtown 14) which runs in a north-south direction approximately 18m east of the site boundary at the nearest point and is separated from the Proposed Development site by a hard-surface lane running beneath the railway bridge north of the site. The River Barrow, River Suir and Campile River are located 253m, 255m and 914m beyond the western, western and southern site boundaries respectively. The Newtown Stream drains farmland to the north of the railway line and farmland and forestry south of the railway line with no connectivity to the proposed development areas.

There is no connectivity to any European sites within or outside the potential Zone of Influence.

The consideration of all potential direct and indirect impacts that may result in significant effects on the conservation objectives of a European site, taking into account the size and scale of the Proposed Development are presented in Table 3.

Table 3 Assessment of Likely Significant Effects.

Identification of all potential direct and indirect impacts that may result in significant effects on the conservation objectives of a European site, taking into account the size and scale of the project.	
Impacts:	**Significance of Impacts:**
Construction phase e.g. Vegetation clearance Demolition Surface water runoff from soil excavation/infill/landscaping (including borrow pits) Dust, noise, vibration Lighting disturbance Impact on groundwater/dewatering Storage of excavated/construction materials Access to site Pests	None The Proposed Development site is located within the boundary of a field of improved grassland, an existing permitted access track and the site of the exiting Power Station. The construction phase woks will not involve discharge or treatment of surface or groundwater. There are no hydrological pathways to offsite surface water bodies. The nearest SPA to the subject site is the Bannow Bay SPA (Site Code 004033) located c. 11.36km to the southeast. The proposed site was surveyed for wintering waders and no Conservation Objective species associated with the SPA were recorded within the site. The River Barrow and River Nore SAC located 370m to the west listed 22 bird species that utilise the river and estuary. None of these birds were recorded from within the subject site. While the surrounding agricultural lands provide good feeding and roosting areas, the subject site has lower potential given the enclosed nature of the site; the existing power-station to the west, railway bank to the north, treeline to the east and construction site to the south. These barriers prevent the site from offering ex site effects on the SPAs and birds associated with SAC's located in the wider vicinity of the Proposed Development.
Operational phase e.g. Direct emission to air and water Surface water runoff containing contaminant or sediment Lighting disturbance	All foul and surface water runoff, once the facility is operational, will be contained on site and discharged to urban drainage systems. There is no real likelihood of any significant effects on European Sites in the wider catchment area.

Noise/vibration Changes to water/groundwater due to drainage or abstraction Presence of people, vehicles and activities Physical presence of structures (e.g. collision risks)	The facility is located at a distance of removal such that there will be no disturbance to qualifying interest species in any European sites.
Describe any likely changes to the European site:	
Examples of the type of changes to give consideration to include: Reduction or fragmentation of habitat area Disturbance to QI species Habitat or species fragmentation Reduction or fragmentation in species density Changes in key indicators of conservation status value (water quality etc.) Changes to areas of sensitivity or threats to QI Interference with the key relationships that define the structure or ecological function of the site Climate change	None. The Proposed Development site is not located adjacent or within a European site, therefore there is no risk of habitat loss or fragmentation or any effects on QI habitats or species directly or ex-situ.

5.2. Assessment of Potential In-Combination Effects

In-combination effects are changes in the environment that result from numerous human-induced alterations. In-combination effects can be thought of as occurring through two main pathways: first, through persistent additions or losses of the same materials or resource, and second, through the compounding effects as a result of the coming together of two or more effects.

As part of the Screening for an Appropriate Assessment, in addition to the Proposed Development, other relevant plans and projects in the area must also be considered at this stage. This step aims to identify at this early stage any possible significant in-combination effects of the Proposed Development with other such plans and projects on European sites.

A review of the National Planning Application Database was undertaken. The database was then queried for developments granted planning permission within the vicinity of the Proposed Development within the last three years, these are presented in Table 4 below.

Table 4.Planning applications granted permission in the vicinity of the Proposed Development.

Planning Ref.	Description of development	Comments
ABP-308906-20	Proposed development will form part of the Greenlink Interconnector and will consist of the development of a new converter station, tail station, MV substation and 23km of high voltage direct current (JVDC) electricity cables, 420m of high voltage alternating current (HVAC) cables, 23.42km of fibre optic cable and all associated site works with an overall proposed development site area of 83.8ha.	No potential for in-combination effects given the Proposed Development will have no effect on any European site.
20221633	Permission for the development of a new 38kV electricity circuit between the existing Knockmullen ESB Substation, New Ross and the existing Great Island ESB Substation, within the Great Island generation station complex. The circuit - which traverses the townland of Great Island, Creakan Lower, Creakan Upper, Butlersland, Ballydock, Priesthaggard, Poulmaloe, Whitechurch, Dunganstown, Killowen, Oldcourt, Stokestown, Landscape, Camlin and Knockmullin, County Wexford, will be c.13.75 km in length and will consist of c.12 km of overhead line (OHL) and c.1.75 km of underground cable (UGC). The OHL structures (87 No.) will consist of single and double wood polesets, with a height above ground level ranging from c.9.7 m to c. 18 m and will require below ground foundations and staywires at specific locations. The UGC will primarily run along public roads and will consist of electrical cables laid in underground ducts buried in a trench (with varying dimensions between c.0.6 cm and c.0.9 m width and a depth of c.1.2 m). For information: the proposed OHL passes through the curtilage associated with the demesne lands of Landscape House which is a protected Structure in the Wexford County Development Plan 2022-2028 (RSP Ref: WCC0530). Permission is sought for all associated works including temporary works such as the creation of access ways etc. Planning permission is sought for a ten (10) year period. A Natura Impact Statment (NIS) has been prepared and will be submitted to the planning authority with the application.	No potential for in-combination effects given the Proposed Development will have no effect on any European site.
N/A	**Great Island – 38kV project – Description of Development** In October 2023 an application was made to Wexford County Council for development generally described as a 38kV substation, 38kV BESS (consisting of 16no. battery units), 38kV underground grid connection and associated ancillary development. The application (LPA Ref. 23) was validated on October 27th, 2023.	No potential for in-combination effects given the Proposed Development will have no significant effect on Biodiversity.

The Wexford County Development Plan in complying with the requirements of the Habitats Directive requires that all Projects and Plans that could affect the Natura 2000 sites in the same potential Zone of Influence of the Proposed Development site would be initially screened for Appropriate Assessment and if requiring Stage 2 AA, that appropriate employable mitigation measures would be put in place to avoid, reduce or ameliorate negative impacts. In this way any, in-combination impacts with Plans or Projects for the proposed development area and surrounding townlands in which the proposed development site is located, would be avoided.

The listed developments have been granted permission in most cases with conditions relating to sustainable development by the consenting authority in compliance with the relevant Local Authority Development Plan and in compliance with the Local Authority requirement with regard to the Habitats Directive. The development cannot have received planning permission without having met the consenting authority requirement in this regard.

There are no predicted in-combination effects given that it is predicted that the Proposed Development will have no effect on any European site.

Any new applications for the Proposed Development area will be assessed on a case by case basis *initially* by Wexford County Council which will determine the requirement for AA Screening as per the requirements of Article 6(3) of the Habitats Directive.

6. Conclusion

There is no connectivity to the River Barrow, or to any European sites within or outside the potential Zone of Influence.

There are no predicted effects on any European sites given:

- The distance between the Proposed Development and any European Sites, approximately 370m;
- The lack of direct connectivity between the Proposed Development and any hydrological pathways; there are no watercourses within the Proposed Development boundary and there is no connectivity between the Proposed Development site and any watercourses that lead to any European sites;
- There are no predicted emissions to air, water or the environment during the construction or operational phases that would result in significant effects.

It has been objectively concluded by Moore Group Environmental Services that:

1. The Proposed Development is not directly connected with, or necessary to the conservation management of the European sites considered in this assessment.
2. The Proposed Development is not likely to either directly or indirectly significantly affect the Qualifying interests or Conservation Objectives of the European sites considered in this assessment.
3. The Proposed Development, either alone or in combination with other plans or projects, is not likely to have significant effects on a European site.
4. It is possible to conclude that significant effects can be excluded at the screening stage.

It can be *excluded*, on the basis of objective information, that the Proposed Development, individually or in combination with other plans or projects, will have a significant effect on a European site.

An appropriate assessment is not, therefore, required.

A final determination will be made by the competent authority in this regard.

7. References

Department of the Environment, Heritage and Local Government (2010) Guidance on Appropriate Assessment of Plans and Projects in Ireland (as amended February 2010).

European Commission (2007) Guidance document on Article 6(4) of the 'Habitats Directive '92/43/EEC: Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interests, compensatory measures, overall coherence and opinion of the Commission. European Commission, Brussels.

European Commission (2018) Managing Natura 2000 sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC.

European Commission (2021) Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Brussels 28.9.21.

European Commission (2021) Guidance document on the strict protection of animal species of Community interest under the Habitats Directive, Brussels 12.10.21.

NPWS (2019) The Status of EU Protected Habitats and Species in Ireland. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin.

NPWS (2023) National Parks and Wildlife Service Metadata available online at https://www.npws.ie/maps-and-data

Office-of-the-Planning-Regulator (2021) Appropriate Assessment Screening for Development Management OPR Practice Note PN01. March 2021

Kilmannock 110kV Substation
& 110kV Grid Connection
Ecological Impact Assessment

Prepared By:

Moore Group -
Environmental Services

On behalf of:
Kilmannock Battery Energy Storage Ltd.

Job Number 23191
15 December 2023

Project Proponent	Kilmannock Battery Energy Storage Ltd.
Project	Kilmannock 110kV Substation & 110kV Grid Connection
Title	Kilmannock 110kV Substation & 110kV Grid Connection Ecological Impact Assessment

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Moore Archaeological and Environmental Services Limited				

Contents

1. INTRODUCTION

Moore Group was commissioned by Kilmannock Battery Energy Storage Ltd. to undertake a Habitat Survey and EcIA of the site of a proposed 110kV substation and underground grid connection (UGC) at Great Island, Co. Wexford, referred to as the 'Proposed Development'.

This report provides information on ecological features if present within the potential Zone of Influence of the Proposed Development, of particular significance, primarily designated habitats and species, including habitats/species listed in Annex I, II and IV of the EU Habitats Directive, rare flora listed in the Flora Protection Order along with other semi-natural habitats of conservational value.

This report was compiled by Ger O'Donohoe M.Sc. of Moore Group providing information on habitats in the study area. Ger is the principal ecologist with Moore Group and has 30 years' experience in ecological impact assessment. He graduated from ATU Galway in 1993 with a B.Sc. in Applied Freshwater & Marine Biology and subsequently worked in environmental consultancy while completing an M.Sc. in Environmental Sciences, graduating from Trinity College, Dublin in 1999. (He also has over 15 years' experience of carrying out bat surveys and has completed the Bat Conservation Ireland, Bat Detector Workshop which is the standard training for the carrying out of bat surveys in Ireland and follows the Bat Conservation Ireland 'Bat Survey Guidelines' - Aughney *et al*., 2008'. In addition, Ger is an active member of the Galway Bat Group and Bat Conservation Ireland, which monitors bat populations in Ireland, and facilitates the education of bat communities to the public.

Éire Ecology was commissioned by Entrust Services to carry out preliminary Bat and Bird Surveys. The work was undertaken by John Curtin of Éire Ecology. John Curtin B.Sc. is the principal ecologist with Éire Ecology and has over 10 years of experience in ecological impact assessment having conducted plant, habitats, birds, bats and mammal surveys since 2010 including at windfarm and solar sites. John conducted bird, bat and badger surveys. Shane O'Neill is an experienced ornithologist (Co-author Hen Harrier Survey, NPWS 2015) with a broad knowledge of breeding birds, waders and all aspects of ornithology. Shane has previously conducted I-WeBS surveys and taken part in the Shannon estuary wintering wader surveys. Laura Hynes has a degree in Wildlife Biology from MTU Kerry and has worked as an ecologist since 2022. Laura has worked as a Curlew officer for the NPWS.

The following important ecological receptors were considered in planning and designing the project, and in assessing its likely ecological effects:

- Sites with nature conservation designations, including proposed NHAs, the reasons for their designation, and their conservation objectives, where available;
- Annex IV (Habitats Directive) species of fauna and flora, and their breeding sites and resting places, which are strictly protected under the European Communities (Birds and Natural Habitats) Regulations, 2011;

- Other species of fauna and flora which are protected under the Wildlife Acts, 1976-2012;
- *'Protected species and natural habitats'*, as defined in the Environmental Liability Directive (2004/35/EC) and European Communities (Environmental Liability) Regulations, 2008, including:
    - Birds Directive – Annex I species and other regularly occurring migratory species, and their habitats (wherever they occur);
    - Habitats Directive – Annex I habitats, Annex II species and their habitats, and Annex IV species and their breeding sites and resting places (wherever they occur);
- Other habitats of ecological value in a national to local context, including rocky habitats in the general area;
- Stepping stones and ecological corridors encapsulated by Article 10 of the Habitats Directive.

The report has been compiled in compliance with the European Communities Legal requirements and follows EPA Guidelines on Information to be contained in an EIAR (EPA, 2022) and on Transport Infrastructure Ireland TII policy and guidance outlined in Section 2.

The European Habitats Directive 92/43/EEC (Article 6) indicates the need for plans and projects to be subject to Habitats Directive Assessment (also known as Appropriate Assessment) if the plan or project not directly connected with or necessary to the management of a Natura 2000 site (which includes SACs and SPAs) but which has the potential to have implications on a site's conservation objectives. These implications can be significant effects either individually or in combination with other plans or projects.

As such, a report for the purposes of Appropriate Assessment Screening was undertaken by Moore Group for the proposed development in support of the application. This stand-alone report is presented separately as part of the design package for the Project.

The site location is presented in Figure 1 below.

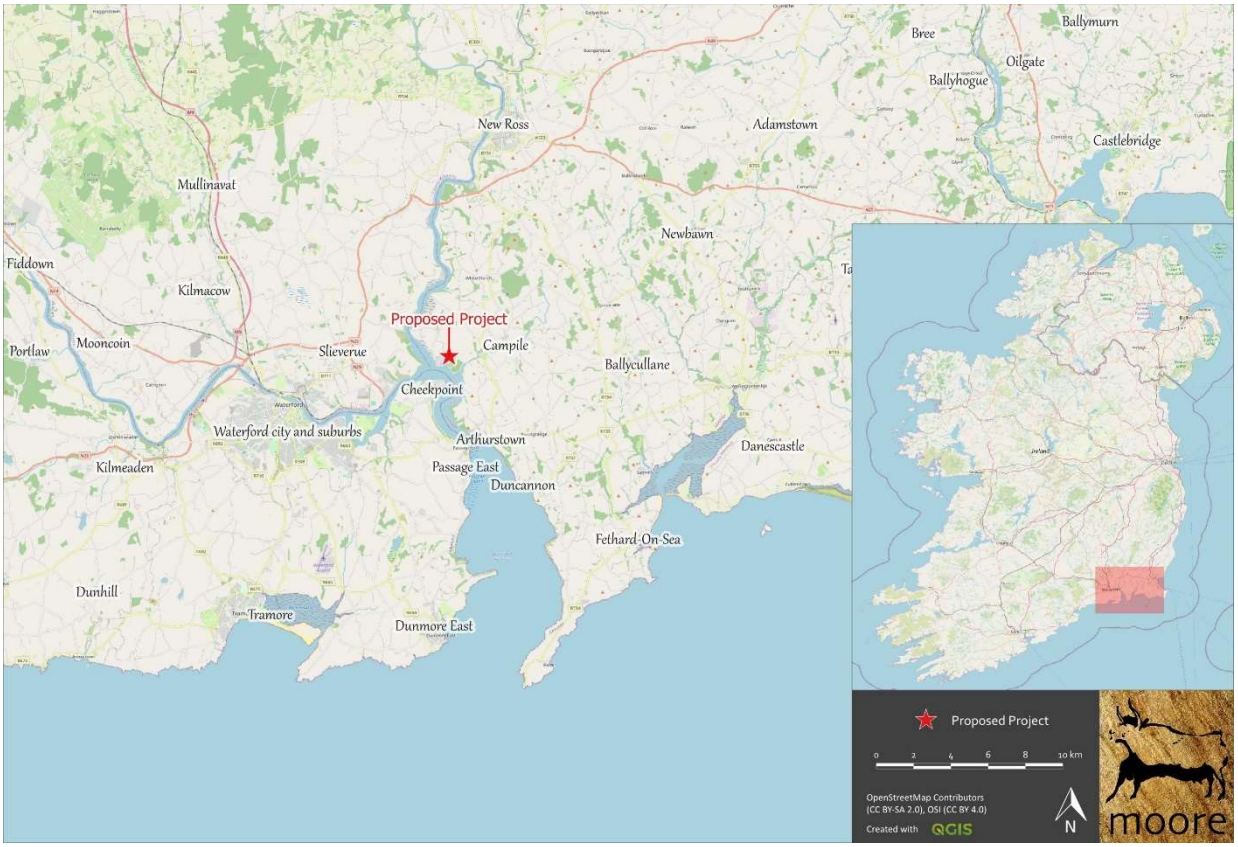

Figure 1. Showing the site location at Great Island, Co. Wexford.

2. ASSESSMENT METHODOLOGY

2.1. POLICY & LEGISLATION

2.1.1. EU Habitats Directive

The "*Habitats Directive*" (Council Directive 92/43/EEC) on the Conservation of Natural Habitats and of Wild Flora and Fauna) is the main legislative instrument for the protection and conservation of biodiversity within the European Union. The Habitats Directive provides for the designation, conservation and protection of sites comprising Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), collectively forming the Natura 2000 network of 'European sites'. Article 3 of the Habitats Directive obliges Member States to designate as SACs sites hosting the natural habitat types listed in Annex I and habitats of the species listed in Annex II of the Habitats Directive. Article 10 of the Habitats Directive requires that Member States endeavour to improve the ecological coherence of the Natura 2000 network to manage and conserve features of the landscape which are of major importance for wild fauna and flora, for example ecological corridors or stepping-stones which are important for the migration, dispersal, and genetic exchange of species.

Article 6(2) obliges Member States to take the necessary measures to avoid the deterioration of an SAC, or disturbance of a species for which the site is designated. Article 6(3) sets out the requirement for an "Appropriate Assessment", to ensure that a proposed plan or project will not have an adverse effect on

the integrity of a SAC. Article 7 applies the requirements of Article 6(2) and 6(3) of the Habitats Directive to SPAs designated under the Birds Directive.

