# Natura Impact Statement

# Project Coolpowra

**Prepared by: Moore Group – Environmental Services**

**29 May 2024**

**On behalf of Coolpowra Flexgen Ltd**

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| **Project Proponent** | Coolpowra Flexgen Ltd |
| **Project** | Project Coolpowra |
| **Title** | Natura Impact Statement<br>Appropriate Assessment<br><br>Project Coolpowra |



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| **Moore Archaeological and Environmental Services Limited** | | | |

# 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 |

# Contents

# 1. Introduction

## 1.1. General Introduction

This Natura Impact Statement (NIS) has been prepared by Moore Group – Environmental Services on behalf of Coolpowra Flexgen Ltd. This NIS report contains information to assist the competent authority in carrying out an Appropriate Assessment (AA) for the purposes of Article 6(3) of the Habitats Directive and section 177V of the Planning and Development Act 2000, as amended, (the "Planning Acts") in respect of the construction and operation of a Proposed Reserve Gas-Fired Power Generator, GIS Electrical Substation and Energy Storage System at Coolpowra, Ballynaheskeragh, Coolnageeragh and Gortlusky, Co. Galway (hereafter referred to as the Proposed Development).

This NIS informs the Appropriate Assessment process in the determination of any adverse effects on the integrity of European sites, having regard to their conservations objectives and in light of best scientific knowledge. It is necessary that the Proposed Development has complies with Article 6(3) of the Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (as amended) (referred to as the Habitats Directive). For the purposes of the Proposed Development, this is transposed into Irish Law by Part XAB of the Planning and Development Act 2000 as amended[1]. The focus of the assessment is on objectively assessing by reference to the evidence as to whether the Proposed Development will adversely affect the integrity of the European sites in light of their conservation objectives.

## 1.2. Legislative Background - The Habitats and Birds Directives

Articles 6(3) and 6(4) of the Habitats Directive are transposed into Irish Law inter alia by the Part XAB of the Planning Acts (section 177U and 177V) governing 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 Article 3 of 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.

[1]The European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. 477) as amended (referred to as the Habitats Regulations) transposes the Habitats Directive for the purposes of proposed projects subject to legislation other than the Planning and Development Act 2000, as amended.

The Birds Directive (Council Directive 2009/147/EC) on the conservation of wild birds), transposed into Irish law by the 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 in Irish legislation 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."*

These obligations in relation to Appropriate Assessment have been implemented in Ireland under Part XAB of the Planning and Development Act 2000, as amended, and in particular Section 177T thereof.

Section 177T(1)(b) and (2) state as follows with regard to a Natura Impact Statement:

> *"(b) A Natura impact statement means a statement, for the purposes of Article 6 of the Habitats Directive, of the implications of a proposed development, on its own or in combination with other plans or projects, for one or more than one European site, in view of the conservation objectives of the site or sites."*
>
> *"(2) Without prejudice to the generality of subsection (1), a Natura impact report or a Natura impact statement, as the case may be, shall include a report of a scientific examination of evidence and data, carried out by competent persons to identify and*

*classify any implications for one or more than one European site in view of the conservation objectives of the site or sites."*



The EU Water Framework Directive[2] (WFD) is an important piece of environmental legislation which aims to improve our water quality. It applies to rivers, lakes, groundwater, estuaries and coastal waters. The Water Framework Directive was agreed by all individual EU member states in 2000, and its first cycle ran from 2009 – 2015. The Directive runs in 6-year cycles, so the second cycle runs from 2016 – 2021 and the third cycle runs form 2022-2027. It focuses on protection of surface water and groundwater and the consideration of the WFD has been addressed in this NIS where the assessment of potential impacts on European sites were considered in this AA.

## 1.3. Methodology

The Commission's methodological guidance (EC, 2002, 2018, 2021 see Section 1.4 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:** In this stage, there is a consideration of the impact of the project with a view to ascertain whether there will be any adverse effect on the integrity of the Natura 2000 site either alone or in combination with other projects or plans, with respect to the site's structure and function and its conservation objectives. Additionally, where there are predicted impacts, an assessment of the potential mitigation of those impacts is considered.

**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.

[2] Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy.

**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.



## 1.4. Guidance

The NIS 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.)(soon to be superseded by EC Guidance in prep.).
- 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).
- Natura Impact Statement Sustainable Residential Development and Compact Settlement Guidelines for Planning Authorities (NPWS, 2024).

## 1.5. 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;
    - Open Street Maps;
    - Digital Elevation Model over Europe (EU-DEM);
    - Google Earth and Bing aerial photography 1995-2024;

- 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;
    - Galway County Development Plan 2022 - 2028

## 1.6. Statement of Authority

This 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 reports for Appropriate Assessment Screening and Natura Impact Statements in terrestrial and aquatic habitats.

Engineering and technical data was supplied by Halston Environmental and Planning Ltd. for the Proposed Development.

## 1.7. Description of the Proposed Development

The Proposed Development consists of the construction and operation of:

1. A Reserve Gas-Fired Generator comprises three open-cycle gas-fired generator (OCGT) units located within a turbine hall, accompanied by auxiliary equipment. Secondary fuel (gas oil) will be stored in a bunded structure outside the turbine hall, alongside cooling equipment and other electrical plant items (e.g. transformers). The Reserve Gas-Fired Generator will include an above ground installation (AGI) compound

- An underground gas pipeline, designed to operate at pressures of 16bar or higher, will be established by Gas Networks Ireland (GNI) through a separate planning application.

- This pipeline will be directed to the proposed AGI at the development site from the nearest connection point on the gas transmission network.

- The selection and assessment of potential routes of the gas line to the development site will be included in EIAR which will be prepared to support the planning application(s).

2. A 400kV Gas Insulated Switchgear (GIS) Substation comprising a two-storey building positioned and secured within a palisade fenced compound. The proposed GIS will upgrade and replace the existing air insulated switchgear (AIS) substation with a new gas GIS substation at Oldstreet. The GIS substation will facilitate connection of the reserve gas fired generator and ESS to the existing node on the transmission network thereby securing energy supply into the future.

3. Energy Storage System which includes: (i) a long duration energy storage (LDES) battery (200MW) positioned in an outdoor compound and (ii) a synchronous condenser (400MVA electrical rating) positioned within a building. The technology is designed to complement and support the reserve gas fired generator by providing zero carbon, instantaneous power and balancing power to the grid.

## 1.8. Description of the Existing Environment

The Proposed Development consists of a large area of agricultural land, bounded to the east by the L8763 local road and a small group of dwellings, to the south and west by agricultural land, and to the north by the Oldstreet 400kV substation as well as further agricultural land.

An existing farmhouse, with outbuildings and yards is situated in the southern portion of the site. These structures, as well as the main access roads to the site are classed as Buildings and Artificial structures (BL3).

Most of the farmland is laid out in Improved agricultural grassland (GA1). Areas recently re-seeded form a Perennial Rye Grass (*Lolium perenne*) monoculture; most fields have a number of common weedy species in addition, such as Broad-leaved Dock (*Rumex obtusifolius*), Cuckoo Flower (*Cardamine pratensis*), Dandelion (*Taraxacum* agg.) and Meadow Buttercup (*Ranunculus acris*). Isolated lower lying areas in certain fields have wet, but still improved grassland, with Soft Rush (*Juncus effusus*) dominant.

Fields to the south of the existing farmhouse comprise Arable Land (BC1/BC3). These were observed in various states of the arable cycle, with young cereal crops, newly ploughed and harrowed land all recorded.

Fields are invariably bounded by hedgerows (WL1), with some treelines (WL2). Most hedgerows are dominated by Hawthorn (*Crataegus monogyna*), and of low biodiversity value. The most significant linear woodland features are the Esker hedgerow and treeline alomng the eastern boundary, with Scots

Pine (*Pinus sylvestris*), Hazel (*Corylus avellana*), Whitebeam (*Sorbus* sp.) and calcicole ground flora, and the hedgerow along the western portion of the Treananearla Stream, with Hawthorn, Willow (*Salix sp.*), Ash (*Fraxinus excelsior*), Rose (*Rosa canina*) and Bramble (*Rubus fruticosus*).

Most ditches are classed as Drainage Ditches (FW4), and all appear to have been modified to some extent; these are generally species poor, with some Fools Water Cress (*Apium nodiflorum*)and Water Horsetail (*Equisetum fluviatile*). The Treananearla Stream from the farmhouse bridge to the Oldstreet substation, is considered to have the greatest degree of seminatural character, and is classed as (FW1) Eroding upland rivers with some meanders and level changes allowing slight glides and riffles to develop over a stony bottom. Instream vegetation is generally lacking diversity; shaded portions lacking any, more stagnant sections with Reed Canary Grass (*Phalaris arundinacea*) and Bulrush (*Typha latifolia*), with Fools Water Cress in more lotic sections.

Scrub (WS1) is confined to a small area along the L8763 road at the new access point, with Gorse (*Ulex europaeus*), Willows (*Salix* sp.) and dense Brambles. This new access area comprises heavily disturbed ground with crushed gravel and patches of tarmac. Numerous ruderal species have colonised this area, which is classified as Recolonising Bare Ground (ED3), with Oxeye Daisy (*Leucanthemum vulgare*), Black Medick (*Medicago lupulina*), and Red Fescue (*Festuca rubra*) recorded.

The L8763 road has some areas of Dry meadows and grassy verges (GS2) along its verges, with species such as Erly Purple Orchid (*Orchis mascula*), Cowslip (*Primula veris*), False Brome (*Brachypodium sylvaticum*), and Wild Strawberry (*Fragaria vesca*). This road runs along an esker, which has been entirely levelled at the access area, however, a small area of Exposed sand, gravel or till (ED1) remains to the north, and backing onto the existing roadside hedgerow. This has a reasonably diverse suite of species, including Early Purple Orchid, Yellowwort (*Blackstonia perfoliata*), Common Milkwort (*Polygala vulgare*) and Burnet Saxifrage (*Pimpinella saxifraga*)

There were no invasive species recorded at the proposed development site

There are no rare or protected habitats recorded in the study area inside the site boundary. The site may be considered of Low to Moderate Ecological Value at a Local level.

## 1.9. Construction Management

A Construction Environmental Management Plan (CEMP) has been prepared to manage the impacts of construction activities associated with the Proposed Development.

The CEMP sets out the principles to be adhered to and outlines measures that will be implemented during the construction of the development to ensure that potential environmental impacts and disturbance will be minimised or eliminated.

It will be the responsibility of the project proponent and contractor employed to update and add (where required) specific control measures relevant to the environmental management plan and procedures, taking into account any conditions imposed on any planning permissions granted. The control measures will be amended by improvement with regards to environmental protection and will take cognisance of additional environmental commitments arising from planning conditions.

The project proponent will oversee the process through appointment of the contractor with input from the project engineer and oversight from the planning and project team. The contractor will be contractually obliged to comply with the CEMP.

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 presents a plan of the Proposed Development.

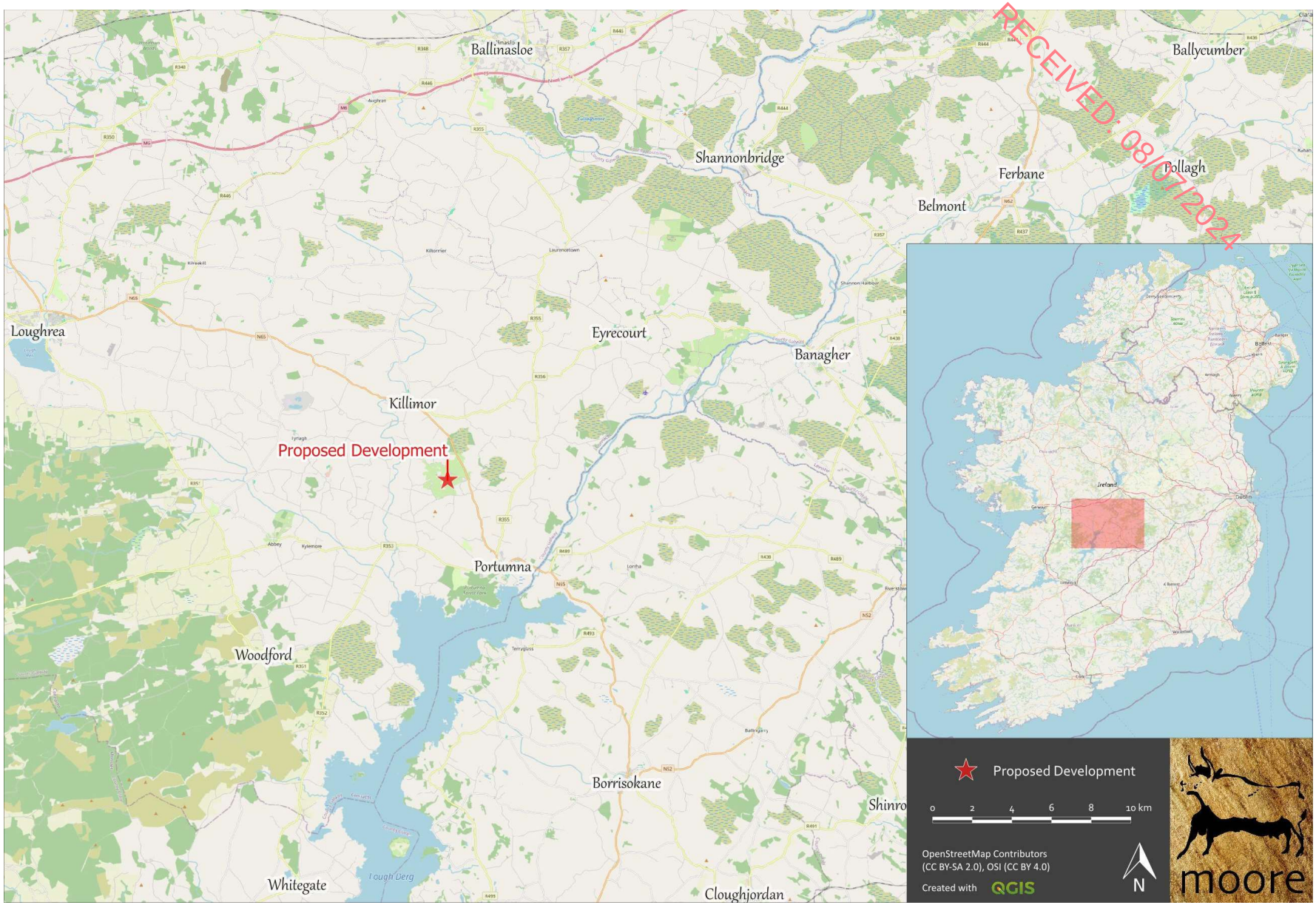


*Figure 1. Showing the Proposed Development location between Killimor and Portumna, Co. Galway.*