In addition, and separate to the Appropriate Assessment requirements, Article 12 of the Habitats Directive obliges Member States to establish a regime of strict protection for certain species listed in Annex IV of the Directive, wherever they occur within their natural range. The protection for species under Article 12 of the Habitats Directive is not confined to the boundary of SACs. Species listed in Annex IV include the otter and certain species of bat.

2.1.2. EU Birds Directive

The "*Birds Directive*" (European Council (2009) Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds) confers legal protection to all naturally occurring wild birds within the EU territory. Member States are obliged to adopt the necessary measures to maintain the population of bird species, and that includes, in accordance with Article 3, an obligation to create, maintain and manage habitats for birds, and specifically for the species of Bird listed in Annex I of the Directive, Article 4 requires Member States to create SPAs which, by virtue of Article 7 of the Habitats Directive, form part of the Natura 2000 network of European sites and are subject to the Appropriate Assessment requirements under Article 6(3) of the Habitats Directive.
Additionally, Article 5 of the Birds Directive requires that Member States establish a general system of protection for all naturally occurring wild birds within the EU territory, similar to the system of strict protection required for Annex IV species under the Habitats Directive.

2.1.3. Wildlife Acts 1976 - 2021[1]

The primary domestic legislation providing for the protection of wildlife in general, and wild birds in particular, and the control of some activities adversely impacting upon wildlife is the Wildlife Act of 1976, as amended. The aims of the Wildlife Act, according to the National Parks and Wildlife Service (NPWS) are "... to provide for the protection and conservation of wild fauna and flora, to conserve a representative sample of important ecosystems, to provide for the development and protection of game resources and to regulate their exploitation, and to provide the services necessary to accomplish such aims." All wild bird species are protected under the Act. The European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) made significant amendments to the Wildlife Acts to ensure consistency with the Habitats and Birds Directives.

[1] Wildlife Act 1976, as amended. Administrative consolidation of the Wildlife Act 1976, Law Reform Commission (2021)

2.2. SURVEY METHODOLOGY

2.2.1. Desk Study

The assessment was carried out in three stages, firstly through desktop assessment to determine existing records in relation to habitats and species present in the potential Zone of Influence of the Proposed Development. This included research on the NPWS metadata website, the National Biodiversity Data Centre (NBDC) database and a literature review of published information on flora and fauna occurring in the development area.

Sources of information that were used to collate data on biodiversity in the potential Zone of Influence are listed below:

- The following mapping and Geographical Information Systems (GIS) data sources, as required:
    - National Parks & Wildlife (NPWS) protected site boundary data;
    - Ordnance Survey of Ireland (OSI) mapping and aerial photography;
    - OSI/ Environmental Protection Agency (EPA) rivers and streams, and catchments;
    - Open Street Maps;
    - Digital Elevation Model over Europe (EU-DEM);
    - Google Earth and Bing aerial photography 1995-2023;
- Online data available on Natura 2000 sites as held by the National Parks and Wildlife Service (NPWS) from www.npws.ie including:
    - Natura 2000 - Standard Data Form;
    - Conservation Objectives;
    - Site Synopses;
- National Biodiversity Data Centre records;
    - Online database of rare, threatened and protected species;
    - Publicly accessible biodiversity datasets.
- Status of EU Protected Habitats in Ireland. (National Parks & Wildlife Service, 2019); and
- Relevant Development Plans in neighbouring areas:
    - Wexford County Development Plan 2022-2028

2.2.2. Field Study

The second phase of the assessment involved a site visit to establish the existing environment in the footprint of the proposed development area. Areas which were highlighted during desktop assessment were investigated in closer detail according to the Heritage Council Best Practice Guidance for Habitat Survey and Mapping (Smith *et al*., 2011). Habitats in the proposed development area were classified according to the Heritage Council publication "*A Guide to Habitats in Ireland*" (Fossitt, 2000). This publication sets out a standard scheme for identifying, describing, and classifying wildlife habitats in Ireland. This form of classification uses codes to classify different habitats based on the plant species

present. Species recorded in this report are given in both their Latin and English names. Latin names for plant species follow the nomenclature of "*An Irish Flora"* (Parnell & Curtis, 2012).

Habitats were surveyed on the 27 July 2023 by conducting a study area walkover covering the main ecological areas identified in the desktop assessment. The survey date is within the optimal botanical survey period. A photographic record was made of features of interest.

Signs of mammals such as badgers and otters were searched for while surveying the study area noting any sights, signs, or any activity in the vicinity especially along adjacent boundaries.

Bats and Birds were surveyed using standard transect methodology and signs were recorded where encountered during the field walkover surveys. The preliminary results of the initial surveys are presented in Appendix 3. Methodologies are not repeated here in the interest of avoiding repetition.

2.2.3. Site Evaluation and Impact Assessment

The final part of the assessment involves an evaluation of the study area and determination of the potential impacts on the habitats of the study area. This part of the assessment forms the basis for Impact Assessment and is based on the following guidelines and publications:

- Guidelines for Ecological Impact Assessment in the UK And Ireland Terrestrial, Freshwater, Coastal and Marine September 2018 Version 1.1 - Updated September 2019 (CIEEM, 2019);
- EPA Guidelines on Information to be contained in an EIAR (EPA, 2022);
- Best Practice Guidance for Habitat Survey and Mapping (Heritage Council, 2011);
- Ecological Surveying Techniques for Protected Flora & Fauna (NRA, 2008);
- Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009);
- Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DEHLG, December 2009, Rev 2010);
- Guidance document on Article 6(4) of the Habitats Directive 92/43/EEC (EC, 2007).

While prepared for linear projects the TII Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009) are still relevant and outlines the methodology for evaluating ecological impacts of the project in the present report. According to the TII Guidelines, the Ecological Study should address:

- Designated conservation areas and sites proposed for designation within the zone(s) of influence of any of the Project options,
- All the main inland surface waters (e.g. rivers, streams, canals, lakes and tanks) that are intersected by any of the route corridor options, including their fisheries value and any relevant designations,

- Aquifers and dependent systems and turloughs and their subterranean water systems,
- Any known or potentially important sites for rare or protected flora or fauna that occur along or within the zone(s) of influence of any of the route options,
- Any other sites of ecological value, that are not designated, along or in close proximity to any of the route corridor options,
- Any other relevant conservation designations or programmes (e.g. catchment management schemes, habitat restoration or creation projects, community conservation projects, etc.),
- Any other features of particular ecological or conservation significance along any of the route options.

The TII Guidelines set out a method of evaluating the importance of sites identified and in turn the evaluation of the significance of impacts. The Evaluation Scheme is presented in Appendix 1 for reference.

Impact Assessment is then based on CIEEM Guidelines for Ecological Impact Assessment in the UK and Ireland, 2019.

3. PROJECT DESCRIPTION

The Proposed Development consists of the construction of an electrical infrastructure installation and associated underground grid connection (UGC) on lands within the townland of Great Island measuring approximately 2.58Ha./25812 square metres in overall area. The installation would consist of a 110kV tailfed substation and underground grid connection measuring approximately 838m in overall length. The 110kV substation would consist of a 110kV transformer; house transformer; disconnect, individual current and voltage transformers, combined current/voltage transformer, surge arrestors; circuit breakers and cable sealing end; a blastwall measuring 8.00m in overall height; 4no. lightning masts measuring 18.00m in overall height; palisade fencing measuring 2.60m in overall height; pole-mounted security cameras and lamp posts. An Eirgrid substation building with an overall footprint of approximately 180.00sqm and overall height of 4.20m would be located at the western end of the substation area. An IPP substation with an overall footprint of 132sqm and height of overall 4.20m would be located at the eastern end. The typical UGC installation would consist of standard ESB ducting details of the following 1no. trench (0.82m wide; 1.31m deep) measuring approximately 838m in overall length to carry 3no. 160mm power ducts and 2no. communication ducts and an ECC duct, connecting the proposed substation to an existing 110kV Eirgrid substation at Great Island. The typical trefoil trench will need to be adapted to a flat formation to accommodate for any service crossings encountered along the route. A typical width of trench for a flat formation trench would be approx. 1.60m with varying depths. A temporary construction compound would be constructed within the site boundary for construction phase of the development, after which it would be removed.

The application site "the Site", which measures 2.58Ha. in overall area and is greenfield, is situated approximately 12.60 kilometres (kms) south of New Ross Town and lies wholly within the townland of Great Island, being located directly east of the SSE Great Island Power Station and north of the Greenlink UK-Ireland Interconnector converter station currently undergoing construction. The village of Campile is approximately 3.1kms east of the Site, as the crow flies. The Site is located in a rural and sparsely populated area.

The Site slopes from South to north, where the existing highest level of +22m ASL is in the south-west of the Site and lowest level of +5m ASL in the north-east of site. The Site is characterised as rough grassland with encroachment of brambles and scrub, bounded by hedgerows on the northern and eastern boundaries. Access to Site from L4033 (entrance road to Great Island Power Station) is shared with Greenlink Interconnector Station, past the Siemens temporary construction compound.

The purpose of the proposed development is to construction electrical plant in the form of a substation capable of to an existing Eirgrid substation on the electrical transmission system. A battery energy storage system "BESS" to be built would provide fast frequency capacity to the grid whilst reducing the need for conventional back up generation. In a pre-app consultation (ABP-318011-23) with An Bord Pleanála it was considered the BESS does not constitute Strategic Infrastructure Development and cannot form part of the proposal.

The 110kV substation, measuring 0.3Ha in overall area, would be sited at ground level of 16.00m ASL and would consist of the following infrastructure: 110kV transformer; House transformer; Disconnect; Individual current and voltage transformers; Combined current/voltage transformer; Surge arrestors; Circuit breakers; Cable sealing end; 4no. lightning masts measuring 18.00m in overall height. 2no. substations (Eirgrid and IPP) would be included in the substation, each building having an overall height of 4.20m. A blastwall measuring 8.00m in overall height located on the eastern side of 110kV transformer, between transformer and IPP substation. Ancillary development to the main substation infrastructure would include palisade fencing measuring 2.60m in overall height, pole mounted security cameras and lamp posts.

The underground grid connection would serve to connect an existing Eirgrid 110kV substation at the SSE Great Island Power Station to the proposed substation. Measuring approximately 838.00m in overall length. The connection would consist of 1 no. typical trefoil trench measuring approximately 0.82m wide and 1.31m m deep to house 3no. power ducts, 2no. communications ducts and 1 ecc duct. A precast communications chamber measuring approximately 1.30m in length, 1.03m in width and 1.20m in height would be installed outside both substations. The UGC would be wholly on private land.

In October 2023 an application was made to Wexford County Council for development generally described as a 38kV substation, 38kV BESS (consisting of 16no. battery units), 38kV underground grid connection and associated ancillary development. The application (LPA Ref. 231294) was validated on October 27th, 2023. Figure 2 shows a detailed view of the existing site on high resolution aerial photography. Figure 3 shows the layout of the proposed development.

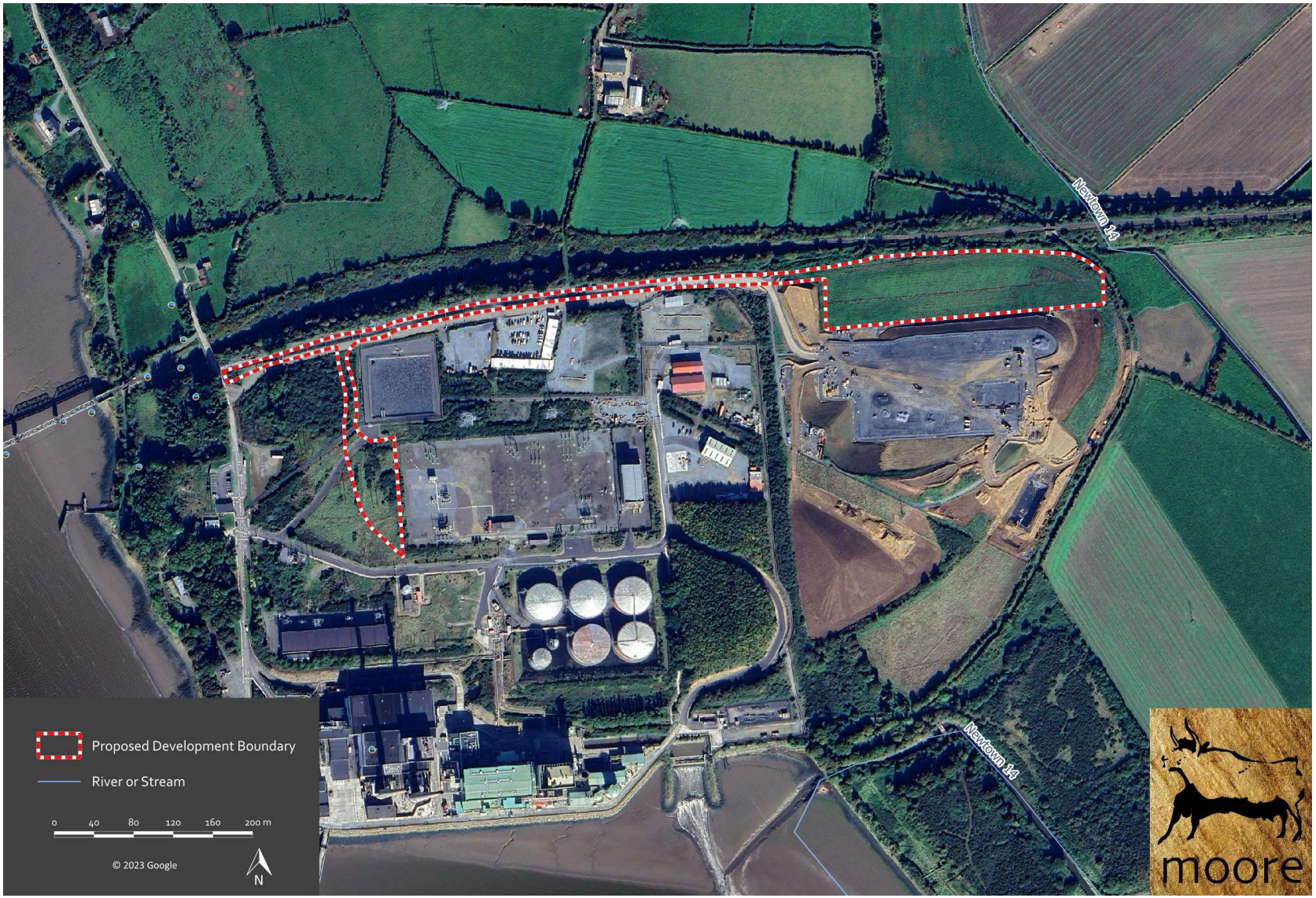

Figure 2. Showing the area of the overall combined development with proposed grid connection.

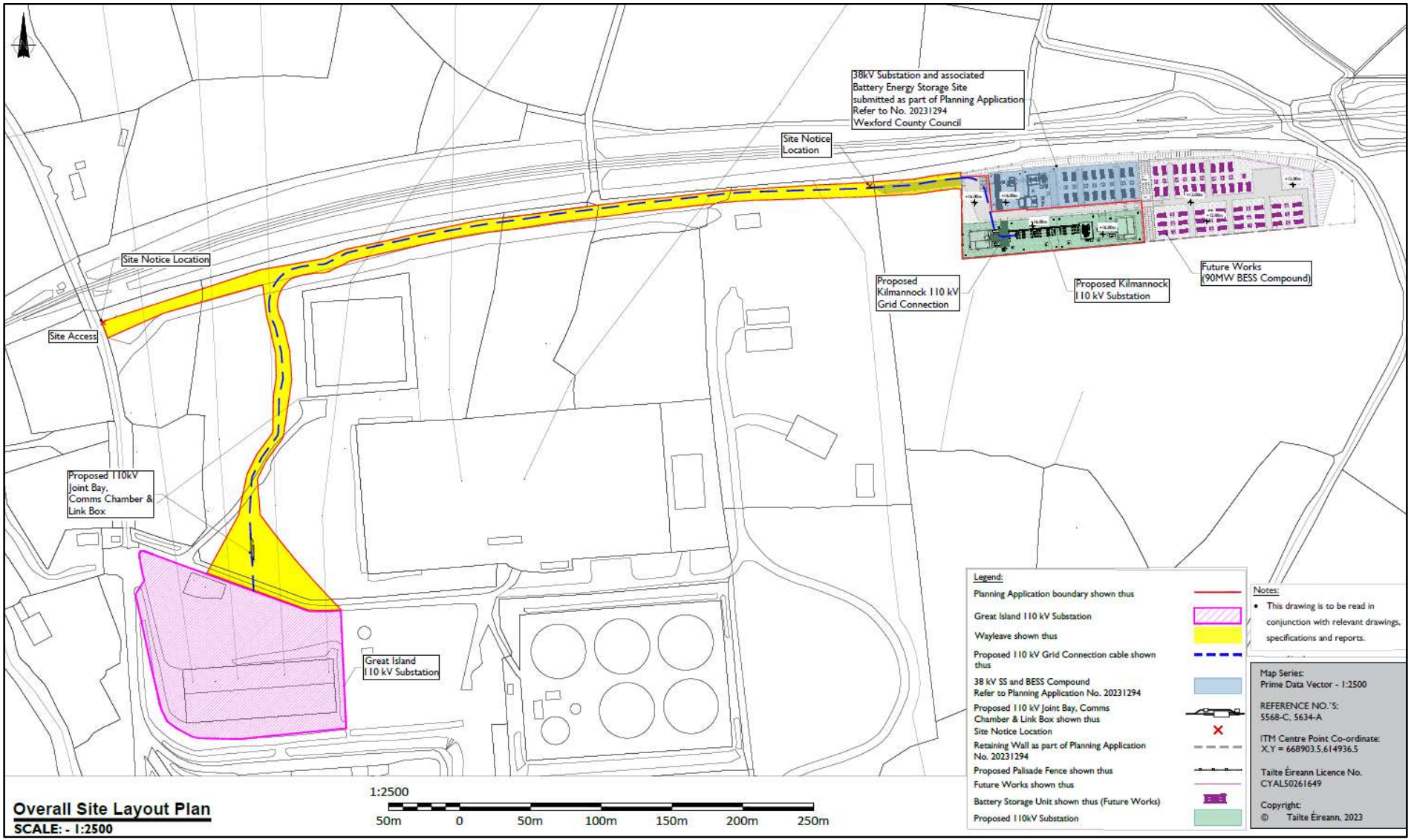

Figure 3. Plan showing proposed site layout.