*Figure 2. Showing the Proposed Development site on recent aerial photography.*

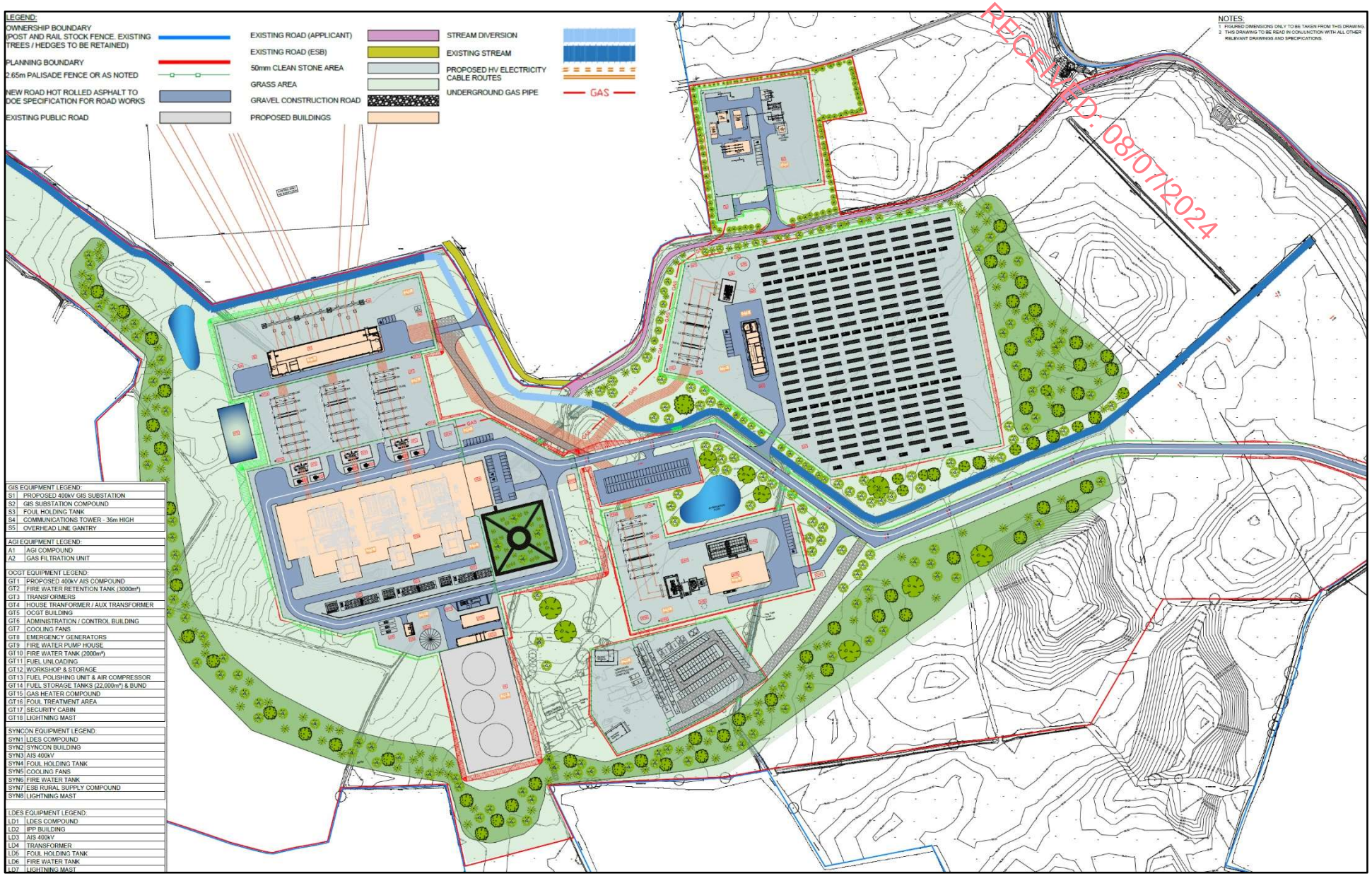


*Figure 3. Plan of the Proposed Development.*

# 2. Stage 1 – Screening for Appropriate Assessment



A Report for AA Screening was compiled and is presented as a stand-alone document in the planning application. The following is a summary of the Screening process.

The potential for source pathway receptor connectivity was firstly identified through GIS interrogation and detailed information was then provided on sites with connectivity. European sites that are located within a potential Zone of Influence of the Overall 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 22 May 2024. This data was interrogated using GIS analysis to provide mapping, distances, locations and pathways to all sites of conservation concern including pNHAs, NHAs and European sites.

*Table 1 European Sites located within the potential Zone of Influence[3] of the Proposed Development.*

| Site Code | Site name | Distance (km)[4] |
|---|---|---|
| 000231 | Barroughter Bog SAC | 5.33 |
| 002241 | Lough Derg, North-east Shore SAC | 5.18 |
| 000216 | River Shannon Callows SAC | 5.09 |
| 004058 | Lough Derg (Shannon) SPA | 5.28 |
| 004096 | Middle Shannon Callows SPA | 5.11 |
| 004168 | Slieve Aughty Mountains SPA | 7.36 |

The Proposed Development is located within the townlands of Coolpowra, Gortlusky and Treananearla, between Killimor and Portumna, in southeast Co. Galway. Site surveys have established that the site, with the exception of a small section in the southeast corner, drains to the Treananearla Stream, which runs northwest from the site, and enters the Kilcrow River. The Kilcrow flows generally south, discharging into Lough Derg at Stonyisland Bay.

A drainage ditch which runs under the L8763 local road close to its junction with the N65 drains a small section of the southeast of the site which has connectivity to a watercourse which enters the River Shannon north of Portumna, and thus has connectivity with the River Shannon Callows SAC (Site Code 000216) and Middle Shannon Callows SPA (Site Code 004096), 4.6km to the southeast. However, there

[3] All European sites potentially connected irrespective of the nature or scale of the Proposed Development.

[4] Distances indicated are the closest geographical distance between the Proposed Development and the European site boundary, as made available by the NPWS.

are no works proposed that will have any impact on this drainage ditch and in the absence of a pathway and connectivity, these two sites are screened out at this stage of the assessment.



Barroughter Bog SAC (Site Code 000231), lies close to the Kilcrow River, 5.3km to the southwest. The Kilcrow River runs along the eastern edge of the SAC boundary before it outfalls into Lough Derg. Given the location of the SAC in relation to the Proposed Development and the nature of the qualifying interests for which it is designated (terrestrial habitats) no viable source pathway receptor links are identified and therefore no potential for significant effects to this European site, and it is screened out.

The Slieve Aughty Mountains SPA (Site Code 004168) lies 7.4km to the southwest. The footprint of the Proposed Development has not been identified as an *ex-situ* foraging, roosting or breeding area for any SCI species, and it is screened out.

The Treananearla Stream has connectivity to two European sites at Lough Derg, the Lough Derg, North-east Shore SAC (Site Code 002241), and the Lough Derg (Shannon) SPA (Site Code 004058), 5.2km to the south.

It is proposed to realign a portion of the Treananearla Stream within the site boundary. This will involve construction of a new channel, prior to altering the flow of the stream. Construction management of this portion of the Proposed Development to prevent any impacts on these two European sites.

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.

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

| Site Name | QI/SCI | Habitat Loss | Water Quality | Disturbance | Displacement | Rationale | Possibility of Significant Effects |
|---|---|---|---|---|---|---|---|
| **Lough Derg Northeast Shore SAC (002241)** | 5130 *Juniperus communis* formations on heaths or calcareous grasslands | None | Unlikely | None | Unlikely | This terrestrial habitat is located outside the zone of influence of the Proposed Development | None |
| | 7210 Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae | None | Unlikely | None | Unlikely | Indirect pathway via the Kilcrow River to Lough Derg downstream and to the lake margins in the SAC (not currently mapped) | Uncertain in the absence of construction management |
| | 7230 Alkaline fens | None | Unlikely | None | Unlikely | Indirect pathway via the Kilcrow River to Lough Derg downstream and to the lake margins in the SAC (not currently mapped) | Uncertain in the absence of construction management |
| | 8240 Limestone pavements | None | Unlikely | None | Unlikely | This terrestrial habitat is located outside the zone of influence of the Proposed Development | None |
| | 91E0* Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) | None | Unlikely | None | Unlikely | This habitat is located outside the zone of influence of the Proposed Development | None |
| | 91J0 *Taxus baccata* woods of the British Isles | None | Unlikely | None | Unlikely | This terrestrial habitat is located outside the zone of influence of the Proposed Development | None |
| **Lough Derg (Shannon) SPA (004058)** | A017 Cormorant *Phalacrocorax carbo*<br>A061 Tufted Duck *Aythya fuligula*<br>A067 Goldeneye *Bucephala clangula*<br>A193 Common Tern *Sterna hirundo* | None | Unlikely | None | Unlikely | These Annex 1 bird species are located in Lough Derg and within the zone of influence of the Proposed Development | Uncertain in the absence of construction management |
| | A999 Wetlands | None | Unlikely | None | Unlikely | These habitats are located in the Lough Derg and within the zone of influence of the Proposed Development | Uncertain in the absence of construction management |

The potential for significant adverse effects on the Lough Derg North-east Shore SAC (Site Code 002241), and the Lough Derg (Shannon) SPA (Site Code 004058) is uncertain in the absence of control of potential pollution of surface water during construction. The Project will require the implementation of management measures to avoid potential adverse effects on the Lough Derg North-east Shore SAC and the Lough Derg (Shannon) SPA and as such Stage 2 AA is required.



Adopting the precautionary approach, in line with current guidance and in consideration of proposed SuDS measures and Construction Management, a Stage 2 Appropriate Assessment of the project has been prepared as follows.

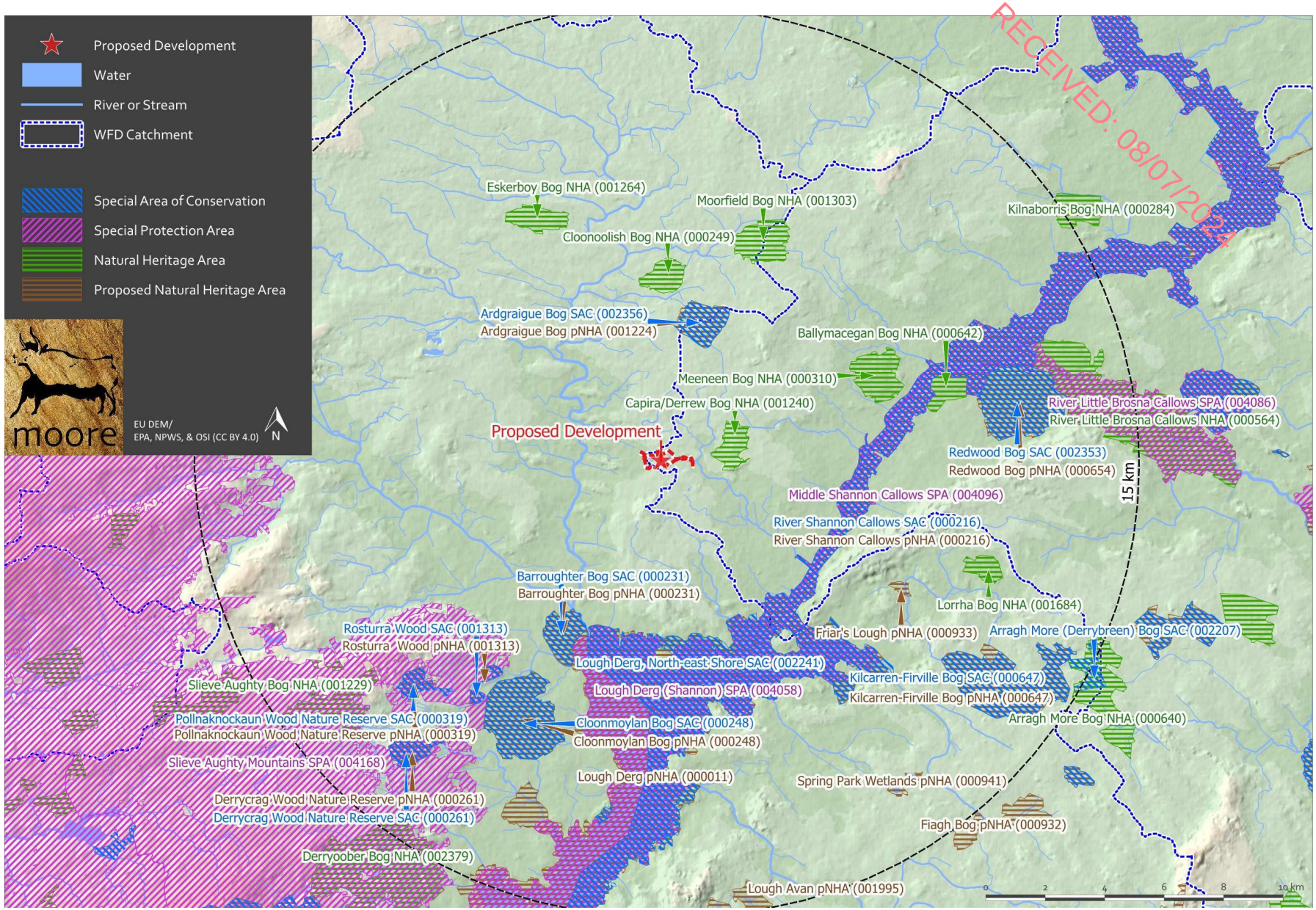


*Figure 4. Showing European sites and NHAs/pNHAs in the wider vicinity of the Proposed Development.*