4. EXISTING ENVIRONMENT

4.1. DESIGNATED CONSERVATION AREAS

A Zone of Influence (ZoI) of a proposed development is the geographical area over which it could affect the receiving environment in a way that could have significant effects on the Qualifying Interests of a European site. In accordance with the OPR Practice Note (2021), PN01, the ZoI should be established on a case-by-case basis using the Source- Pathway-Receptor framework.

The European Commission's "*Assessment of plans and projects in relation to Natura 2000 sites guidance on Article 6(3) and (4) of the Methodological Habitats Directive 92/43/EEC*" published 28 September 2021 states at section 3.1.3, that:

"Identifying the Natura 2000 sites that may be affected should be done by taking into consideration all aspects of the plan or project that could have potential effects on any Natura 2000 sites located within the zone of influence of the plan or project. This should take into account all of the designating features (species, habitat types) that are significantly present on the sites and their conservation objectives. In particular, it should identify:

- *any Natura 2000 sites geographically overlapping with any of the actions or aspects of the plan or project in any of its phases, or adjacent to them;*
- *any Natura 2000 sites within the likely zone of influence of the plan or project Natura 2000 sites located in the surroundings of the plan or project (or at some distance) that could still be indirectly affected by aspects of the project, including as regards the use of natural resources (e.g. water) and various types of waste, discharge or emissions of substances or energy;*
- *Natura 2000 sites in the surroundings of the plan or project (or at some distance) which host fauna that can move to the project area and then suffer mortality or other impacts (e.g. loss of feeding areas, reduction of home range);*
- *Natura 2000 sites whose connectivity or ecological continuity can be affected by the plan or project".*

The range of Natura 2000 sites to be assessed, i.e. the zone in which impacts from the plan or project may arise, will depend on the nature of the plan or project and the distance at which effects may occur. For Natura 2000 sites located downstream along rivers or wetlands fed by aquifers, it may be that a plan or project can affect water flows, fish migration and so forth, even at a great distance. Emissions of pollutants may also have effects over a long distance. Some projects or plans that do not directly affect Natura 2000 sites may still have a significant impact on them if they cause a barrier effect or prevent ecological linkages. This may happen, for example, when plans affect features of the landscape

that connect Natura 2000 sites or that may obstruct the movements of species or disrupt the continuity of a fluvial or woodland ecosystem. To determine the possible effects of the plan or project on Natura 2000 sites, it is necessary to identify not only the relevant sites but also the habitats and species that are significantly present within them, as well as the site objectives.

The Zone of Influence may be determined by considering the Proposed Development's potential connectivity with European sites, in terms of:

- Nature, scale, timing and duration of all aspects of the proposed works and possible impacts, including the nature and size of excavations, storage of materials, flat/sloping sites;
- Distance and nature of potential pathways (dilution and dispersion; intervening 'buffer' lands, roads etc.); and
- Location of ecological features and their sensitivity to the possible impacts.

The potential for source pathway receptor connectivity is firstly identified through GIS interrogation and detailed information is then provided on sites with connectivity. European sites that are located within a potential Zone of Influence of the Proposed Development are listed in Table 1 and presented in Figures 4 and 5, below. Spatial boundary data on the Natura 2000 network was extracted from the NPWS website (www.npws.ie) on 15 December 2023. This data was interrogated using GIS analysis to provide mapping, distances, locations, and pathways to all sites of conservation concern including pNHAs, NHA and European sites.

Table 1 European Sites located within the potential Zone of Influence[2] of the Proposed Development.

Site Code	Site name	Distance (km)[3]
002137	Lower River Suir SAC	1.67
002162	River Barrow and River Nore SAC	0.37

The nearest European sites to the Proposed Development are the River Barrow and River Nore SAC (Site Code 002162), c. 370m to the southeast and the Lower River Suir SAC (Site Code 002137), c. 1.67km to the southwest.

The Proposed Development is located to the northeast of the existing Great Island Power Station and is bounded to the north by the Waterford to Rosslare railway line and to the east and southeast by a local access road. A review of aerial photography, Ordnance Survey Ireland (OSI) mapping and OSI Geographical Information System (GIS) data for rivers and streams indicates that there are no notable

[2] All European sites potentially connected irrespective of the nature or scale of the Proposed Development.
[3] Distances indicated are the closest geographical distance between the Proposed Development and the European site boundary, as made available by the NPWS.

surface water features onsite and no direct hydrological pathways to offsite surface water bodies. This was confirmed during fieldwork on habitat assessment on 27 July 2023.

The nearest watercourse to the application is the Newtown Stream (EPA Newtown 14) which runs in a north-south direction approximately 18m east of the site boundary at the nearest point and is separated from the Proposed Development site by a hard-surface lane running beneath the railway bridge north of the site.

The River Barrow, River Suir and Campile River are located 253m, 255m and 914m beyond the western, western and southern site boundaries respectively. The Newtown Stream drains farmland to the north of the railway line and farmland and forestry south of the railway line with no connectivity to the proposed development areas.

There are no water courses on site and there is no direct connectivity to any European sites.

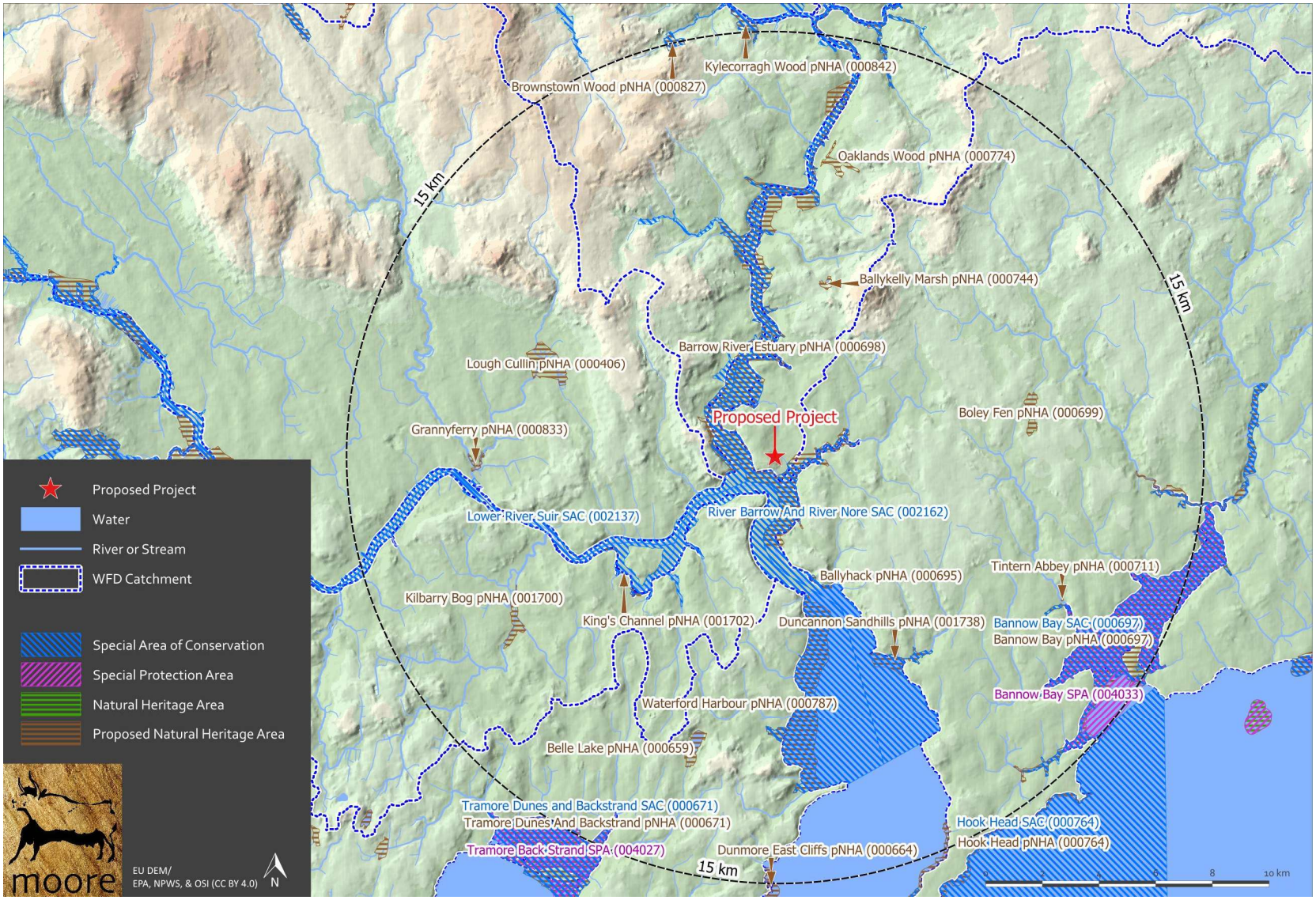

Figure 4. Showing European sites and NHAs/pNHAs within the wider Potential Zone of Influence of the Proposed Development.

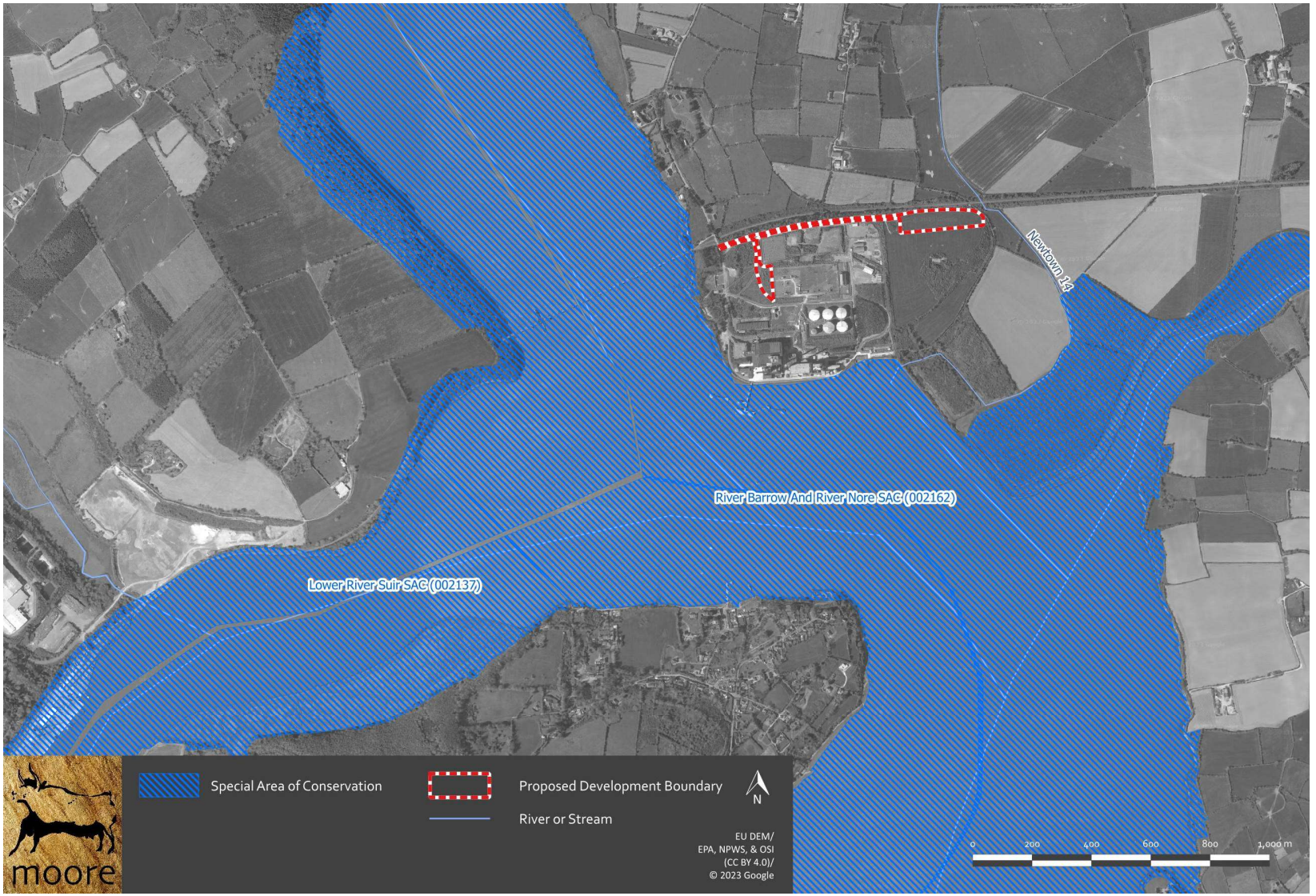

Figure 5. Detailed view of European sites in the nearer Potential Zone of Influence of the Proposed Development.

4.2. HABITAT DESCRIPTIONS

Records from the NBDC database of rare terrestrial plants in a custom polygon covering the Proposed Development areas (NBDC accessed 04/10/23) are summarised as follows.

- Divided Sedge (*Carex divisa*) recorded on 04/07/1990 in The Flora of County Wexford as a Threatened Species: Regionally Extinct.
- Irish Whitebeam (*Sorbus hibernica*) recorded on 26/08/2011 in The Flora of County Wexford as Threatened Species: Vulnerable.
- Meadow Barley (*Hordeum secalinum*) recorded on 31/12/1990 in Irish Crop Wild Relative Database as Threatened Species: Endangered.
- Slender Thistle (*Carduus tenuiflorus*) recorded on 25/06/1990 in The Flora of County Wexford as Threatened Species: Near threatened.

Other listed threatened plant species are not relevant as they date from 1950, 1901 and late 1800s. In any case none of these species were recorded in the Proposed Development areas.

The proposed substation development area is located east of the existing Great Island Power Station, see Figure 6. The site is bounded to the north by the Waterford-Rosslare railway line, to the east by a local road and to the south by the new Greenlink development. The underground grid connection (UGC) will be along the permitted access road to the Greenlink site. From the access track the UGC turns south into the Great Island site cutting through the edge of Mixed broadleaved woodland and Gorse Scrub (WD1) and into rank grassland that has been historically disturbed for pylon and twin pole set placement.

The substation works area consists of a field of Improved agricultural grassland (GA1) with a thin strip of Recolonising Bare Ground (ED3) along the northern boundary where earth has been disturbed in the past year. The field slopes down from south to north toward the railway line.

The grassland areas have typical species of improved grassland, including Perennial Rye Grass (*Lolium perenne*) Meadow Foxtail (*Alopecurus pratensis*), Crested Dogs Tail (*Cynosusrus cristatus*), False Oat-Grass (*Arrhenatherum elatius*) with Broad-leaved Dock (*Rumex obtusifolius*) and Creeping Thistle (*Cirsium arvense*). Bare patches from machinery have been colonised by Knotgrass (*Polygonum* spp.) and Redshank (*Persicaria maculosa*).

A narrow portion of the north of the site been disturbed in the recent past, presumably during scrub clearance and has recolonised (ED3) with vigorous tall herb growth, with Nettle (*Urtica dioica*), Spear Thistle (*Cirsium vulgare*), Great Willowherb (*Epilobium hirsutum*) and Rosebay Willowherb (*Chamerion angustifolium*).

The railway corridor comprises Mixed broadleaved woodland and Scrub (WD1) with Sycamore and Ash predominating along with Hawthorn and Gorse Scrub. This woodland type is also present under the route of the UGC with Gorse Scrub having succeeded to woodland.

There were no invasive species recorded at the proposed development site.

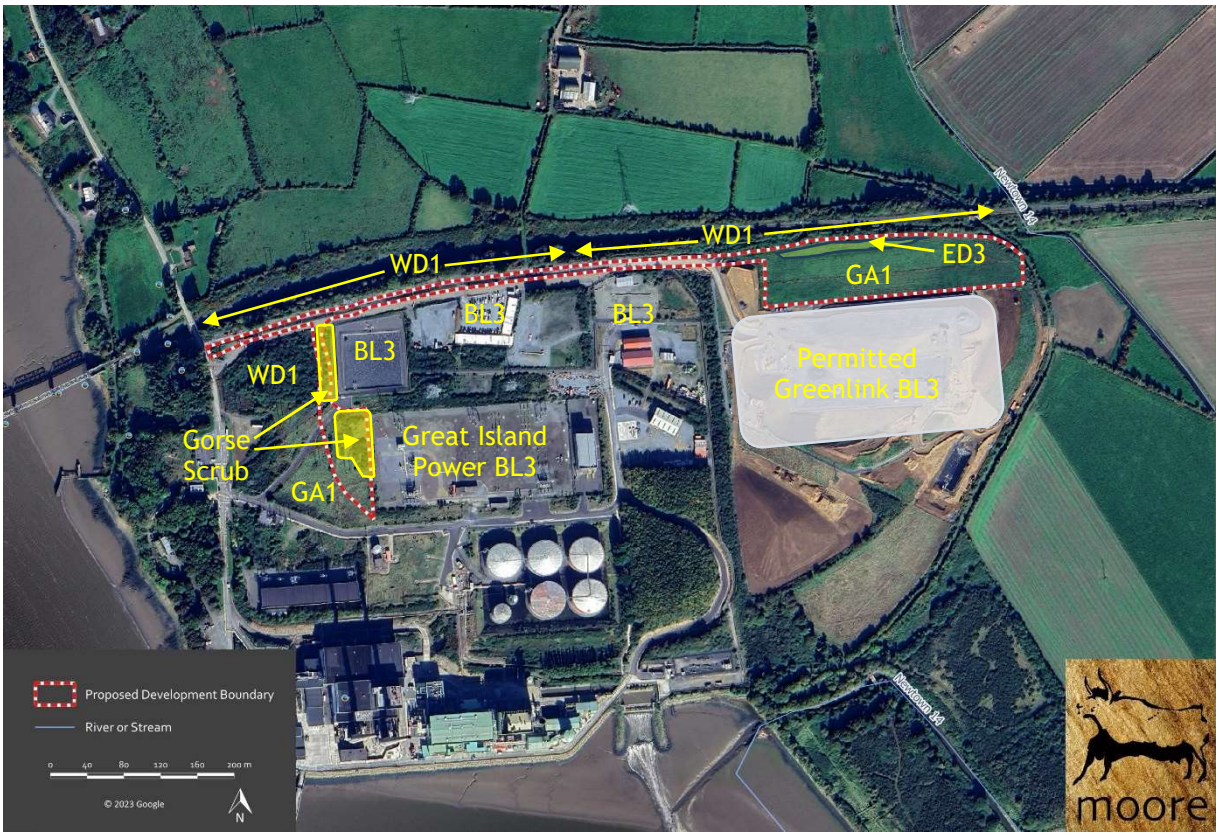

Figure 6. Habitat map based on recent aerial photography.

4.1. FAUNA

4.1.1. Mammals

Otters

There are no otter habitats in the study area and no potential for otters on the site.