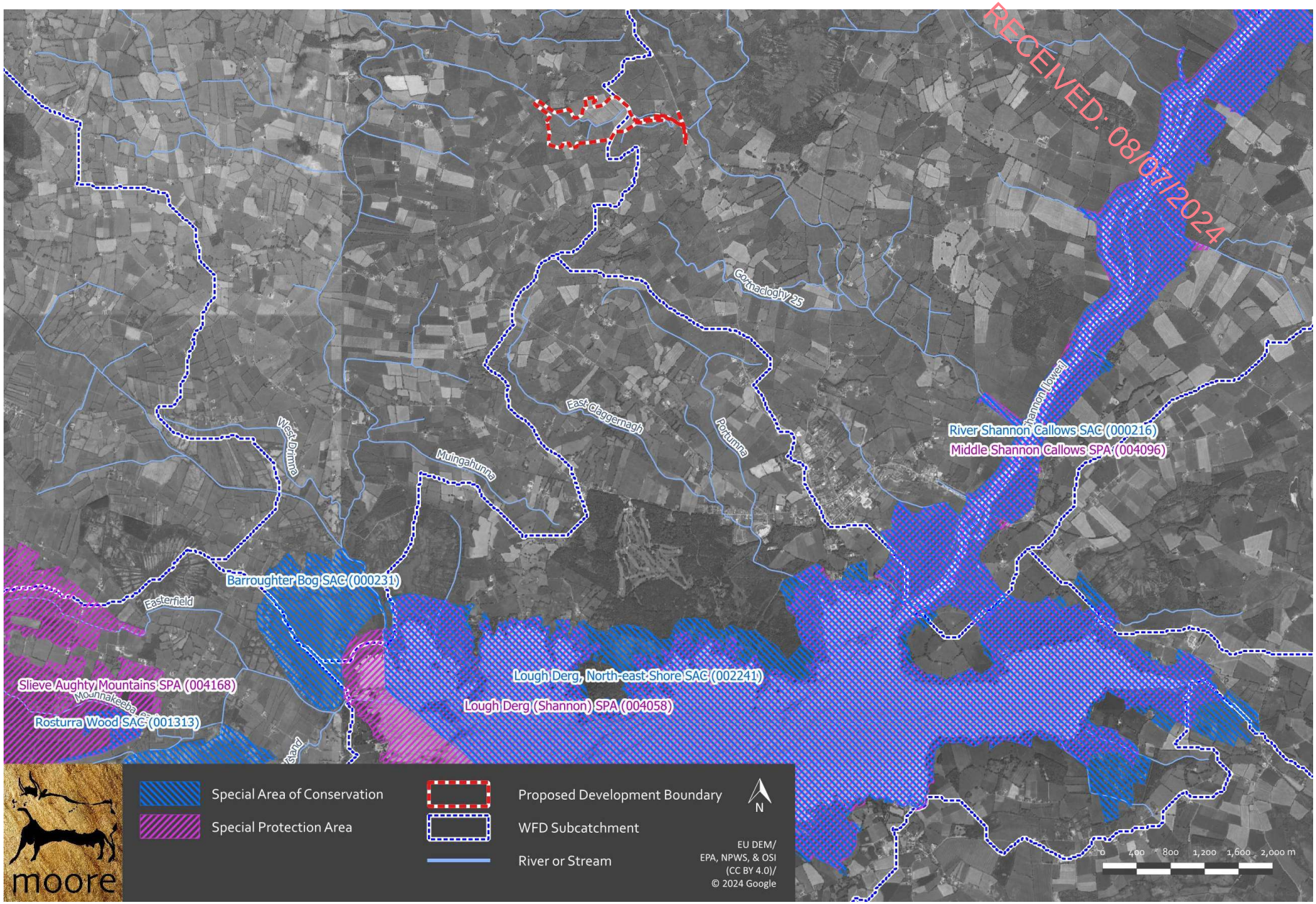


*Figure 5. Detailed view of European sites in the nearer vicinity of the Proposed Development.*

# 3. Stage 2 – Appropriate Assessment

This stage considers whether the Proposed Development, alone or in combination with other projects or plans, will have adverse effects on the integrity of a European site, and includes any mitigation measures necessary to avoid, reduce or offset negative effects. The Stage 2 Appropriate Assessment comprises a scientific examination of the plan / project and the relevant European site; to identify and characterise any possible implications for the site in view of the site's conservation objectives, structure and function; taking account of in combination effects.

## 3.1. Description of European Sites Potentially Affected

Potential impacts on the following European sites have been identified:

### 3.1.1. Lough Derg, North-east Shore SAC [002241]

The NPWS provides the following Site Synopsis in relation to the Lough Derg, North-east Shore SAC Version date 3rd January 2014.

*Lough Derg, the lowest order lake on the River Shannon, is one of the largest bodies of freshwater in Ireland. This SAC, however, only includes the northern shore of the lake from the mouth of the Cappagh River in the north-west to just below Black Lough at the north-eastern shore. The greater part of this site lies on Carboniferous limestone, although there is Old Red Sandstone on the southern shores of the eastern section.*

*The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E. U. Habitats Directive ( * = priority; numbers in brackets are Natura 2000 codes):*

*[5130] Juniper Scrub*

*[7210] Cladium Fens**

*[7230] Alkaline Fens*

*[8240] Limestone Pavement**

*[91EO] Alluvial Forests**

*[91JO] Yew Woodlands**

*The geology of the lake shore is principally limestone and in places this protrudes at the surface in the form of boulders and rubble and can be classified as limestone pavement. These are often bryophyte-lich surfaces or else support a calcareous grassland or heath flora, as well as some woody species, such*

*as Yew (Taxus baccata) and Juniper (Juniperus communis). Examples occur at Cornalack, Kylenamelly and Portumna. The last two named areas were partly afforested but are proposed for restoration under a Coillte E. U. LIFE Programme. The geographical location of these examples of limestone pavement within the country is notable.*

*A second priority Annex I habitat, Cladium fen, occurs occasionally along the lake margins, mainly in association with alkaline fens, Common Reed (Phragmites australis) and other swamp vegetation. Typically, Great Fen-sedge (Cladium mariscus), which can be up to 2 m in height, forms dense stands. Associated species include Common Reed, Black Bog-lush (Schoenus nigricans), Water Horsetail (Equisetum fluviatile), Bottle Sedge (Carex rostrata) and occasional Slender Sedge (Carex lasiocarpa). This community generally merges with alkaline fen dominated by Black Bog-rush, with Purple Moor-grass (Molinia caerulea), Marsh Horsetail (E. palustre), Meadowsweet (Filipendula ulmaria) and scattered tussocks of Greater Tussock-sedge (Carex paniculata).*

*Yew woods in Ireland are mostly confined to the west of the country. However, a substantial area of Yew is located on limestone at Cornalack, where Yew forms a scrub woodland along the east shore of Lough Derg. Here, Yew is found in association with small amounts of Juniper, which forms protection against grazing for the young Yew. Other notable species present include Hawthorn (Crataegus monogyna), Hazel (Corylus avellana), Holly (Ilex aquifolium), Small-leaved Cotoneaster (Cotoneaster microphyllus), along with occasional Ivy (Hedera helix), Wild Strawberry (Fragaria vesca), Bramble (Rubus fruticosus agg.) and Wood-sorrel (Oxalis acetosella). Elsewhere, small stands of Yew up to 5 m high occur with Spindle (Euonymus europaeus), Blackthorn (Prunus spinosa), Gorse (Ulex europaeus) and Ash (Fraxinus excelsior). Due to shading, and in places cattle trampling, the ground flora supports few herbs. However, the bryophyte layer is well developed with many moss covered rocks present.*

*Juniper occurs throughout this site in a range of habitats, associated with calcareous grasslands, heath and limestone outcrops. Some of the finest examples of Jumper formations in Ireland occur along the lake edge where bushy Juniper shrubs up to 3 m tall are found. Typically, Juniper forms dense hedges with Ash, Hawthorn, Gorse, Hazel and Bramble, and occasional Yew. These tall Juniper shrubs are a unique feature in Ireland, where it is more typically found growing in prostrate form. In places along the lake shore Juniper forms a mosaic with Black Bog-rush and Great Fen-sedge fen. The best examples are seen at the north and north-east of the site. On drier ground above the flood level, Juniper occurs in association with species-rich calcareous grassland with Mouse-ear Hawkweed (Hieracium pilosella), Daisy (Bellis perennis), Lady's Bedstraw (Galium verum), Wild Thyme (Thymus praecox) and Blue Moor-grass (Sesleria albicans). An extensive area of this vegetation is seen north of Kilgarvan Quay. Many of the islands also support significant Juniper cover. This is particularly evident on Bounla Island. Juniper generally occurs as fringing vegetation around the islands, which typically have wooded centres. At Cornalack, along the eastern shore of Lough Derg. tall Juniper is found in association with loose limestone rubble with a significant cover of Yew.*

*Deciduous woodlands are also a notable feature of the site, dominated by oak (Quercus spp .), as at Bellevue, and Hazel/Ash at many of the examples along the north-eastern shore. Typically the ground layer includes Early purple Orchid (Orchis mascula), violets (Viola spp.), Ivy, Lesser Celandine (Ranunculus ficaria), Bluebell (Hyacinthoides non-scripta), Wood Anemone (Anemone nemorosa), Wood-sorrel, Primrose (Primula vulgaris), Bramble, Ground Ivy (Glechoma hederacea), Pignut (Conopodium majus) and Honeysuckle (Lonicera periclymenum). Wet woodland is frequent along the lake shore, and in some areas this conforms well with the E.U. Annex I habitat, alluvial woodland. At Kylenamelly wood, where some planting of commercial forestry has occurred, there are extensive areas of alluvial woodland which are subject to flooding. These woods are dominated by willows (Salix spp.) and Alder (Alnus glutinosa), with Downy Birch (Betula pubescens) and Ash also present. The ground flora of the undisturbed alluvial sites is often dominated by Yellow Iris (Iris pseudacorus), with a range of other species commonly present, including Bogbean (Menyanthes trifoliata), Marsh-marigold (Caltha palustris), Meadowsweet, Purple Loosestrife (Lythrum salicaria), horsetails (Equisetum spp.), Wild Angelica (Angelica sylvestris), Greater Tussock-sedge and Remote Sedge (Carex remota). Further examples of alluvial woodland occur at Portumna. Beech (Fagus sylvatica) and Scots Pine (Pinus sylvestris) are often present at the lake edge along areas which were once parts of estates. Some areas of coniferous forestry have been included within the site.*