Badgers

There are no badger setts in the study area and no potential for badgers on the site. The field boundaries were surveyed and no setts were recorded.

Bats

There are nine resident bat species in Ireland accounting for nearly a third of Irelands mammal populations. Bats are protected by EU Habitats Directive as well as the 1976 Wildlife Act and 2000 Amendment (BCI, 2010). Lesser Horseshoe bats have an additional protection under the EU Habitats

Directive. In order to comply with legislation that bats are not killed or injured, it is essential to ensure that measures to reduce risk to bats are undertaken or that the presence of bats can be ruled out.

A preliminary walkover survey was carried out by 13 September 2023 to examine the potential for any features suitable to host a bat roost. The subject site did not contain any buildings however hedgerows and scrub fringes were examined. In addition, a railway bridge located to the north of the site was examined. Hedgerows within the site have no potential to host a bat roost. Similarly, the block and brick bridge had no gaps of sufficient depth to provide suitable roosting features for bats.

Two Song Meter SM4 (Wildlife Acoustics, Inc; Massachusetts, USA) 16-bit full spectrum time-expansion recording bat detectors were placed within the study area (Static 1; 52.28328, -6.98666. Static 2 52.28350, -6.98867) on the evening of the 13 - 20 September 2023. These static detectors were installed according to the guidelines as set out in Bat Conservation Ireland's 'Bat Survey Guidelines.'

Detector 1 was placed in the open, attached to a post within grassland while detector 2 was situated adjacent to a hedgerow; a habitat feature favoured by bats. These devices were set to record from 30 minutes prior to sunset to half an hour after sunrise and automatically adjusts itself each day thus in position and recording giving a total of 73 hours 40 minutes each over the seven nights.

Registrations follow the Bat Conservation Trusts definition of a bat pass; 'two or more bat calls in a continuous sequence; each sequence or pass is separated by one second or more in which no calls are recorded. The number of bat passes for each species or species group identified is counted for each' point. (BCT Good Practice Guidelines 2nd Ed 2012). Weather information is provided by Met Eireann from the weather station located in Johnstown Castle, Wexford. Lowest sunset temperatures was 11.5 degrees or above. Sunset windspeeds were on average (2.6m/s). Drizzle or showers occurred on four nights, two nights were dry and another two had persistent drizzle to rain. Overall conditions were acceptable baring 13th where early drizzle turned to rain.

Highest-level activity was on the 16 September with detector 2 recording 177 individual calls and 40 recorded on detector 1. Detector 2, located by the northern hedgerow, showed a marked higher average rate of bat calls; 375 registrations compared to 76 from the detector placed in the open.

Common Pipistrelle made up the majority of the calls recorded (46%), followed by Leisler's bat (35%) and Soprano Pipistrelle (15%). Brown long-eared bat, 40kHz Pipistrelle and Myotis species were all recorded in very low numbers; 3%, 1% and 0.4% respectively.

4.1.2. Birds

All nesting birds are protected under the Wildlife Acts. A list of breeding bird species recorded during fieldwork in July 2023 is presented in Table 2 below. Given the habitat type present; rank improved grassland, and the high level of existing disturbance associated with the permitted adjacent Greenlink development, the site is not suitable for Wintering bird species.

Table 2. Birds recorded during fieldwork in July 2023.

Birds	Scientific name	BWI Status	Habitat Type
Great Tit	*Parus major*	Green	Woods, hedgerows, farmland
Goldfinch	*Carduelis carduelis*	Green	Farms, gardens
Stonechat	*Saxicola rubicola*	Green	Scrub, heath, grassland
Blackbird	*Turdus merula*	Green	Anywhere in lowland areas
Woodpigeon	*Columba palumbus*	Green	Gardens, woods, hedges
Wren	*Troglodytes troglodytes*	Green	Gardens, woods, hedges

5. ASSESSMENT OF IMPACTS

5.1. SITE EVALUATION

Due cognisance of features of the landscape which are of major importance for wild flora and fauna, such as those with a "*stepping stone*" and ecological corridors function, as referenced in Article 10 of the Habitats Directive were considered in this assessment.

The ecological value of the site was assessed following the guidelines set out in the Institute of Ecology and Environmental Management's Guidelines for Ecological Impact Assessment (2019) and according to the Natura Scheme for evaluating ecological sites (after Nairn & Fossitt, 2004). Judgements on the evaluation were made using geographic frames of reference*, e.g.* European, National, Regional or Local. Following a detailed literature review, desktop assessment and field survey the footprint of the proposed development site can be categorised into the following habitat types:

- Improved grassland (GA1)
- Mixed broadleaved woodland and Scrub mosaic (WD1)
- Recolonising Bare Ground (ED3)

There were no rare or protected species recorded on the site and there were no records of invasive species.

The habitats under the footprint of the proposed development are of low local ecological value.

5.2. IMPACT ASSESSMENT

There is no connectivity with the River Barrow, Nore, or Suir. Given the nature and scale of the proposed works, in a greenfield area, adjacent to the existing power station and interconnector, adverse effects on the River Barrow and River Nore and Lower River Suir European sites, or any other European sites, are highly unlikely and significant adverse effects have been ruled out in AA Screening.

5.2.1. Direct Effects

Habitats

The proposed BESS and substation development will be sited on lands which are currently classed as improved grassland and recolonising bare ground as a result there will be a local insignificant loss of improved grassland and recolonising bare ground. The loss is considered **imperceptible** and will be **permanent**.

The proposed UGC development will be sited on lands which are currently classed as woodland/scrub and improved grassland and as a result there will be a local insignificant loss of scrub and improved grassland. The loss is considered **imperceptible** and will be **permanent**.

There were no invasive species recorded in the Proposed Development areas.

Fauna

Otters

There will be no direct or indirect effects on otters.

Badgers

There will be no direct or indirect effects on badgers.

Bats

Four species of bat were positively identified during the various bat surveys: Common Pipistrelle (*Pipistrellus pipistrellus*), Soprano Pipistrelle (*Pipistrellus pygmaeus*), Brown Long-eared bat (*Plecotus auritus*) and Leisler's bat (*Nyctalus leisleri*). In addition, two unidentified Myotis bat species were recorded, these being either Whiskered, Natterers or Daubenton's bats. Finally several Pipistrelle calls recorded from the static detectors had a peak frequency of 40kHz thus could be either Common or Nathusius Pipistrelle.

The overall bat pass per hour rate for both sites, even the hedgerow site are very low particularly given the lowland nature of the site. These rates are more in line with upland bog habitats. It is likely lighting from the nearby power station reduces favourability of the site for bats.

The predicted direct effects on bats recorded and presented in Appendix 3 are summarised as follows:

Brown Long-eared bat

The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted.

Common Pipistrelle

The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted.

Soprano Pipistrelle

The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted.

Leisler's Bat

The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted.

Myotis Species

The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted.

Birds

Annexed Birds

The nearest SPA to the subject site is the Bannow Bay SPA (Site Code 004033) located c. 11.36km to the southeast. The proposed site was surveyed for wintering waders and no Conservation Objective species associated with the SPA were recorded within the site. The River Barrow and River Nore SAC located 370m to the west listed 22 bird species that utilise the river and estuary. None of these birds were recorded from within the subject site. While the surrounding agricultural lands provide good feeding and roosting areas, the subject site has lower potential given the enclosed nature of the site; the existing power-station to the west, railway bank to the north, treeline to the east and construction site to the south. These barriers prevent the site from offering ex site effects on the SPAs and birds associated with SAC's located in the wider vicinity of the Proposed Development.

Buzzard

The magnitude of the impact is assessed as Very Low. Low sensitivity species + Medium Impact = Very Low effect significance. No likely significant effects at a local level are predicted.

Meadow Pipit

The magnitude of the impact is assessed as Low. Medium sensitivity species + Medium Impact = Low effect significance. No likely significant effects at a local level are predicted.

Sparrowhawk

The magnitude of the impact is assessed as Very Low. Low sensitivity species + Medium Impact = Very Low effect significance. No likely significant effects at a local level are predicted

Yellowhammer

The magnitude of impact is assessed as Low. Medium sensitivity species + Low Impact = Low effect significance. No likely significant effects at a local level are predicted.

5.2.2. Indirect Effects

Habitats

There are no water courses on or adjacent to the proposed works areas and there will be no effects on the nearby Newtown Stream or on the River Barrow.

There will be no indirect effects on the River Barrow and River Nore SAC or on the Lower River Suir SAC.

Fauna

Otters

There will be no direct or indirect effects on otters.

Badgers

There will be no direct or indirect effects on badgers.

Bats

The predicted indirect effects on bats recorded and presented in Appendix 3 are summarised as follows:

Brown Long-eared bat

The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted.

Common Pipistrelle

The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted.

Soprano Pipistrelle

The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted.

Leisler's Bat

The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted.

Myotis Species

The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted.

Birds

Annexed Birds

The River Barrow and River Nore SAC located 370m to the west listed 22 bird species that utilise the river and estuary. None of these birds were recorded from within the subject site. While the surrounding agricultural lands provide good feeding and roosting areas, the subject site has lower potential given the enclosed nature of the site; the existing power-station to the west, railway bank to the north, treeline to the east and construction site to the south. These barriers prevent the site from offering ex site effects on the SPAs and birds associated with SAC's located in the wider vicinity of the Proposed Development.

Buzzard

The magnitude of impact is assessed as Low. Low sensitivity species + Low Impact = Very Low effect significance. No likely significant effects at a local level are predicted.

Meadow Pipit

The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted.

Sparrowhawk

The magnitude of impact is assessed as Very Low. Low sensitivity species + Low Impact = Low effect significance. No likely significant effects at a local level are predicted.

Yellowhammer

The magnitude of the impact is assessed as Low. Medium sensitivity species + Low Impact = Low effect significance.

5.2.3. Cumulative Effects

Cumulative effects or in combination effects are changes in the environment that result from numerous human-induced, small-scale alterations. Cumulative impacts can be thought of as occurring through two main pathways: first, through persistent additions or losses of the same materials or resource, and second, through the compounding effects as a result of the coming together of two or more effects.

A review of the National Planning Application Database was undertaken. The database was then queried for developments granted planning permission within the vicinity of the Proposed Development within the last three years, these are presented in Table 3 below.

Table 3. Consideration of in-combination and cumulative effects.

Planning Ref.	Description of development	Comments
ABP-308906-20	Proposed development will form part of the Greenlink Interconnector and will consist of the development of a new converter station, tail station, MV substation and 23km of high voltage direct current (JVDC) electricity cables, 420m of high voltage alternating current (HVAC) cables, 23.42km of fibre optic cable and all associated site works with an overall proposed development site area of 83.8ha.	No potential for in-combination or cumulative effects given the Proposed Development will have no significant effect on Biodiversity.
20221633	Permission for the development of a new 38kV electricity circuit between the existing Knockmullen ESB Substation, New Ross and the existing Great Island ESB Substation, within the Great Island generation station complex. The circuit - which traverses the townland of Great Island, Creakan Lower, Creakan Upper, Butlersland, Ballydock, Priesthaggard, Poulmaloe, Whitechurch, Dunganstown, Killowen, Oldcourt, Stokestown, Landscape, Camlin and Knockmullin, County Wexford, will be c.13.75 km in length and will consist of c.12 km of overhead line (OHL) and c.1.75 km of underground cable (UGC). The OHL structures (87 No.) will consist of single and double wood polesets, with a height above ground level ranging from c.9.7 m to c. 18 m and will require below ground foundations and staywires at specific locations. The UGC will primarily run along public roads and will consist of electrical cables laid in underground ducts buried in a trench (with varying dimensions between c.0.6 cm and c.0.9 m width and a depth of c.1.2 m). For information: the proposed OHL passes through the curtilage associated with the demesne lands of Landscape House which is a protected Structure in the Wexford County Development Plan 2022-2028 (RSP Ref: WCC0530). Permission is sought for all associated works including temporary works such as the creation of access ways etc. Planning permission is sought for a ten (10) year period. A Natura Impact Statment (NIS) has been prepared and will be submitted to the planning authority with the application.	No potential for in-combination or cumulative effects given the Proposed Development will have no significant effect on Biodiversity.

Planning Ref.	Description of development	Comments
N/A	**Great Island – 38kV project – Description of Development** In October 2023 an application was made to Wexford County Council for development generally described as a 38kV substation, 38kV BESS (consisting of 16no. battery units), 38kV underground grid connection and associated ancillary development. The application (LPA Ref. 23) was validated on October 27th, 2023.	No potential for in-combination or cumulative effects given the Proposed Development will have no significant effect on Biodiversity.

There are no significant impacts predicted from the proposed development on habitats, flora, fauna, or biodiversity. There are no predicted in-combination or cumulative effects with other adjacent and concurrent proposed developments.

6. MIIGATION MEASURES

There are no significant impacts predicted from the proposed development on habitats, flora, fauna, or biodiversity.

Standard site specific measures for the protection of Bats and Birds is included from Appendix 3.

6.1. MITIGATION FOR BATS

No loss of bat roosting potential will occur due to the development. Highest activity recorded was from Common Pipistrelle and Leisler's bat, both species adept at hunting over artificial surfaces thus the transformation of the site may result in only a medium negative to neutral impact. It is important to limit artificial lighting within the site to ensure no additional light pollution occurs on bat friendly habitat features.

Multiple surveys demonstrate the site will have a low impact any species of note. Minor measures are proposed as follows.

Bats and artificial lighting in the UK (BCT, 2018) suggest the avoidance of lighting on key habitats and features. It is important to maintain Dark Zones for foraging bats in areas where lighting is not necessary. However, where lighting is required, this lighting should be placed at a minimum height using the lowest lux value permitted for health and safety.

The lighting will be directional on to paths and buildings only with no spillage of light to adjoining habitats. To reduce light spillage from luminaries, lights that are designed not to emit light at angles greater than 70° from the vertical plane will be used. Consequently a flat glass protector is often used to reduce light spillage. Other methods to control light spillage:

a) Shields: these can be mounted on lamps to control direction of the light

b) Masking: part of the luminaries is painted to block light to control the direction of the light

c) Louvers': either as internal or external slates organized in rows or at angles depending on the direction of light control.

No white light will be permitted as this has the greatest impact on bats. Lighting will be fitted with LED luminaires using warm white colours <2700 Kelvins. Luminaires will feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.

6.2. MITIGATION FOR BIRDS

An Ornithologist ECoW will conduct two days surveys in the bird breeding season during the construction period to identify if any rare or protected birds are breeding in areas with potential for disturbance.

Vegetation removal could impact on nesting passerines such as blackbird and wren thus ideally this activity should be carried out only outside the bird-nesting season March 1st – August 31st in order to avoid impacts on nesting birds. In the event this work is required earlier an ecological clerk of works should be onsite to ensure no nesting birds are present. Should an occupied nest be found the clearance works will have to waits until after fledging.

Yellowhammer and Meadow Pipit were recorded within the site. As such wildflower seed mix areas will be planted to allow a food source for such species still occupying the greater area.

7. CONCLUSIONS & RESIDUAL EFFECTS

Residual impacts are those that occur after the mitigation measures have taken effect. If the mitigation measures listed above are employed during construction, then there will be no residual impact on the local ecology.

There are no significant effects predicted from the proposed development on European sites.

There are no significant effects predicted from the proposed development on habitats, flora, fauna, or biodiversity.

8. REFERENCES

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Appendix 1

TII Evaluation of Habitats

Ecological valuation: Examples

International Importance:

- 'European Site' including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation.
- Proposed Special Protection Area (pSPA).
- Site that fulfills the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended).
- Features essential to maintaining the coherence of the Natura 2000 Network.[4]
- Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive.
- Resident or regularly occurring populations (assessed to be important at the national level)[5] of the following:
  - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or
  - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive.
- Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971).
- World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972).
- Biosphere Reserve (UNESCO Man & The Biosphere Programme).
- Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979).
- Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979).
- Biogenetic Reserve under the Council of Europe.
- European Diploma Site under the Council of Europe.
- Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).[6]

National Importance:

- Site designated or proposed as a Natural Heritage Area (NHA).
- Statutory Nature Reserve.
- Refuge for Fauna and Flora protected under the Wildlife Acts.
- National Park.
- Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park.
- Resident or regularly occurring populations (assessed to be important at the national level)[7] of the following:
  - Species protected under the Wildlife Acts; and/or
  - Species listed on the relevant Red Data list.
- Site containing 'viable areas'[8] of the habitat types listed in Annex I of the Habitats Directive.

County Importance:

- ☐ Area of Special Amenity.[9]
- ☐ Area subject to a Tree Preservation Order.
- ☐ Area of High Amenity, or equivalent, designated under the County Development Plan.
- ☐ Resident or regularly occurring populations (assessed to be important at the County level)[10] of the following:
  - ☐ Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
  - ☐ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
  - ☐ Species protected under the Wildlife Acts; and/or
  - ☐ Species listed on the relevant Red Data list.
- ☐ Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.
- ☐ County important populations of species, or viable areas of semi-natural habitats or natural heritage features identified in the National or Local BAP,[11] if this has been prepared.
- ☐ Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county.
- ☐ Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.

Local Importance (higher value):

- ☐ Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared;
- ☐ Resident or regularly occurring populations (assessed to be important at the Local level)[12] of the following:
  - ☐ Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
  - ☐ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
  - ☐ Species protected under the Wildlife Acts; and/or
  - ☐ Species listed on the relevant Red Data list.
- ☐ Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality;
- ☐ Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.

Local Importance (lower value):

- ☐ Sites containing small areas of semi-natural habitat that are of some local importance for wildlife;
- ☐ Sites or features containing non-native species that are of some importance in maintaining habitat links.

Appendix 2 Site Photos

Photo 1. Showing the site from the northwest with permitted Greenlink building in centre.

Photo 2. View toward the UGC, with the railway line behind the hedgerow in the centre.

Appendix 2 Bat & Bird Survey – Éire Ecology

Eire Ecology

Environmental Consultants

Bird and Bat Report

110kV electrical substation and
underground grid connection
Great Island, Co. Wexford

DOCUMENT DETAILS

Client:	Entrust Planning and Environmental on behalf of SSE Generation Ltd.
Project Title:	110kV electrical substation and underground grid connection
Document Title:	Bird and Bat Report
Prepared By:	Karolina Illien - Ecologist
Reviewed By:	John Curtin – Lead Ecologist
Date:	December 2023

Table of Contents

1 INTRODUCTION

Eire Ecology was commissioned by Awn Consulting to carry out an assessment of birds and bat usage of lands located at Brownstown, Co. Dublin.