*The only known site in the country for the Red Data Book plant Irish Fleabane (Inula salicina) occurs along the lake shore. This plant is legally protected under the Flora (Protection) Order, 1999. Other Red Data Book species present within this site are Marsh Pea (Lathyrus palustris) and Ivy Broomrape (Orobanche hederae). The Red Data Book stonewort Chara tomentosa has its stronghold in Lough Derg.*

*The lake is rated as nationally important for waterfowl. The entire lake, including all of the islands, is a designated SPA (Special Protection Area). Counts from 1995/96 carried out at seven locations on the lake indicate that the lake holds nationally important numbers for Mute Swan, Cormorant, Mallard, Teal, Tufted Duck and Goldeneye. The lake also supports a number of Greenland White-fronted Goose, a bird species listed on Annex I of the E. U. Birds Directive. There is a Wildlife Sanctuary" at the north western edge of the lake.*

*Lough Derg is of conservation interest also for its fish and freshwater invertebrates. Lampreys, listed under Annex II of the E. U. Habitats Directive, are known to occur and the lake contains an apparently self-sustaining landlocked population of Sea Lamprey (Petromyzon marinus). A landlocked population, where the fish are feeding and not completing a seaward migration, is unique in an Irish context, though there are several such populations in the U.S. and one is known from Loch Lomond in Scotland. Brook Lamprey (Lampetra planeri) is known to be common in the lower Shannon catchment where all three lamprey species breed.*

*The endangered fish species Pollan (Coregonus autumnalis pollan) is recorded from Lough Derg, one of only three sites in Ireland and in western Europe. The Pollan is a landlocked species of Corgonid or 'White Fish', thought to have colonised Irish waters after the last Ice Age. Its nearest relative, the Arctic Cisco, is found as far away as Alaska, Northern Canada and Siberia. Although it is anadromous throughout most of its northern range, the Irish population are all non-migratory and purely freshwater. Lough Derg is also a well known fishing lake with a good Trout (Salmo trutta) fishery. Atlantic Salmon (Salmo salar) also use the lake as a spawning ground. Although this species is still fished commercially in Ireland, it is considered to be endangered or locally threatened elsewhere in Europe and is listed on Annex II of the E. U. Habitats Directive.*

*Otter and Badger have been recorded within the site. Both of these species are listed in the Irish Red Data Book and are legally protected by the Wildlife Act, 1976.*

*Land use within the site is mainly of a recreational nature with many boat hire companies, holiday home schemes and angling clubs located at the lake edge.*

*Recreational disturbance may pose a threat to the wintering wildfowl populations, though tourism is scaled down during the winter. The water body is surrounded mainly by improved pastoral farmland to the south and east, with areas of bog to the south-west and west. Coniferous plantations are present along the west and north- west shore and small areas of these are included within the site. If these areas are felled no further planting should take place as afforestation damages the wetland habitats between the plantation and lake edge.*

*The main threats to the quality of the site are water polluting activities resulting from intensification of agricultural activities around the lake shore, uncontrolled discharge of sewage, which is causing eutrophication of the lake, and housing and boating development which has resulted in the destruction of lakeshore habitats. There is also significant fishing and shooting pressure on and around the lake. Forestry" can result in the loss of some areas of wetland habitat. The spread of Zebra Mussel (Dreissena polymorpha) in Lough Derg also poses a threat the ecology of the lake.*

*This is a site of significant ecological interest, with six habitats listed on Annex I of the E.U. Habitats Directive. Four of these are priority habitats - Cladium fen, alluvial woodland, limestone pavement and Yew woodland. Other annexed habitats present include alkaline fen and Juniper scrub formations on heath and calcareous grasslands. In addition, the lake itself is an SPA that supports important numbers of wintering wildfowl, Greenland White-fronted Goose, Common Tern and Cormorant, a number of which are listed under Annex I of the E.U. Birds Directive.*

### 3.1.2. Lough Derg (Shannon) SPA [004058]



The NPWS provides the following Site Synopsis in relation to the Lough Derg (Shannon) SPA (Version date 8th July 2014).

*Lough Derg lies within counties Tipperary, Galway and Clare and is the largest of the River Shannon Lakes, being some 40 km long. Its maximum breadth across the Scariff Bay -Youghal Bay transect is 13 km but for most of its length it is less than 5 km wide. The lake is relatively shallow at the northern end being mostly 6 m in depth but in the middle region it has an axial trench and descends to over 25 m in places. The narrow southern end of the lake has the greatest average depth, with a maximum of 34 m. The greater part of the lake lies on Carboniferous limestone but the narrow southern section is underlain by Silurian strata. Most of the lower part of the lake is enclosed by hills on both sides, the Slieve Aughty Mountains to the west and the Arra Mountains to the east. The northern end is bordered by relatively flat, agricultural country. The lake shows the high hardness levels and alkaline pH to be expected from its mainly limestone catchment basin, and it has most recently been classified as a mesotrophic system. The lake has many small islands, especially on its western and northern sides. The shoreline is often fringed with swamp vegetation. Aquatic vegetation includes a range of charophyte species, including the Red Data Book species, Chara tomentosa. The shoreline is often fringed by swamp vegetation, comprised of such species as Common Reed (Phragmites australis), Great Fen-sedge (Cladium mariscus) and Bottle Sedge (Carex rostrata).*

*The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Cormorant, Tufted Duck, Goldeneye and Common Tern. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.*

*Lough Derg is of importance for both breeding and wintering birds. The site supports a nationally important breeding colony of Common Tern (55 pairs recorded in 1995). Management of one of the islands used for nesting has increased the area of suitable habitat available and prevented nests being destroyed by fluctuating water levels. Large numbers of Black-headed Gull have traditionally bred on the many islands (2,176 pairs in 1985) but the recent status of this species is not known. The islands in the lake also support a nationally important Cormorant colony - 167 pairs were recorded in 1995; a partial survey of the lake in 2010 recorded 113 pairs. Lough Derg is also a noted breeding site for Great Crested Grebe (47 pairs in 1995) and Tufted Duck (169 pairs in May 1995).*

*In winter, the lake is important for a range of waterfowl species, including nationally important populations of Tufted Duck (776) and Goldeneye (157) all figures are mean peaks for 4 of the 5 seasons between 1995/96 and 1999/2000. Other species which occur in winter include Mute Swan (164),*

*Whooper Swan (IS), Wigeon (249), Teal (301), Mallard (376), Little Grebe (14), Cormorant (90), Coot (173), Lapwing (922), Curlew (66) and Black-headed Gull (732). Areas to north and south west of*

*Lough Derg has been utilised in the past by small numbers of Greenland White-fronted Goose — 19 geese were recorded on callow land near Portumna in 1996/97. A relatively small flock based in the Lough Derg-Lough Graney area and possibly further afield have been recorded in the Scarriff Bay area, with 20 geese recorded in 2004. Few sightings, at either location have been made in recent years.*

*Hen Harrier are also known to roost in the reedbeds on the margins of the site during the winter.*

*Lough Derg (Shannon) SPA is of high ornithological importance as it supports nationally important breeding populations of Cormorant and Common Tern. In winter, it has nationally important populations of Tufted Duck and Goldeneye, as well as a range of other species including Whooper Swan. The presence of Whooper Swan, Greenland White-fronted Goose, Hen Harrier and Common Tern is of particular note as these are listed on Annex I of the E.U. Birds Directive. Parts of Lough Derg (Shannon) SPA are a Wildfowl Sanctuary.*



## 3.2. Conservation Objectives of European Sites

### 3.2.1. Lough Derg, North-east Shore SAC [002241]

Specific Conservation Objectives and Target Notes are set by the NPWS (Version 1. 24th April 2019) for the Lough Derg, North-east Shore SAC (002241) as follows. Specific objectives are included for the aquatic habitats and species identified in the zone of influence of the Proposed Development as follows:

## 7210 Calcareous fens with Cladium mariscus and species of the Caricion davallianae



**To maintain the favourable conservation condition of Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae* in Lough Derg, North-east Shore SAC, which is defined by the following list of attributes and targets:**

| Attribute | Measure | Target | Notes |
|---|---|---|---|
| Habitat area | Hectares | Area stable or increasing, subject to natural processes | Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae* has not been mapped in detail for Lough Derg, North-east Shore SAC and thus the total current area of the qualifying priority habitat in the SAC is unknown. *Cladium* fen (habitat code 7210) occurs occasionally along lake margins in the SAC in association with the Annex I habitat Alkaline fens (habitat code 7230) and swamp vegetation also. The habitat is particularly well-developed at the sheltered bays of Lough Derg around the Portumna Forest Park area and immediately north of Kilgarvan Quay (NPWS internal files) |
| Habitat distribution | Occurrence | No decline, subject to natural processes | See the notes for Habitat area above |
| Ecosystem function: peat formation | Percentage cover of peat-forming vegetation and water table levels | Maintain active peat formation, where appropriate | In order for peat to form, water levels need to be slightly below or above the soil surface for c.90% of the time |
| Ecosystem function: hydrology - groundwater levels | Water levels (centimetres); duration of levels; hydraulic gradients | Maintain, or where necessary restore, appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat | Fen habitats require high groundwater levels (i.e. water levels at or above the ground surface) for a large proportion of the calendar year (i.e. duration of mean groundwater level). Fen groundwater levels are controlled by regional groundwater levels in the contributing catchment area (which sustain the hydraulic gradients of the fen groundwater table). Regional abstraction of groundwater may affect fen groundwater levels |
| Ecosystem function: hydrology - surface water flow | Drain density and form | Maintain, or where necessary restore, as close as possible to natural or semi-natural, drainage conditions | Drainage, either within or surrounding the fen habitat, can result in the drawdown of the fen groundwater table. The depth, geometry and density of drainage (hydromorphology) will indicate the scale and impact on fen hydrology. Drainage can result in loss of characteristic species and transition to drier habitats |
| Ecosystem function: water quality | Water chemistry measures | Maintain appropriate water quality, particularly pH and nutrient levels, to support the natural structure and functioning of the habitat | Fens receive natural levels of nutrients (e.g. iron, magnesium and calcium) from water sources. However, they are generally poor in nitrogen and phosphorus, with the latter tending to be the limiting nutrient under natural conditions. Water supply should also be relatively calcium-rich |
| Vegetation composition: typical species | Percentage cover at a representative number of 2m x 2m monitoring stops | Maintain adequate cover of typical species, including brown mosses and vascular plants | For lists of typical plant species, see the Article 17 conservation status assessment for *Cladium* fens (NPWS, 2013) and the Article 17 fen habitats supporting document (Kimberley, 2013). Typical species recorded in the habitat in the SAC include great fen-sedge (*Cladium mariscus*) and black bog-rush (*Schoenus nigricans*) (NPWS internal files) |
| Vegetation composition: native negative indicator species | Percentage cover at a representative number of 2m x 2m monitoring stops | Cover of native negative indicator species at insignificant levels | Negative indicators include species not characteristic of the habitat and species indicative of undesirable impacts such as overgrazing, undergrazing, nutrient enrichment, agricultural improvement or impacts on hydrology. See JNCC (2004) and Kimberley (2013) |
| Vegetation composition: non-native species | Percentage cover at, and in local vicinity of, a representative number of 2m x 2m monitoring stops | Cover of non-native species less than 1% | Attribute and target based on Perrin et al. (2014). Non-native species can be invasive and have deleterious effects on native vegetation. A low target is set as non-native species can spread rapidly and are most easily dealt with when still at lower abundances |

| | | | |
|---|---|---|---|
| Vegetation composition: trees and shrubs | Percentage cover in local vicinity of a representative number of monitoring stops | Cover of scattered native trees and shrubs less than 10% | Attribute and target based on Perrin et al. (2014). Scrub and trees will tend to invade if fen conditions become drier |
| Physical structure: disturbed bare ground | Percentage cover at, and in local vicinity of, a representative number of 2m x 2m monitoring stops | Cover of disturbed bare ground not more than 10%. Where tufa is present, disturbed bare ground not more than 1% | Attribute and target based on Perrin et al. (2014). While grazing may be appropriate in this habitat, excessive areas of disturbed bare ground may develop due to unsuitable grazing regimes. Disturbance can include hoof marks, wallows, human footprints, vehicle and machinery tracks. Excessive disturbance can result in loss of characteristic species and presage erosion of peatlands |
| Indicators of local distinctiveness | Occurrence and population size | No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat; maintain features of local distinctiveness, subject to natural processes | This includes species on the Flora (Protection) Order, 2015 and/or Red Lists (Byrne et al., 2009; Regan et al., 2010; Lockhart et al., 2012; Wyse Jackson et al., 2016, etc.) |

**7230 Alkaline fens**

**To maintain the favourable conservation condition of Alkaline fens in Lough Derg, North-east Shore SAC, which is defined by the following list of attributes and targets:**



| Attribute | Measure | Target | Notes |
|---|---|---|---|
| Habitat area | Hectares | Area stable or increasing, subject to natural processes | Alkaline fen has not been mapped in detail for Lough Derg, North-east Shore SAC and thus the total current area of the qualifying habitat in the SAC is unknown. The habitat occurs frequently along lake margins in the SAC, often in association with the Annex I habitat Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae (7210*), common reed (*Phragmites australis*) beds and other swamp vegetation. The habitat is particularly well-represented at the edge of Portumna Forest Park (NPWS internal files) |
| Habitat distribution | Occurrence | No decline, subject to natural processes | See the notes for Habitat area above |
| Ecosystem function: soil nutrients | Soil pH and appropriate nutrient levels at a representative number of monitoring stops | Maintain soil pH and nutrient status within natural ranges | Relevant nutrients and their natural ranges are yet to be defined. However, nitrogen deposition is noted as being relevant to this habitat in NPWS (2013). See also Bobbink and Hettelingh (2011) |
| Ecosystem function: peat formation | Percentage cover of peat-forming vegetation and water table levels | Maintain active peat formation, where appropriate | In order for peat to form, water levels need to be slightly below or above the soil surface for c.90% of the time |
| Ecosystem function: hydrology - groundwater levels | Water levels (centimetres); duration of levels; hydraulic gradients | Maintain, or where necessary restore, appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat | Fen habitats require high groundwater levels (i.e. water levels at or above the ground surface) for a large proportion of the calendar year (i.e. duration of mean groundwater level). Fen groundwater levels are controlled by regional groundwater levels in the contributing catchment area (which sustain the hydraulic gradients of the fen groundwater table). Regional abstraction of groundwater may affect fen groundwater levels |
| Ecosystem function: hydrology - surface water flow | Drain density and form | Maintain, or where necessary restore, as close as possible to natural or semi-natural drainage conditions | Drainage, either within or surrounding the fen habitat, can result in the drawdown of the alkaline fen groundwater table. The depth, geometry and density of drainage (hydromorphology) will indicate the scale and impact on fen hydrology. Drainage can result in loss of characteristic species and transition to drier habitats |
| Ecosystem function: water quality | Water chemistry measures | Maintain appropriate water quality, particularly pH and nutrient levels, to support the natural structure and functioning of the habitat | Fens receive natural levels of nutrients (e.g. iron, magnesium and calcium) from water sources. However, they are generally poor in nitrogen and phosphorus, with the latter tending to be the limiting nutrient under natural conditions. Water supply should also be relatively calcium-rich |
| Community diversity | Abundance of variety of vegetation communities | Maintain variety of vegetation communities, subject to natural processes | The entire diversity of alkaline fen vegetation communities present in the SAC is currently unknown. Information on the vegetation communities associated with alkaline fens in the uplands is presented in Perrin et al. (2014). See also the Irish Vegetation Classification (Perrin, 2018; www.biodiversityireland.ie/projects/national-vegetation-database/irish-vegetation-classification) |
| Vegetation composition: brown mosses | Percentage cover at a representative number of 2m x 2m monitoring stops | Maintain adequate cover of typical brown moss species | Typical brown moss species include *Bryum pseudotriquetrum, Calliergonella cuspidata, Calliergon giganteum, Campylium stellatum, Cratoneuron filicinum, Ctenidium molluscum, Fissidens adianthoides, Palustriella commutata, Scorpidium cossonii, S. revolvens* and *S. scorpioides*. Many brown moss species are present in the alkaline fen in Lough Derg, North-east Shore SAC, including *Campylium stellatum, Calliergonella cuspidata, Ctenidium molluscum* and *Fissidens adianthoides* (NPWS internal files) |