The present report was compiled by John Curtin of Eire Ecology providing information on flora and fauna. John Curtin B.Sc. is the principal ecologist with Eire Ecology and has over 10 years of experience in ecological impact assessment.

The report concentrates on ecological features within the development area of particular significance, primarily designated birds and bats.

The report has been compiled in compliance with the European Communities Legal requirements and follows guidance outlined in the following documents:

- EPA Revised Guidelines on the Information to be contained in Environmental Impact Statements Draft September 2015.
- EPA Advice Notes on for Preparing Environmental Impact Statements Draft September 2015.

The European Habitats Directive 92/43/EEC (Article 6) indicates the need for plans and projects to be subject to Habitats Directive Assessment (also known as Appropriate Assessment) if the plan or project is not directly connected with or necessary to the management of a Natura 2000 site (which includes SACs and SPAs) but which has the potential to have implications on a site's conservation objectives. These implications can be significant effects either individually or in combination with other plans or projects.

2 ASSESSMENT METHODOLOGY

2.1 POLICY & GUIDANCE

2.1.1 EU Habitats Directive

The "Habitats Directive" (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna) is the main legislative instrument for the protection and conservation of biodiversity within the European Union and lists certain habitats and species that must be protected within wildlife conservation areas, considered to be important at a European as well as at a national level. A "Special Conservation Area" or SAC is a designation under the Habitats Directive. The Habitats Directive sets out the protocol for the protection and management of SACs.

The Directive sets out key elements of the system of protection including the requirement for "Appropriate Assessment" of plans and projects. The requirements for an Appropriate Assessment are set out in the EU Habitats Directive. Articles 6(3) and 6(4) of the Directive.

2.2 EU Birds Directive

The "Birds Directive" (Council Directive 79/409/EEC as codified by 2009/147/EC) provides for a network of sites in all member states to protect birds at their breeding, feeding, roosting and wintering areas. This directive identifies species that are rare, in danger of extinction or vulnerable to changes in habitat and which need protection (Annex I species). Appendix I indicates Annex I bird species as listed on the Birds Directive. A "Special Protection Area" or SPA, is a designation under The Birds Directive.

SACs and SPAs form a pan-European network of protected sites known as Natura 2000 sites and any plan or project that has the potential to impact upon a Natura 2000 site requires Appropriate Assessment (AA). As outlined previously, an AA Screening Report was prepared for this project and is presented as a separate report to the planning application.

2.2.1 Wildlife Acts 1976 – 2012

The primary domestic legislation providing for the protection of wildlife in general, and the control of some activities adversely impacting upon wildlife is the Wildlife Act of 1976, as amended. The aims of the wildlife act according to the National Parks and Wildlife Service are "… to provide for the protection and conservation of wild fauna and flora, to conserve a representative sample of important ecosystems, to provide for the development and protection of game resources and to regulate their exploitation, and to provide the services necessary to accomplish such aims." All bird species are protected under the act. The Wildlife (Amendment) Act of 2000 amended the original Act to improve the effectiveness of the Act to achieve its aims.

2.3 SURVEY METHODOLOGY

The assessment was carried out in three stages, firstly through desktop assessment to determine existing records in relation to habitats and species present in the study area. This included research on the NPWS metadata website, the National Biodiversity Data Centre (NBDC) database and a literature review of published information on flora and fauna occurring in the development areas.

The second phase of the assessment involved site visits to establish the existing environment in the footprint of the proposed development with particular reference to birds and bats. The potential to host bat roosts was examined at the time of an walkover survey. A photographic record was made of the main features of interest. A static bat detector survey was conducted in September 2023. Breeding and wintering bird surveys were conducted from July to October 2023. The final part of the assessment involves an evaluation of the proposed development area and determination of the potential impacts on the fauna of the area. This part of the assessment forms the basis for Impact Assessment and is based on the following guidelines and publications:

- Assessment of plans and projects significantly affecting Natura 2000 sites (EC, 2002);
- Managing Natura 2000 Sites (EC, 2000);
- Guidance document on Article 6(4) of the Habitats Directive 92/43/EEC (EC, 2007);
- Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DEHLG, December 2009, Rev 2010);
- Guidelines for Planning Authorities & An Bord Pleanala on carrying out Environmental Impact Assessments (March 2013)
- EPA Revised Guidelines on the Information to be contained in Environmental Impact Statements Draft September 2015.
- EPA Advice Notes on for Preparing Environmental Impact Statements Draft September 2015.
- Bat Mitigation Guidelines for Ireland V2 (National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, 2022).
- Hen Harrier Survey 2015 results (Irish Wildlife Manuals No. 93, Ruddock et al 2016)
- Institute of Ecology and Environmental Management's Guidelines for Ecological Impact Assessment (2006)
- Natura Scheme for evaluating ecological sites (Nairn & Fossitt, 2004)
- Colhoun, K., and Cummins, S. (2013). Birds of Conservation Concern in Ireland 2014–2019. Irish Birds 9:523—544
- BirdWatch Ireland and the National Parks and Wildlife Service of the Department of the Environment, Heritage and Local Government. Counter Manual. Guidelines for Irish Wetland Bird Survey Counters
- NRA (2009) 'Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes'

- Mc Guinness, S., Muldoon, C., Tierney, N., Cummins, S., Murray, A., Egan, S. & Crowe, O. (2015) Bird Sensitivity Mapping for Wind Energy Developments and Associated Infrastructure in the Republic of Ireland. BirdWatch Ireland, Kilcoole, Wicklow
- Crowe, O (2005) Ireland's wetlands and their waterbirds: Status and Distribution. BirdWatch Ireland, Newcastle, Co Wicklow
- Scottish Natural Heritage (2017) Recommended bird survey methods to inform impact assessment of onshore wind farms, Version 2, SNH, Perth
- Natural England Guidance for bird surveys in relation to development https://www.gov.uk/guidance/ wild-birds-surveys-and-mitigationfor-development-projects#surveymethods
- Natural England Guidance for bird surveys in relation to onshore windfarms https://www.gov.uk/ guidance/wild-birds-surveys-and monitoring-for-onshore-wind-farms
- Wetland Bird Survey (WeBS): Numbers and Trends
- British Trust for Ornithology. Bird Atlas 2007-11, Field Methods.

The location of the proposed development in the townland of Great Island, Co. Wexford is presented in Figure 2-1 below.

Figure 2-1 Showing the indicative site location at Great Island, Co. Wexford.

3 PROJECT DESCRIPTION

The proposed development is for an electrical installation that can generally be described as consisting of a 110kV electrical substation and underground grid connection that would connect the proposed substation to an existing Eirgrid substation within the SSE Power Station at Great Island. For the purposes of planning validation, the proposed development will be described as:

- Construction of an electrical infrastructure installation and associated underground grid connection (UGC) on lands within the townland of Great Island measuring approximately 2.58Ha./25812 square metres in overall area. The installation would consist of a 110kV tailfed substation and underground grid connection measuring approximately 838m in overall length. The 110kV substation would consist of a 110kV transformer; house transformer; disconnect, individual current and voltage transformers, combined current/voltage transformer, surge arrestors; circuit breakers and cable sealing end; a blastwall measuring 8.00m in overall height; 4no. lightning masts measuring 18.00m in overall height; palisade fencing measuring 2.60m in overall height; pole-mounted security cameras and lamp posts. An Eirgrid substation building with an overall footprint of approximately 180.00sqm and overall height of 4.20m would be located at the western end of the substation area. An IPP substation with an overall footprint of 132sqm and height of overall 4.20m would be located at the eastern end. The typical UGC installation would consist of standard ESB ducting details of the following 1no. trench (0.82m wide; 1.31m deep) measuring approximately 838m in overall length to carry 3no. 160mm power ducts and 2no. communication ducts and an ECC duct, connecting the proposed substation to an existing 110kV Eirgrid substation at Great Island. The typical trefoil trench will need to be adapted to a flat formation to accommodate for any service crossings encountered along the route. A typical width of trench for a flat formation trench would be approx. 1.60m with varying depths. A temporary construction compound would be constructed within the site boundary for construction phase of the development, after which it would be removed.
- The application site "the Site", which measures 2.58Ha. in overall area and is greenfield, is situated approximately 12.60 kilometres (kms) south of New Ross Town and lies wholly within the townland of Great Island, being located directly east of the SSE Great Island Power Station and north of the Greenlink UK-Ireland Interconnector converter station currently undergoing construction. The village of Campile is approximately 3.1kms east of the Site, as the crow flies. The Site is located in a rural and sparsely populated area. There are no RPS or NIAH sites located within the proposed development site or immediately adjacent to it. The closest structure on the RPS is Kilmokea House, RPS ref. WCC0882 and it is located c. 1.5km to the north of the subject site. The Barrow Bridge (NIAH 12404401) located approximately 0.6km west of the existing energy plant is considered to be of national importance and has

been identified as an important component of the built heritage of south County Wexford and Kilkenny.

- The Site slopes from South to north, where the existing highest level of +22m ASL is in the south-west of the Site and lowest level of +5m ASL in the north-east of site. The Site is characterised as rough grassland with encroachment of brambles and scrub, bounded by hedgerows on the northern and eastern boundaries. Access to Site from L4033 (entrance road to Great Island Power Station) is shared with Greenlink Interconnector Station, past the Siemens temporary construction compound.
- The purpose of the proposed development is to construction electrical plant in the form of a substation capable of to an existing Eirgrid substation on the electrical transmission system. A battery energy storage system "BESS" to be built would provide fast frequency capacity to the grid whilst reducing the need for conventional back up generation. In a pre-app consultation (ABP-318011-23) with An Bord Pleanála it was considered the BESS does not constitute Strategic Infrastructure Development and cannot form part of the proposal.
- The 110kV substation, measuring 0.3Ha in overall area, would be sited at ground level of 16.00m ASL and would consist of the following infrastructure: 110kV transformer; House transformer; Disconnect; Individual current and voltage transformers; Combined current/voltage transformer; Surge arrestors; Circuit breakers; Cable sealing end; 4no. lightning masts measuring 18.00m in overall height. 2no. substations (Eirgrid and IPP) would be included in the substation, each building having an overall height of 4.20m. A blastwall measuring 8.00m in overall height located on the eastern side of 110kV transformer, between transformer and IPP substation. Ancillary development to the main substation infrastructure would include palisade fencing measuring 2.60m in overall height, polemounted security cameras and lamp posts.
- The underground grid connection would serve to connect an existing Eirgrid 110kV substation at the SSE Great Island Power Station to the proposed substation. Measuring approximately 838.00m in overall length. The connection would consist of 1 no. typical trefoil trench measuring approximately 0.82m wide and 1.31m m deep to house 3no. power ducts, 2no. communications ducts and 1 ecc duct. A precast communications chamber measuring approximately 1.30m in length, 1.03m in width and 1.20m in height would be installed outside both substations. The UGC would be wholly on private land.

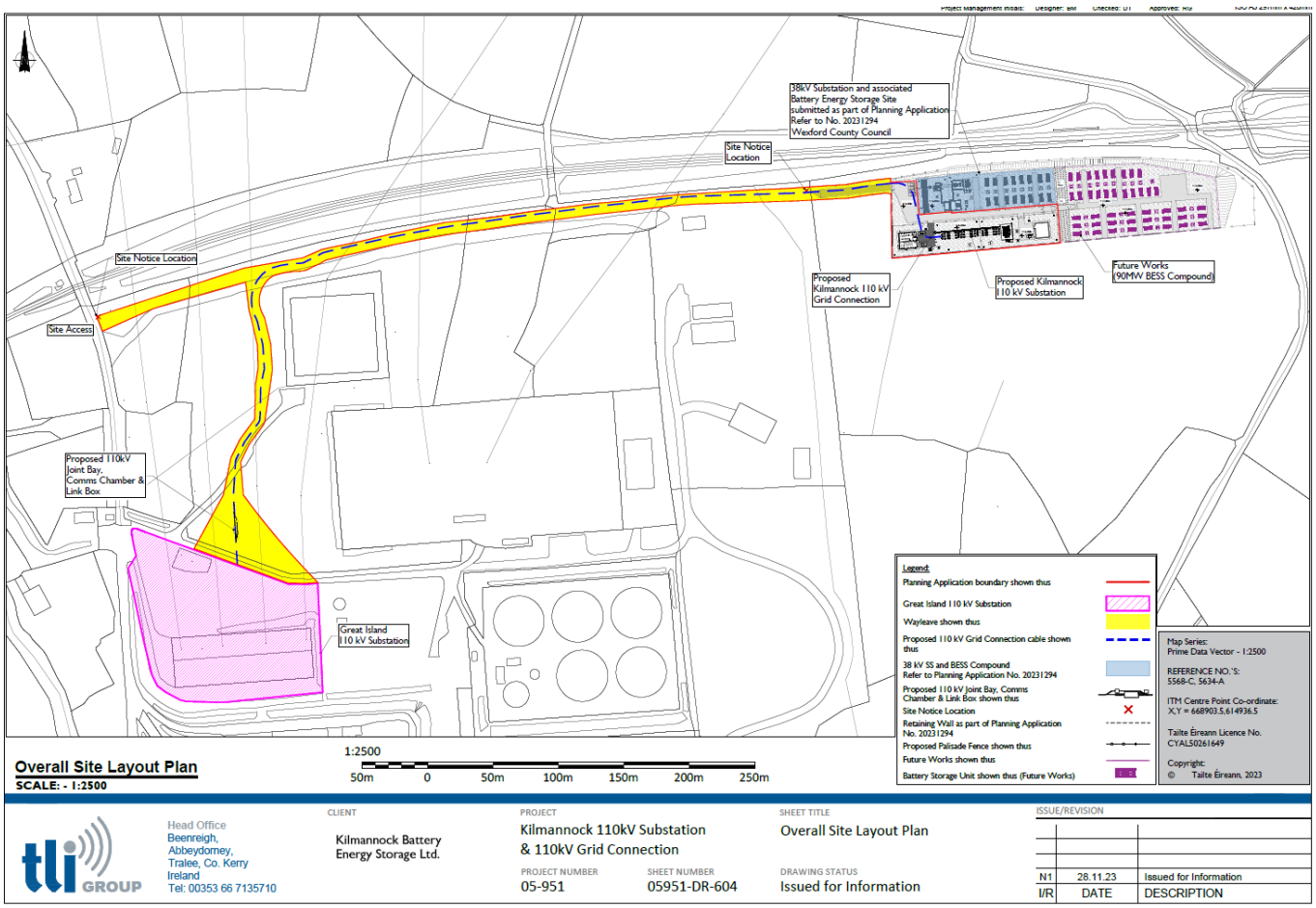

Figure 3-1 Showing the indicative design for the project.

4 EXISTING ENVIRONMENT

4.1 DESIGNATED CONSERVATION AREAS

The nearest European sites to the Proposed Development are the River Barrow and River Nore SAC (Site Code 002162) c. 370m to the southeast and the Lower River Suir SAC (Site Code 002137) c. 1.67km to the southwest. The closest Special Protected Area (SPA) to the site is the Bannon Bay SPA located 11.6k to the south-east.

The Proposed Development is located to the northeast of the existing Great Island Power Station and is bounded to the north by the Waterford to Rosslare railway line

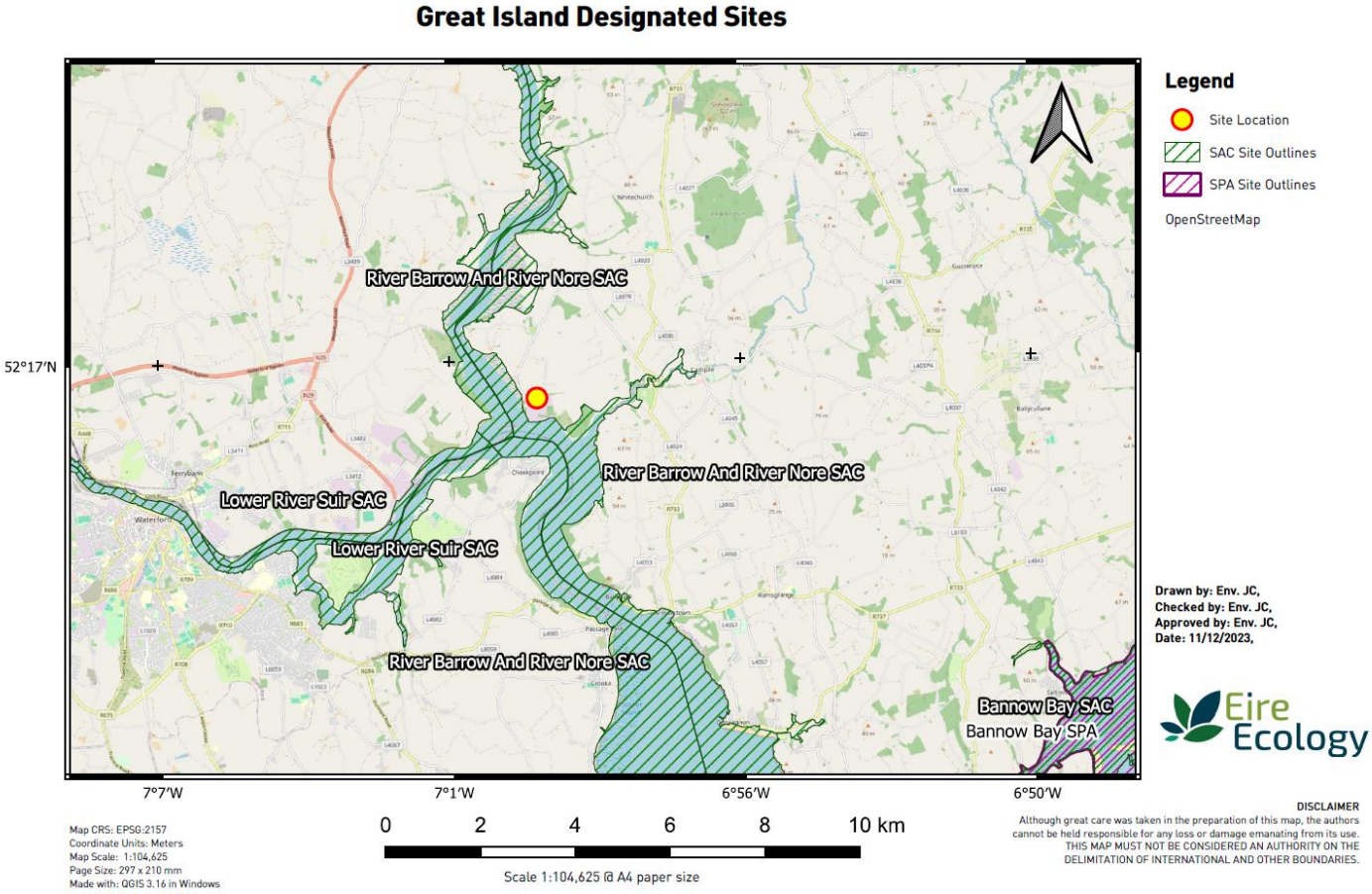

Figure 4-1: EU Designated Sites in the locality

Table 4-1: EU Designated site found in the locality

Site	Site Code	Distance	Has the designated site a high ornithological / bat value?	Has the site ornithological / mammal connectivity to the subject site?
River Barrow and River Nore SAC	002162	0.37km	Yes. 22 bird species recorded in the Natura 2000 dataform. Contains estuary habitat suitable for waders, swan and geese.	Located to the west and south of the site. While the site is located close to good wader habitats there is considerable pre-existing anthropological interference surrounding the site which will lower favourability. Proximity favours an examination.
Lower River Suir SAC	002137	1.67km	Yes, 18 bird species recorded in the Natura 2000 dataform.	This subject site sits across the Barrow from this SAC. Connectivity for bird species will be limited.
Bannow Bay SPA	004033	11.6km	13 designated species.	Limited connectivity with considerable distance of tillage and grassland between sites. The Barrow flows south of subject site with Slade peninsula further separating sites.

4.1.1.1 Designated species recorded in the surrounding area

The NBDC database was consulted for details on designated records held for the site and the surroundings. The database was consulted on the 08/12/2023 for details on historical records from the site and the surrounding 2km square; S61X. Results are outlined in Table 4-2.

Table 4-2: Designated birds and bats recorded in the S61X 2km grid

Species name	Latin Name	Date of last record	Designation
Common Pheasant	*Phasianus colchicus*	31/12/2011	Wildlife Acts || EU Birds Directive Annex II, & III
Common Redshank	*Tringa totanus*	31/12/2011	Wildlife Acts || Birds of Conservation Concern - Red List
Common Wood Pigeon	*Columba palumbus*	31/12/2011	Wildlife Acts || EU Birds Directive Annex II, & III
Eurasian Curlew	*Numenius arquata*	31/12/2011	Wildlife Acts || EU Birds Directive Annex II, || Birds of Conservation Concern - Red List
Great Cormorant	*Phalacrocorax carbo*	31/12/2011	Wildlife Acts || Birds of Conservation Concern - Amber List
Lesser Noctule	*Nyctalus leisleri*	07/07/2011	EU Habitats Directive - Annex IV || Wildlife Acts
Pipistrelle	*Pipistrellus pipistrellus sensu lato*	07/07/2011	
Soprano Pipistrelle	*Pipistrellus pygmaeus*	07/07/2011	

5 Field Survey

5.1 Survey Personal

Shane O'Neill is an experienced ornithologist (Co-author Hen Harrier Survey, NPWS 2015) with a broad knowledge of breeding birds, waders and all aspects of ornithology. Shane has previously conducted I-WeBS surveys and taken part in the Shannon estuary wintering wader surveys. Laura Hynes has a degree in Wildlife Biology from MTU Kerry and has worked as an ecologist since 2022. Laura has worked as a Curlew officer for the NPWS.

5.2 Baseline surveys

Table 5-1 provides a summary of surveys conducted within and surrounding the site.

Table 5-1 Summary of survey dates

Date	Survey type	Start Time	End Time	Details	Surveyor
24/07/2023	Scoping	09:00	11:00	Scoped sites for hinterland surveys 3 sites identified grid reference and names in sheet.	SO'N
	VP	12:00	18:30	Nothing of interest recorded. Works being carried out just to the south of the site in same field (First phase of site). Also works being carried out to the north of the site; pipes and cables being layer running off to the NE. through the 500 m buffer zone and beyond. This level of disturbance will reduce bird activity.	
26/07/2023	Hinterland	11:05	11:15	Buzzard present to the west of the site.	LH
	Summer VP	11:50	14:50	3 Buzzard within the site buffer to the west of the site. Gulls (Black-headed, Lesser black-backed and Herring) present outside of the site to the east.	LH
	Breeding Transect	14:50	15:39	Meadow Pipit (at least 2 possible nests) present within the site. More passerines noted along scrubby boundary of hedgerow.	LH
13/09/2023	Setup of two static bat detectors and examination of roost potential features.			Static 1 was setup towards centre of site in grassland. Static 2 was set up to NE close to bridge along hedgerow. No trees or hedge species were noted with bat roosting potential. Bridge to north examined. Brick and concrete built bridge has not enough deep cavities to provide a suitable bat roost.	LH
20/09/2023	Collection of static bat detectors				LH
23/10/2023	Wintering VP	10:00	18:00	Multiple species of interest noted in the wider area including 300 Black-tailed Godwit outside the site however low activity from within the site.	SO'N
	Hinterland	08:00	10:00	Curlew, Mallard, Gulls, Little egret and Cormorant recorded at estuary to south of site.	SO'N

5.3 Limitations of Survey

All of the surveys were carried out in acceptable weather conditions although rain somewhat impacted the survey conducted on the 24th of July. An initial proposal suggested a greater extent of surveys however the initial site visit revealed much of the surrounds to the south have been significantly altered from the original desktop review (see aerials below). Given the highly modified nature of the surrounds the potential for birds of interest had significantly reduced thus the level of survey effort was adjusted.

Vantage point bird surveys were conducted from a railway track bank to the north of the site. This was situated within the 500m buffer surrounding the site thus not ideally located. A scoping exercise however, found this was the best available location for the survey.

Figure 5-1: Original site (left image) located to east of Great Island power station compared to more recent works (right image)

5.4 Bats

There are nine resident bat species in Ireland accounting for nearly a third of Irelands mammal populations. Bats are protected by EU Habitats Directive as well as the 1976 Wildlife Act and 2000 Amendment (BCI, 2010). Lesser Horseshoe bats have an additional protection under the EU Habitats Directive. In order to comply with legislation that bats are not killed or injured, it is essential to ensure that measures to reduce risk to bats are undertaken or that the presence of bats can be ruled out.

A preliminary walkover survey was carried out by 13th of September 2023 to examine the potential for any features suitable to host a bat roost. The subject site did not contain any buildings however hedgerows and scrub fringes were examined. In addition, a railway bridge located to the north of the site was examined. Hedgerows within the site have no potential to host a bat roost. Similarly, the block and brick bridge had no gaps of sufficient depth to provide suitable roosting features for bats.

Plate 5-1: Bridge to north-west of site.

In order to ascertain bat activity on site two static detectors were placed within the site from the 13th to the 20th of September 2023.

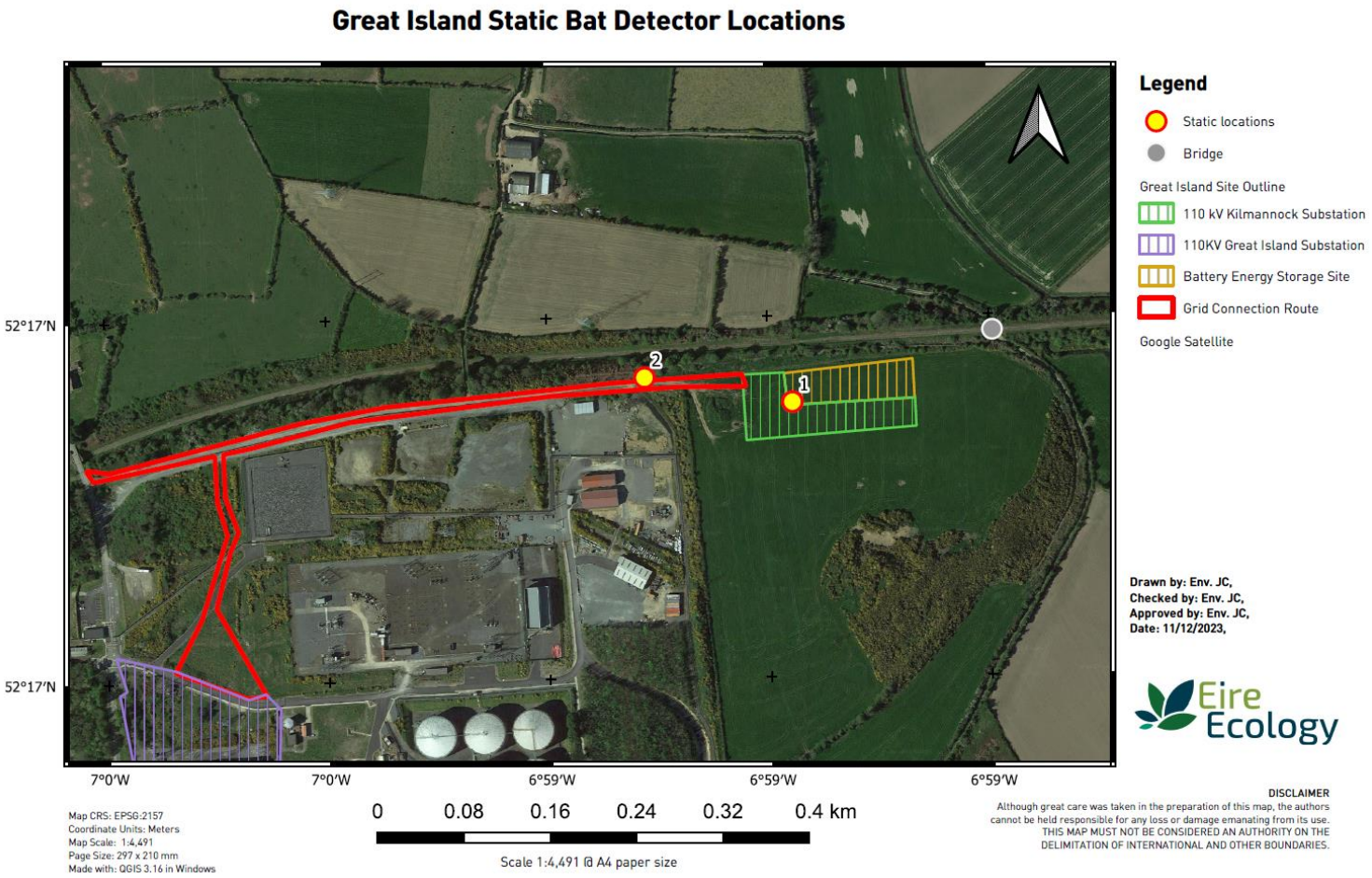

Figure 5-2: Location of static bat detectors in relation to site.

5.4.1.1 Fixed site recordings made during 2023

Two Song Meter SM4 (Wildlife Acoustics, Inc; Massachusetts, USA) 16-bit full spectrum time-expansion recording bat detectors were placed within the study area (Static 1; 52.28328, -6.98666. Static 2 52.28350, -6.98867) on the evening of the 13th to the 20th of September 2023. These static detectors were installed according to the guidelines as set out in Bat Conservation Ireland's 'Bat Survey Guidelines.'

Detector 1 was placed in the open, attached to a post within grassland while detector 2 was situated adjacent to a hedgerow; a habitat feature favoured by bats. These devices were set to record from 30 minutes prior to sunset to half an hour after sunrise and automatically adjusts itself each day thus in position and recording giving a total of 73 hours 40 minutes each over the seven nights.

Registrations as described below follow the Bat Conservation Trusts definition of a bat pass; 'two or more bat calls in a continuous sequence; each sequence or pass is separated by one second or more in which no calls are recorded. The number of bat passes for each species or species group identified is counted for each' point. (BCT Good Practice Guidelines 2nd Ed 2012). Weather information is provided by Met Eireann from the weather station located in

Johnstown Castle, Wexford. Lowest sunset temperatures was 11.5 degrees or above. Sunset windspeeds were on average (2.6m/s). Drizzle or showers occurred on four nights, two nights were dry and another two had persistent drizzle to rain. Overall conditions were acceptable baring 13th where early drizzle turned to rain.

5.4.1.2 Results of static bat survey 2023

Analysis of recorded registrations was made using Wildlife Acoustic's Kaleidoscope Pro; version 5.6.0c This software identifies many of the calls made by Irish bats. All calls were manually verified.

The results of the static detector survey are summarised in Table 5-2. Over the course of seven nights a total of 451 registrations were recorded from both detectors.

Table 5-2: Static results

Date	Detector	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Unidentified Myotis	Total
13th September	1	4	3	0	0	0	0	7
	2	31	54	9	2	2	0	98
14th September	1	0	0	0	0	0	0	0
	2	3	0	0	0	0	0	3
15th September	1	2	0	0	0	0	0	2
	2	4	3	5	0	0	0	12
16th September	1	32	5	2	1	0	0	40
	2	32	96	40	2	5	2	177
17th September	1	8	2	1	0	0	0	11
	2	13	1	3	0	0	0	17
18th September	1	14	1	1	0	0	0	16
	2	12	41	7	1	5	0	66
19th September	1	0	0	0	0	0	0	0
	2	1	1	0	0	0	0	2

Highest-level activity was on the 16th of September with detector 2 recording 177 individual calls and 40 recorded on detector 1. Detector 2, located by the northern hedgerow, showed a marked higher average rate of bat calls; 375 registrations compared to 76 from the detector placed in the open.

Common Pipistrelle made up the majority of the calls recorded (46%), followed by Leisler's bat (35%) and Soprano Pipistrelle (15%). Brown long-eared bat, 40kHz |Pipistrelle and Myotis species were all recorded in very low numbers; 3%, 1% and 0.4% respectively.

Table 5-3: Summary of both statics

Detector	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Unidentified Myotis	Total	Minutes recorded	Bat passes per hour
1	60	11	4	1	0	0	76	4420	1.0
2	96	196	64	5	12	2	375	4420	5.1
Total	156	207	68	6	12	2	451	8840	3.1
Bat passes per hour	1.1	1.4	0.5	0.0	0.1	0.0			

5.4.1.3 Bat Discussion

Four species of bat were positively identified during the various bat surveys: Common Pipistrelle (*Pipistrellus pipistrellus*), Soprano Pipistrelle (*Pipistrellus pygmaeus*), Brown Long-eared bat (*Plecotus auritus*) and Leisler's bat (*Nyctalus leisleri*). In addition, two unidentified Myotis bat species were recorded, these being either Whiskered, Natterers or Daubenton's bats. Finally several Pipistrelle calls recorded from the static detectors had a peak frequency of 40kHz thus could be either Common or Nathusius Pipistrelle.

The overall bat pass per hour rate for both sites, even the hedgerow site are very low particularly given the lowland nature of the site. These rates are more in line with upland bog habitats. It is likely lighting from the nearby power station reduces favourability of the site for bats.

5.5 Birds

All species of birds are protected under the Wild life Act 1976/Wild life Amendment Act 2000. Every autumn and spring several billions of birds undergo migratory journeys between their breeding and non-breeding grounds. These migratory movements link ecosystems and biodiversity on a global scale and their protection require international efforts. The impact of direct anthropogenic changes, including light pollution that reroutes migrants and collisions with manmade structures cause fatalities (Nussbaumer, 2019). In order to ascertain if the proposed site is used as a wintering or breeding site for protected and vulnerable birds, dedicated breeding and wintering bird surveys were conducted within and surrounding the site.

Three days of Vantage point (VP) surveys and transects were conducted on the site. In addition, to better understand the relationship between the site and the surrounding areas, hinterland point counts were conducted during the breeding and wintering periods. Target species for the surveys included all migratory birds such as swans and geese given the close proximity to an estuary and grassland as these species graze on grass. In addition, birds of prey, ducks, plovers, lapwings, sandpipers, gulls and terns. For the purposes of the survey raptors were also considered to be target species. In line with I-WeBS methodology, Cormorant, Shag, Little Egret, Grey Heron, and Kingfisher were also included (Lewis L. J., 2017).

Table 5-4 Elements of the following guidelines were used to decide survey methods

Type of survey	Reference/ Source
Vantage point survey	**Gilbert, G., Gibbons, D.W. & Evans, J. (1998) Bird Monitoring Methods - a Manual of Techniques for Key UK Species. RSPB: Sandy.**
VP survey is designed to quantify the level of flight activity and its distribution over the survey area. Its primary purpose is to provide input data for the Collision Risk Model (Band et al. 2007), which predicts mortalities from collision with turbines. Data can also be used to provide an overview of bird usage of the site, which may help to inform an overview of potential disturbance and displacement. Where new above-ground grid connections are planned, the proposed connection route should be covered by VP observations to assess potential collision risk.	
Type of survey	**Reference/ Source**
WeBS	**Wild birds: surveys and monitoring for onshore wind farms - GOV.UK (www.gov.uk)**
Important movements of birds can take place at any time of year but usually you should survey from: • March to July for breeding birds • November to March for wintering birds • March and October for passage birds	
Type of survey	**Reference/ Source**
Wintering and migratory waterfowl	**Scottish Natural Heritage - Recommended bird survey methods to inform impact assessment of onshore wind farms**
Disturbance or displacement to wintering and migrant waterfowl can occur on both roost sites and feeding areas, so surveys for both of these should be considered. In addition, searching the survey area for signs of wildfowl presence (counts of droppings) can help determine if feeding birds are using the site by night or on days previous to survey visits. The spring migration, period is defined as March – mid-May but this will vary depending on species and location. The autumn migration period is defined as September – November but again varies with species.	

Vantage point surveys were conducted at 52.2837792, -6.9847239 from the railway bank giving an elevated view of the site to the south and west.

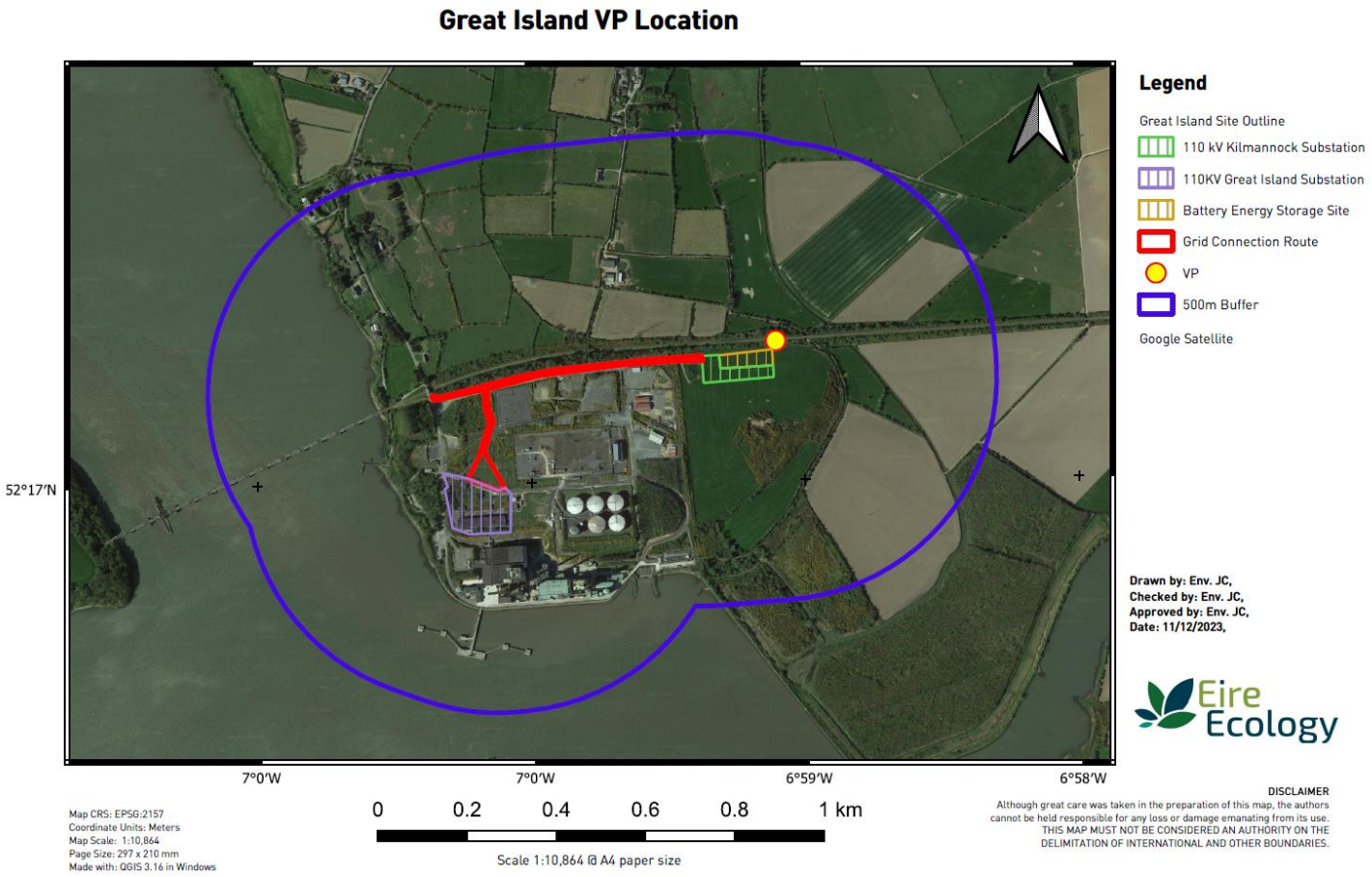

Figure 5-3: VP location

5.5.1.1 Birds within the site of the proposed development

Black headed gull, Buzzard, Herring gull, Meadow Pipit, Sparrowhawk and Yellowhammer were recorded within the site. Multiple other species were noted within a 500m buffer of the site and in the greater area.

5.5.1.2 Vantage Point Results

Three vantage point surveys were conducted between July and October 2023.

Table 5-4 summaries results from the VP surveys showing no of times species were observed and highest numbers recorded. Considerably lower numbers of rare and protected birds were noted from within the site than within the 500m buffer and outside this zone. Yellowhammer and Meadow pipit; two BOCCI4 red listed passerines were recorded from within the site. An Nationally important flock of Black-tailed Godwit was also recorded within a 500m buffer of the site in October.

Table 5-5: Species list of target species recorded from VP

Species	Highest numbers observed	Number of times observed			BOCCI4[1]	1% National Population	Nationally Important numbers?
		In site	500m Buffer	Out			
Black-headed Gull	143	1	1	2	Amber	Unknown	-
Black-tailed Godwit	300	0	4	1	Red	200	Yes
Buzzard	3	3	3	1	Green	Unknown	-
Curlew	30	0	3	2	Red	350	No
Great Cormorant	1	0	1	0	Green	110	No
Herring Gull	200	4	2	2	Green	Unknown	-
Kestrel	1	0	1	1	Red	Unknown	-
Lesser Black-backed Gull	1	0	1	0	Amber	Unknown	-
Little Egret	12	0	1	1	Green	20	No
Mallard	15	0	0	1	Amber	280	No
Meadow Pipit	2	2	0	0	Red		-
Merlin	1	0	1	0	Amber		-
Northern Lapwing	39	0	2	1	Green	850	No
Redshank	16	0	1	0	Red	240	No
Sparrowhawk	2	1	0	0	Green		No
Teal	52	0	0	1	Amber	95	No
Whooper Swan	4	0	1	0	Amber	150	No
Yellowhammer	1	1	1	0	Red		No

Table 5-6: Species list of non-target species recorded from VP.

Species	BOCCI4	Sum of sightings	Species	BOCCI4	Sum of sightings
Blackbird	Green	3	Robin	Green	2
Barn Swallow	Amber	2	Rook	Green	35
Blue Tit	Green	1	Swift	Red	1
Collared Dove	Green	2	Winter Wren	Green	2
Goldfinch	Green	15	Wood Pigeon	Green	4
Linnet	Amber	40	House sparrow	Green	2
Magpie	Green	3			

5.5.1.3 Daylight Transect Survey

A breeding bird transect was conducted on the 26th of July 2023 within the site and the adjacent co-development. Due to the late appointment of Eire Ecology, this survey was conducted slightly late in the breeding season. Given the low potential of the site for rare and protected birds, this survey is acceptable. The only species of noted recorded was Meadow Pipit. This ground nesting bird was probably breeding within the southern field. Interestingly, although Yellowhammer was noted from the Vantage point survey within the site and in the 500m buffer, it was not recorded during the transect. Better habitat can be found to the north where mature

[1] Birds of Conservation Concern 2020 - 2026

treelines and hedges border tillage grain fields. Blackbird was recorded breeding, Dunnock and Meadow pipit were probably breeding and Bullfinch, Stonechat and Wren are possibly breeding.

5.5.1.4 Hinterland Results

Table 5-7 provides a summary of results from the hinterland surveys. Numerous species of interest were recorded from the surroundings particularly to the south of the site by the estuary.

Table 5-7 Summary of Hinterland surveys

Species	Max No's Observed	Times Observed	BOCCI4	1% National Population	Nationally Important numbers?
Barn Swallow	2	1	Amber		
Black-headed Gull	12	1	Amber		
Buzzard	1	2	Green		
Curlew	22	3	Red	350	No
Dunnock	1	1	Green		
Great Cormorant	28	2	Green	110	No
Hooded Crow	1	1	Green		
House Sparrow	3	1	Amber		
Little Egret	15	2	Green	20	No
Little Grebe	2	1	Green		
Mallard	34	3	Amber	280	No
Mew Gull	28	1	Green		
Tufted Duck	5	1	Amber	270	No
Wigeon	18	1	Amber	560	No

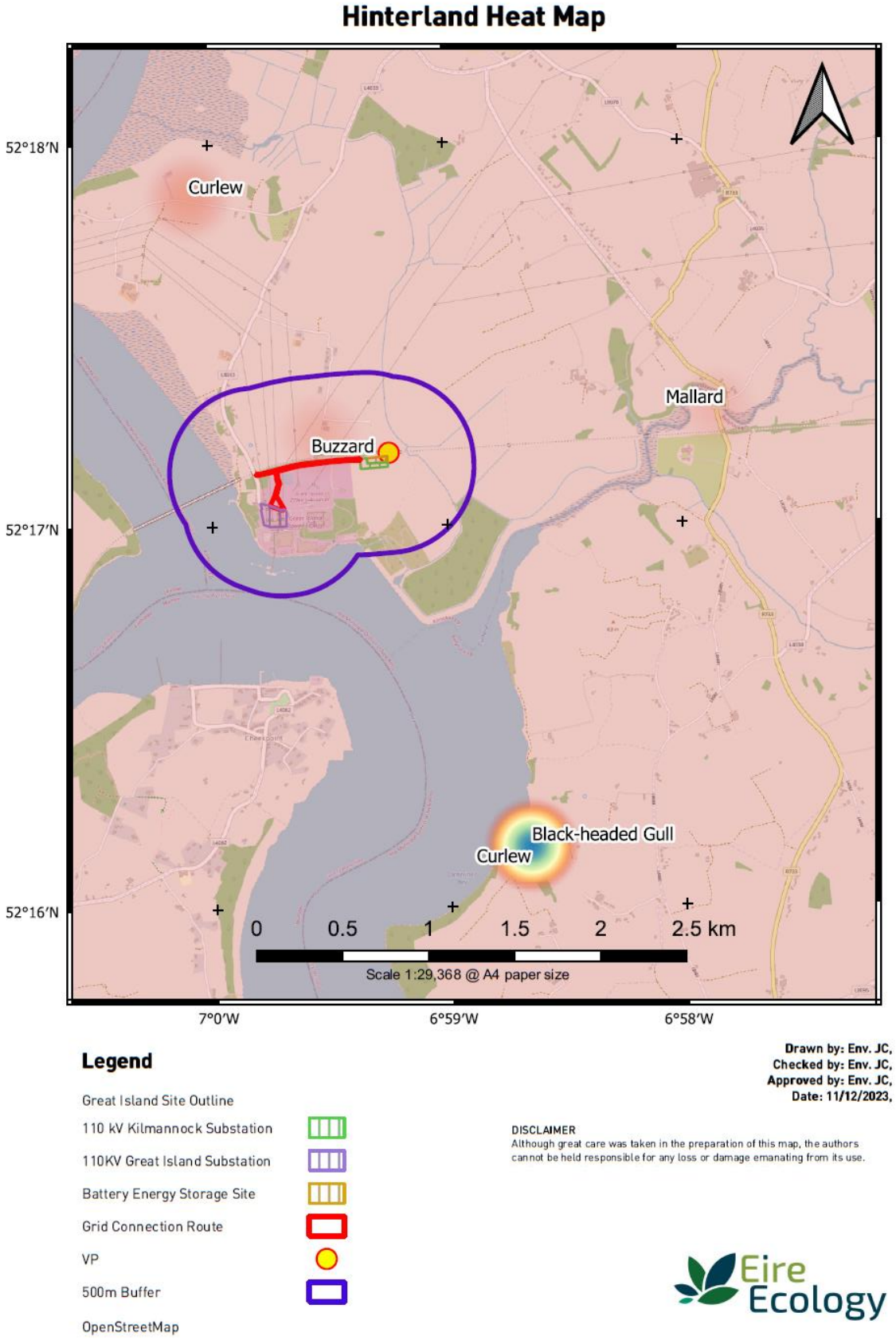

Figure 5-4: Heat map of hinterland results. Highest concentration of birds can be found to the south of the site.

5.5.1.5 Significance of Birds

The significance of potential ecological effects on birds was determined using Percival (2003) together with professional judgement. The effects were further described with reference to EPA (2017) and CIEEM (2019) criteria for characterising ecological impacts.

Table 5-8: Criteria for assessing impacts based on CIEEM (2019) and (EPA, 2017)

Parameter	Description	
Quality	Positive effect: A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).	
	Neutral effect: No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.	
	Negative effect: A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).	
Extent	The area over which an impact occurs	
Duration	• Momentary – effects lasting from seconds to minutes • Brief – effects lasting less than a day • Temporary – effects lasting less than a year • Short-term – effects lasting 1 to 7 years • Medium term – effects lasting 7 to 15 years • Long term – effects lasting 15 to 60 years • Permanent – effects lasting over 60 years • Reversible	
Reversibility	Irreversible impacts: permanent changes from which recovery is not possible within a reasonable time scale or for which there is no reasonable chance of action being taken to reverse it. Reversible impact: temporary changes in which spontaneous recovery is possible or for which effective mitigation (avoidance/cancellation/reduction of effect) or compensation (offset/recompense/offer benefit) is possible.	
Frequency and Timing	Frequency –How often the effect will occur. (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually) Timing –the timing of an activity or change may result in an impact if it coincides with critical life-stages or seasons e.g. bird nesting season.	
Describing the significance of effects (EPA, 2017)	Imperceptible	An effect capable of measurement but without significant consequences.
	Not significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
	Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
	Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
	Significant	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
	Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
	Profound	An effect which obliterates sensitive characteristics

The combination of desk study and the field study has determined that the site in question is not an integral component for and Conservation objective for surround SAC's or SPAs. .

The site is of low ecological value for birds and bats baring Meadow pipit and Yellowhammer. Lands in the wider area however have substantially higher value with numerous rare and protected bird species observed.

5.5.1.5.1 Significance values for birds

Table 5-09 evaluates the importance of species of interest found **within** the site. The table provides a sensitivity value based on (Percivel 2003) although this was designed to examine impacts on birds by wind energy.

While Black-headed gull and Herring gull were recorded overflying the site, they did not associated themselves with it. The site is not suitable for breeding gulls, nor were they recorded feeding or perching here.

Table 5-9 Determination of Sensitivity in study area

Sensitivity	Determining factor
Very High	Species that form the cited interest of SPAs and other statutorily protected nature conservation areas. Cited means mentioned in the citation text for the site as a species for which the site is designated.
High	Species that contribute to the integrity of an SPA but which are not cited as species for which the site is designated. Ecologically sensitive species including the following : divers, common scoter, hen harrier, golden eagle, red-necked phalarope, roseate tern and chough. Species present in nationally important numbers (>1% Irish population)
Medium	Species on Annex 1 of the EC Birds Directive Species present in regionally important numbers (>1% regional (county) population) Other species on BirdWatch Ireland's red list of Birds of Conservation Concern
Low	Any other species of conservation interest, including species on BirdWatch Ireland's amber list of Birds of Conservation Concern not covered above.

Table 5-10 Evaluation of importance for species of interest found interacting with site

Species	Species information	Found in Hinterland surveys?	Designation (BOCCI4)	Sensitivity (Percivel 2003)	Value of Hinterland	Value of subject site
Buzzard	Green listed in BoCC 2020-2026. Regularly found both within and outside the site.	Yes	Green	Low	Local High	Local
Meadow Pipit	This species is red-listed on the Birds of conservation concern in Ireland 2020-2026 list (BOCCI). The listing of this species as of high conservation concern is due to a large decline in population following the unusually cold winters of 2009/2010. According to BirdWatch Ireland, the species has undergone a significant recovery since that period (Countryside bird survey data trend showed 2019 with highest peak since index started in 1998. Slight decline occurred from this peak in 2020 and 2021; https://c0cre470.caspio.com/dp/4bae3000b62efcaae08e4f4da8bd) Found breeding within grassland to the south of the site.	Yes	Red	Medium	Local High	Local
Sparrowhawk	Green listed in BoCC 2020-2026 however trends based on countryside bird surveys shows a downward index trend since a 2016 peak (https://c0cre470.caspio.com/dp/4bae3000b62efcaae08e4f4da8bd). The 2011-2016 population was estimated at 11,859 This species was once recorded flying through the site.	No	Green	Low	Local	Local
Yellowhammer	This species is red-listed on the Birds of conservation concern in Ireland2020-2026 list (BOCCI). According to BirdWatch Ireland, the species has a fluctuating population trend since 1998 (Countryside bird survey data trend showed 2018 with highest peak since index started in 1998 (Lewis L. J., 2019). Slight decline occurred from this peak in 2019, 2020 and 2021; https://c0cre470.caspio.com/dp/4bae3000b62efcaae08e4f4da8bd. A single bird was heard from the hedgerow within the site while another observation recorded a bird by cereal crops and mature hedgerows outside the site.	Yes	Red	Medium	Local High	Local High

6 ASSESSMENT OF IMPACTS

Determination of impacts is derived with guidance from (Percival, 2003). Table 6-1 provides definitions for magnitude of effect. This data alongside the previously assigned significance value is imputed into Table 6-2; significance matrix to provide a final significance impact of the development per species.

Table 6-1 Determination of Magnitude of Effects.

Magnitude	Description
Very High	Total loss or very major alteration to key elements/ features of the baseline conditions such that the post development character/ composition/ attributes will be fundamentally changed and may be lost from the site altogether. Guide: < 20% of population / habitat remains
High	Major loss or major alteration to key elements/ features of the baseline (pre-development) conditions such that post development character/ composition/ attributes will be fundamentally changed. Guide: 20-80% of population/ habitat lost
Medium	Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/composition/attributes of baseline will be partially changed. Guide: 5-20% of population/ habitat lost
Low	Minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible but underlying character/composition/attributes of baseline condition will be similar to pre-development circumstances/patterns. Guide: 1-5% of population/ habitat lost
Negligible	Very slight change from baseline condition. Change barely distinguishable, approximating to the "no change" situation. Guide: < 1% population/ habitat lost

Table 6-2 Significance matrix

Significance		Sensitivity			
		Very high	**High**	**Medium**	**Low**
Magnitude	**Very High**	Very high	Very high	High	Medium
	High	Very high	Very high	Medium	Low
	Medium	Very high	High	Low	Very Low
	Low	Medium	Low	Low	Very Low
	Negligible	Low	Very Low	Very Low	Very Low

Table 6-3 Impacts on species of interest

Species	Potential Impacts		Duration and Magnitude of potential impact	Frequency and reversibility	Magnitude and Significance of effect
Buzzard	Direct Habitat Loss	This species was noted hunting within the site. No breeding birds were found. Based on baseline data the proposed development will have a medium impact on the local buzzard population with a loss of some hunting habitat	Permanent and of medium magnitude	Occurs once, long term	The magnitude of the impact is assessed as Very Low. Low sensitivity species + Medium Impact = Very Low effect significance. No likely significant effects at a local level are predicted
	Displacement and barrier effect	Foraging and commuting birds may temporarily avoid construction areas owing to the noise and increased activity. Based on continued bird surveys through the construction phase it is proposed to identify breeding sites within the surrounds and create a 150m buffer surrounding the zone (Goodship, 2022). Construction will be avoided here until fledging has occurred.	Temporary and of low magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of impact is assessed as Low. Low sensitivity species + Low Impact = Very Low effect significance. No likely significant effects at a local level are predicted
Brown Long-eared bat	Direct Habitat Loss	The proposed development will have little impact on landscape features such as hedgerows. Static surveys show this hedgerow habitat is of marginally higher value to Brown Long-eared bats than the open habitat (12 recordings over a 7 night period) however activity is very low for this species. No roosting habitat was found.	Permanent and of negligible magnitude and will not result in long-term adverse effects (given the levels of activity from this species).	Occurs once, long term	The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted
	Displacement and barrier effect	It is unlikely construction activity will occur during night time within the bat active season. As such it is highly unlikely the construction phase will have an impact on this species.	Temporary and of negligible magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted
Common Pipistrelle	Direct Habitat Loss	The proposed development will have little impact on landscape features such as hedgerows. Static surveys show this hedgerow habitat is of higher value to this species than the open habitat (196 recordings compared to 11 over a 7 night period) however activity is low for this species (average of 1.1 bat passes per hour BP/Hr). No roosting habitat was found.	Permanent and of negligible magnitude and will not result in long-term adverse effects (given the levels of activity from this species).	Occurs once, long term	The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted
	Displacement and barrier effect	It is unlikely construction activity will occur during night time within the bat active season. As such it is highly unlikely the construction phase will have an impact on this species.	Temporary and of negligible magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted
Meadow Pipit	Direct Habitat Loss	The development footprint is dominated by tracks and hedgerow habitat with grassland located to the south. This grassland is being transformed into built land as a result of associated developments.	Long term slight Negative	Occurs once, irreversible	The magnitude of the impact is assessed as Low. Medium sensitivity species + Medium Impact = Low effect significance. No likely significant effects at a local level are predicted

Species	Potential Impacts		Duration and Magnitude of potential impact	Frequency and reversibility	Magnitude and Significance of effect
	Displacement and barrier effect	There is the potential of disturbance to breeding meadow Pipit because the construction activities will disturb birds and displace them from the area. Based on continued bird surveys through the construction phase it is proposed to identify breeding sites and create a 50m buffer surrounding the zone (50m buffer is based on IECS Toolkit26). Works will avoid key breeding periods with works continuing after fledging.	Temporary and of negligible magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted
Leisler's Bat	Direct Habitat Loss	The proposed development will have little impact on landscape features such as hedgerows. Static surveys show hedgerow habitat is of marginally higher value to this species than the open habitat (96 recordings compared to 60 over a 7 night period) with moderate activity levels for this species (average of 1.4 bat passes per hour BP/Hr). This species flies high over habitats and are the most adept Irish bat species at hunting over artificial surfaces thus the transformation of the site may result in only a medium negative to neutral impact. No roosting bats were found.	Permanent and of negligible magnitude and will not result in long-term adverse effects (given the levels of activity from this species).	Occurs once, long term	The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted
	Displacement and barrier effect	It is unlikely construction activity will occur during night time within the bat active season. As such it is highly unlikely the construction phase will have an impact on this species.	Temporary and of negligible magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted
Myotis Species	Direct Habitat Loss	The proposed development will have little impact on landscape features such as hedgerows.. Static surveys show very low activity for this species with two recording from the detector placed by hedgerow over a 7 night period. This suggests the subject site is rarely utilised by woodland or Daubenton's bats. No roosting bats were found.	Permanent and of negligible magnitude and will not result in long-term adverse effects (given the levels of activity from this species).	Occurs once, long term	The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted
	Displacement and barrier effect	It is unlikely construction activity will occur during night time within the bat active season. As such it is highly unlikely the construction phase will have an impact on this species.	Temporary and of negligible magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted
Sparrowhawk	Direct Habitat Loss	The development footprint is dominated by built land and hedgerows with grassland to the south, providing suitable foraging habitat for the species. Sparrowhawk can nest in a variety of substrates such as rock ledges, old corvid stick nests, bird boxes, buildings etc. Whilst no suitable breeding sites were found within the development footprint it is possible this species is breeding within treelines closeby. Based on baseline data the proposed development will have a low impact on the local Sparrowhawk population with a loss of some hunting habitat	Permanent and of medium magnitude	Occurs once, long term	The magnitude of the impact is assessed as Very Low. Low sensitivity species + Medium Impact = Very Low effect significance. No likely significant effects at a local level are predicted

Species	Potential Impacts		Duration and Magnitude of potential impact	Frequency and reversibility	Magnitude and Significance of effect
	Displacement and barrier effect	Foraging and commuting birds may temporarily avoid construction areas owing to the noise and increased activity. No sign of breeding Sparrowhawk were noted thus no disturbance of breeding site area expected.	Temporary and of low magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of impact is assessed as Very Low. Low sensitivity species + Low Impact = Low effect significance. No likely significant effects at a local level are predicted
Soprano Pipistrelle	Direct Habitat Loss	The proposed development will have little impact on landscape features such as hedgerows. Static surveys show this hedgerow habitat is of higher value to this species than the open habitat (64 recordings compared to 4 over a 7 night period) however activity is very low for this species (average of 0.5 BP/Hr). No roosting bats were found.	Permanent and of negligible magnitude and will not result in long-term adverse effects (given the levels of activity from this species).	Occurs once, long term	The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted
	Displacement and barrier effect	It is unlikely construction activity will occur during night time within the bat active season. As such it is highly unlikely the construction phase will have an impact on this species.	Temporary and of negligible magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted
Yellowhammner	Direct Habitat Loss	This species was observed on the site on one occasion and again to the north of the site. Yellowhammer breed in treelines and hedgerows bounded by cereal crops. The subject site lacks these cereals thus is somewhat less favourable to this species than those outside the site.	Permanent and of negligible magnitude and will not result in long-term adverse effects.	Occurs once, irreversible	The magnitude of impact is assessed as Low. Medium sensitivity species + Low Impact = Low effect significance. No likely significant effects at a local level are predicted
	Displacement and barrier effect	There is the potential of disturbance to Redwing during construction phase. Foraging birds may temporarily avoid construction areas owing to the noise and increased activity.	Temporary and of Low magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of the impact is assessed as Low. Medium sensitivity species + Low Impact = Low effect significance.

7 MITIGATION MEASURES

7.1 Bats

No loss of bat roosting potential will occur due to the development. Highest activity recorded was from Common Pipistrelle and Leisler's bat, both species adept at hunting over artificial surfaces thus the transformation of the site may result in only a medium negative to neutral impact.

Lighting along periphery treelines

Guidance on lighting has been based on the Bats & Lighting document; (BCI, 2010), the Bats and artificial lighting in the UK Guidance Note 08/23 (BCT, Bats and artifical lighting at night, 2023) and 08/18 (BCT, 2018) and Guidelines for consideration of bats in lighting projects. EUROBATS Publication Series No. 8 (Voigt, 2018). Lighting can alter the behaviour of bats and the insects they prey on. Night flying insects can be attracted to lights particularly sources that emit an ultraviolet component or have a high blue spectral content. Whilst some species of bat such as Leisler's and Pipistrelle species can take advantage of this occurrence, other species such as Daubenton's bat and brown long-eared avoid such areas. Lighting can create barriers for bat species both entering roosts and using commuting routes such as rivers, treelined roads and woodland edges. 'Consideration should be given to ensure that dark wildlife corridors remain in the landscape to allow bats and other wildlife to travel safely to and from feeding habitats.' A study by Emery (Emery, 2008) concluded that shielding and masking of street lights can reduce light spillage by as much as 40%. While internal and external louvers are more effective, the external louvers can reduce light spillage by as much as 97%.

- Bats and artificial lighting in the UK (BCT, 2018) suggest the avoidance of lighting on key habitats and features.
- It is important to maintain Dark Zones for foraging bats in areas where lighting is not necessary. However, where lighting is required, this lighting should be placed at a minimum height using the lowest lux value permitted for health and safety.
- The lighting should be directional on to paths and buildings only with no spillage of light to adjoining habitats. To reduce light spillage from luminaries, lights that are designed not to emit light at angles greater than 70º from the vertical plane should be used. Consequently a flat glass protector is often used to reduce light spillage. Other methods to control light spillage:
    a) Shields: these can be mounted on lamps to control direction of the light
    b) Masking: part of the luminaries is painted to block light to control the direction of the light
    c) Louvers': either as internal or external slates organized in rows or at angles depending on the direction of light control.

- No white light should be permitted as this has the greatest impact on bats. Lighting should be fitted with LED luminaires using warm white colors < than 2700 Kelvins. Luminaires should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.
- Loss of potential roosting habitats within houses.

7.2 Birds

Multiple surveys demonstrate the site will have a low impact any species of note.

- An Ornithologist ECoW will conduct two days surveys in the bird breeding season during the construction period to identify if any rare or protected birds are breeding in areas with potential for disturbance.
- Vegetation removal could impact on nesting passerines such as blackbird and wren thus ideally this activity should be carried out only outside the bird-nesting season March 1st – August 31st in order to avoid impacts on nesting birds. In the event this work is required earlier an ecological clerk of works should be onsite to ensure no nesting birds are present. Should an occupied nest be found the clearance works will have to waits until after fledging.
- Yellowhammer and Meadow Pipit were recorded within the site. As such wildflower seed mix areas should be planted to allow a food source for such species still occupying the greater area.

8 RESIDUAL IMPACTS

Residual impacts are those that occur after the mitigation measures have taken effect.

The nearest SPA to the subject site is the Bannow Bay SPA (Site Code 004033) located c. 11.36km to the southeast. The proposed site was surveyed for wintering waders and no Conservation Objective species associated with the SPA were recorded within the site. The River Barrow and River Nore SAC located 370m to the west listed 22 bird species that utilise the river and estuary. None of these birds were recorded from within the subject site. While the surrounding agricultural lands provide good feeding and roosting areas, the subject site has lower potential given the enclosed nature of the site; the existing power-station to the west, railway bank to the north, treeline to the east and construction site to the south. These barriers prevent the site from offering ex site effects on the SPAs and birds associated with SAC's located in the wider vicinity of the Proposed Development.

If the mitigation measures listed above are employed during construction, then there will be no residual impact on the local ecology.

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APPENDIX 1 – Tables and Figures

Date	Cloud	Wind speed (F)	Wind direction	Visibility	Rain	Comments
24/07/2023	100	2	SW	4	3	Occasional heavy showers
26/07/2023	100	2	W	5	0	Dry
23/10/2023	100	2	W	4	2	Occasional showers

Table 9-1: VP Target Species Results

Date	Season	Obs No.	Species Name	No. of Birds	Time of flight	Duration of flight (s)	Within / Buffer / Out	Habitat Code	Comments
24/07/2023	Breeding	1	Kestrel	1	12:25	120	Out		Hunting fields to the NE of the site 1km approx.
24/07/2023	Breeding	2	Buzzard	1	13::01	300	Buffer	300	Circling and soaring didn't see it land again
24/07/2023	Breeding	3	Buzzard	1	14:15		Out		Perched on Telegraph poll
24/07/2023	Breeding	4	Curlew		16:42		Out		Heard calling to the S of the site on the estuary.
26/07/2023	Breeding	1	Meadow Pipit	2	12:05	-	In	GA1	Perched and calling.
26/07/2023	Breeding	2	Great Cormorant	1	12:23	15	Buffer	BC1	Flew from south, flying over tillage then landed down north of the railway line.
26/07/2023	Breeding	3	Herring Gull	1	12:39	39	In	BC1	In flight then landed. Sub adult.
26/07/2023	Breeding	4	Yellowhammer	1	12:42	-	Buffer	WL2	Heard singing. Location approximate, not seen. Lage treelines to north of site
26/07/2023	Breeding	5	Herring Gull	1	12:55	-	In	GA1	In field around wet area.
26/07/2023	Breeding	6	Buzzard	1	12:58	-	Buffer	BC1	On pole.
26/07/2023	Breeding	7	Lesser Black-backed Gull	1	13:08	78	Buffer	GA1	In flight then landed in field with other gulls & rooks.
26/07/2023	Breeding	8	Meadow Pipit	1	13:15	5	In	GA1	Perched on fencing nearby surveyor. With food in beak & agitated
26/07/2023	Breeding	9	Buzzard	3	13:35	15	In	WL2	Came from tree and perched up on the pole.
26/07/2023	Breeding	10	Buzzard	1	13:35	15	In	WL2	Came from the tree and perched up on a pylon.
26/07/2023	Breeding	11	Buzzard	1	13:35	20	In	WL2	Came from tree and flew south out of sight.
26/07/2023	Breeding	12	Black-headed Gull	1	13:45	82	In	GA1	Then landed in field with other gulls.
26/07/2023	Breeding	13	Yellowhammer	1	14:17	2	In	WL1	Perched and calling.
26/07/2023	Breeding	14	Buzzard	1	14:27	8	Buffer	WL2	Flew west

Date	Season	Obs No.	Species Name	No. of Birds	Time of flight	Duration of flight (s)	Within / Buffer / Out	Habitat Code	Comments
26/07/2023	Breeding	15	House Sparrow	2	14:44	2	Buffer	WL1	Flew briefly, male and female present and perched up in hedgerow. Likely came from nearby settlement to north-west of this point where HS are present.
23/10/2023	Wintering	1	Merlin	1	10:16		Buffer	BL3	Female hunting roadside off site.
23/10/2023	Wintering	2	Whooper Swan	4	12:22		Buffer	BC3	Foraging in field inside 500m buffer
23/10/2023	Wintering	3	Little Egret	12	12:30		Out	GA1	Foraging in field out side site and buffers
23/10/2023	Wintering	4	Teal	52	12:34		Out	WD4	Feeding on flooded river out side
23/10/2023	Wintering	5	Mallard	15	12:36		Out	WD4	Feeding in same area as T
23/10/2023	Wintering	7	Black-tailed Godwit	5	12:44		Buffer	BC3	Within tilled field inside 500 buffer
23/10/2023	Wintering	8	Little Egret	1	13:36		Buffer	GA1	Foraging in field to the N of site inside 500m buffer
23/10/2023	Wintering	9	Redshank	16	13:37		Buffer	BC3	Foraging in flooded tilled field to the E of vp inside 500m buffer
23/10/2023	Wintering	10	Herring Gull	7	13:40		In	BC3	Flew through the site SW-NE inside buffer
23/10/2023	Wintering	11	Black-tailed Godwit	300	13:19		Out	BC3	300e in tilled field to the E outside buffer
23/10/2023	Wintering	12	Black-headed Gull	82	13:21		Out	GA1	Perched in field foraging outside buffer
23/10/2023	Wintering	13	Herring Gull	60	13:22		Out	GA1	60e foraging is with BH outside buffer
23/10/2023	Wintering	14	Curlew	30	13:28		Out	GA1	Foraging in field just outside buffer
23/10/2023	Wintering	15	Northern Lapwing	39	14:39		Buffer	BC3	Foraging in field E of VP inside buffer
23/10/2023	Wintering	16	Sparrowhawk	2	14:45		In	WL2	Flew through the site SE-W inside the site
23/10/2023	Wintering	17	Northern Lapwing	34	14:36		Out	BC3	Flew S out of Buffer
23/10/2023	Wintering	18	Curlew	11	14:38		Buffer	BC3	Flew from N landed in field to the E of vp inside buffer didn't see where rest of CU went
23/10/2023	Wintering	19	Black-tailed Godwit	120	14:41		Buffer	BC3	Circled on over field to the E and landed inside buffer
23/10/2023	Wintering	20	Black-headed Gull	143	14:48		Buffer	BC3	Flew in from NE landed in Tilled field inside the buffer flock to the E flushed by farmer
23/10/2023	Wintering	21	Herring Gull	120	14:51		Buffer	BC3	120e HG flew in with the BH and landed inside 500m buffer
23/10/2023	Wintering	22	Black-headed Gull	143	16:34		Out	BC3	Flew back to field to the E outside buffer
23/10/2023	Wintering	23	Herring Gull	100	16:37		Out	BC3	Flew S out of the buffer Zone
23/10/2023	Wintering	24	Curlew	18	16:37		Buffer	BC3	Flew N into next field

Date	Season	Obs No.	Species Name	No. of Birds	Time of flight	Duration of flight (s)	Within / Buffer / Out	Habitat Code	Comments
23/10/2023	Wintering	25	Black-tailed Godwit	164	16:39		Buffer	BC3	Looked to have flushed all other birds and landed in field to E of VP
23/10/2023	Wintering	26	Black-tailed Godwit	250	16:37		Buffer	BC3	Another flock flew in from the E joined the flock already in buffer zone
23/10/2023	Wintering	27	Northern Lapwing	34	16:38		Buffer	BC3	Flew in from the S / SE landed in tilled field to the E
23/10/2023	Wintering	28	Herring Gull	75	16:40		In	GA1	Flying N-S just over the E edge of site
23/10/2023	Wintering	29	Kestrel	1	17:35		Buffer	BC3	Hunting scrub to the N of VP flew N
23/10/2023	Wintering	30	Herring Gull	200	17:38		Buffer	BC3	-20e flew in from the S landed in field NE of VP inside buffer
23/10/2023	Wintering	31	Curlew	4	17:43		Buffer	BC3	Flew from S-N landed in tillage to NE of VP

Table 9-2: Transect Results

Date	Start time	Finish	Species	No's	Observations	Lat	Lon	Breeding Code
26/07/2023	14:53	15:39	Meadow Pipit	1	Potential nest, bird was flushed from ground and flew off alarm calling.	52.282666	-6.985257	Possibly
26/07/2023	14:53	15:39	Winter Wren	1	alarm calling from hedgerow.	52.283687	-6.984558	Possibly
26/07/2023	14:53	15:39	Meadow Pipit	1	flushed from ground, potential nest nearby.	52.283157	-6.983686	Possibly
26/07/2023	14:53	15:39	Stonechat	1	Watched and perched only.	52.283698	-6.983967	Possibly
26/07/2023	14:53	15:39	Dunnock	1	Flushed from near ground where some dead branches were present. Flew to nearby hedgerow and perched, calling agitatedly.	52.283718	-6.984061	Probably
26/07/2023	14:53	15:39	Meadow Pipit	1	Flushed from ground. Potential nest.	52.283589	-6.98446	Possibly
26/07/2023	14:53	15:39	Bullfinch	1	Male calling from hedgerow.	52.283697	-6.984901	Possibly
26/07/2023	14:53	15:39	Meadow Pipit	1	Alarm calling from this area.	52.283417	-6.985066	Probably
26/07/2023	14:53	15:39	Meadow Pipit	1	Flushed from the ground and called in flight.	52.28341	-6.985306	Possibly
26/07/2023	14:53	15:39	Dunnock	1	Flushed from dead branches and scrub and flew off alarm calling.	52.283584	-6.985663	Probably
26/07/2023	14:53	15:39	Blackbird	1	One juvenile.	52.283666	-6.986255	Breeding

Date	Start time	Finish	Species	No's	Observations	Lat	Lon	Breeding Code
26/07/2023	14:53	15:39	Dunnock	1	Alarm calling from hedgerow after being flushed from scrub/ dead branches pile. At the edge of the field.	52.283611	-6.986804	Possibly