| | | | |
|---|---|---|---|
| Vegetation composition: typical vascular plants | Percentage cover at a representative number of 2m x 2m monitoring stops | Maintain adequate cover of typical vascular plant species | For lists of typical plant species see the Article 17 conservation status assessment for alkaline fens (NPWS, 2013) and the fen habitats supporting document (Kimberley, 2013). See also Perrin et al. (2014) and JNCC (2004). In this SAC, black bog-rush (*Schoenus nigricans*) typically dominates the habitat, along with a rich vascular plant flora including other typical species such as purple moor-grass (*Molinia caerulea*), carnation sedge (*Carex panicea*), devil's-bit scabious (*Succisa pratensis*) and meadow thistle (*Cirsium dissectum*) (NPWS internal files) |
| Vegetation composition: native negative indicator species | Percentage cover at a representative number of 2m x 2m monitoring stops | Cover of native negative indicator species at insignificant levels | Negative indicators include species not characteristic of the habitat and species indicative of undesirable impacts such as overgrazing, undergrazing, nutrient enrichment, agricultural improvement or impacts on hydrology. Native negative indicators may include graminoids such as reed canary-grass (*Phalaris arundinacea*) and reed sweet-grass (*Glyceria maxima*), tall herbs such as great willowherb (*Epilobium hirsutum*), bracken (*Pteridium aquilinum*), bramble (*Rubus fruticosus*) and common nettle (*Urtica dioica*), and bryophytes such as *Brachythecium rutabulum* and *Kindbergia praelonga* |
| Vegetation composition: non-native species | Percentage cover at, and in local vicinity of, a representative number of 2m x 2m monitoring stops | Cover of non-native species less than 1% | Attribute and target based on Perrin et al. (2014). Non-native species can be invasive and have deleterious effects on native vegetation. A low target is set as non-native species can spread rapidly and are most easily dealt with when still at lower abundances |
| Vegetation composition: native trees and shrubs | Percentage cover in local vicinity of a representative number of monitoring stops | Cover of scattered native trees and shrubs less than 10% | Attribute and target based on Perrin et al. (2014). Scrub and trees will tend to invade if fen conditions become drier |
| Vegetation composition: soft rush and common reed cover | Percentage cover in local vicinity of a representative number of monitoring stops | Total cover of soft rush (*Juncus effusus*) and common reed (*Phragmites australis*) less than 10% | Attribute and target based on Perrin et al. (2014) |
| Vegetation structure: litter | Percentage cover in local vicinity of a representative number of monitoring stops | Total cover of litter not more than 25% | Attribute and target based on JNCC (2004). More than 25% litter cover may indicate insufficient removal of biomass by grazing and/or undesirable water table levels |
| Physical structure: disturbed bare ground | Percentage cover at, and in local vicinity of, a representative number of 2m x 2m monitoring stops | Cover of disturbed bare ground not more than 10% | Attribute and target based on Perrin et al. (2014). While grazing may be appropriate in this habitat, excessive areas of disturbed bare ground may develop due to unsuitable grazing regimes. Disturbance can include hoof marks, wallows, human footprints, vehicle and machinery tracks. Excessive disturbance can result in loss of characteristic species and presage erosion for peatlands |
| Physical structure: tufa formations | Percentage cover in local vicinity of a representative number of monitoring stops | Disturbed proportion of vegetation cover where tufa is present is less than 1% | Attribute and target based on Perrin et al. (2014) |
| Indicators of local distinctiveness | Occurrence and population size | No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat; maintain features of local distinctiveness, subject to natural processes | This includes species on the Flora (Protection) Order, 2015 and/or Red Lists (Byrne et al., 2009; Regan et al., 2010; Lockhart et al., 2012; Wyse Jackson et al., 2016, etc.). Lough Derg, North-east Shore SAC contains the only known population of the FPO listed and Critically Endangered Irish fleabane (*Inula salicina*) (Wyse Jackson et al., 2016) which occurs in the alkaline fen habitat along the lakeshore (NPWS internal files) |

### 3.2.2. Lough Derg (Shannon) SPA [004058]



Conservation Objectives are set by the NPWS (First Order Site-specific Conservation Objectives 12/10/2022) for the Lough Derg (Shannon) SPA (004058) as follows.

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

*European and national legislation places a collective obligation on Ireland and its citizens to maintain habitats and species in the Natura 2000 network at favourable conservation condition. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.*

*The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.*

*Favourable conservation status of a habitat is achieved when:*

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

*The favourable conservation status of a species is achieved when:*

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

Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:

A017 Cormorant *Phalacrocorax carbo*

A061 Tufted Duck *Aythya fuligula*

A067 Goldeneye *Bucephala clangula*

A193 Common Tern *Sterna hirundo*



To acknowledge the importance of Ireland's wetlands to wintering waterbirds, Wetland and Waterbirds may be included as a Special Conservation Interest for some SPAs that have been designated for wintering waterbirds and that contain a wetland site of significant importance to one or more of the species of Special Conservation Interest. Thus, a second objective is included as follows:

Objective: To maintain or restore the favourable conservation condition of the wetland habitat at Lough Derg (Shannon) SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.

## 3.3. Consideration of Effects on European Sites

### 3.3.1. Annex I Habitats Directive Habitats

The Proposed Development site is located over 5km north of the Lough Derg North-east Shore SAC.

There are no Annex I habitats located under the footprint or in the vicinity of the Proposed Development. There will be no direct impacts on Lough Derg North-east Shore SAC and there will be no habitat loss or fragmentation as a result of the proposed development. Having considered direct impacts and ruling them out, indirect impacts are then considered in terms of source pathway vectors.

Potential impacts on the Lough Derg North-east Shore SAC are considered in terms of hydrological connectivity between the Proposed Development and Lough Derg via the Treananearla Stream and Kilcrow River.

A worst-case scenario may arise were the Proposed Development to result in a significant detrimental change in water quality in the Treananearla Stream and Kilcrow River either alone or in combination with other projects or plans as a result of indirect pollution, the effect would have to be considered in terms of changes in water quality which would significantly affect the habitats for which Lough Derg North-east Shore SAC is designated.

### 3.3.2. Annex I Birds Directive Birds

There will be no direct impacts on qualifying interest habitats or species and so the main concern is with regard to water quality in Lough Derg and indirect impacts on water quality and habitats and food sources, particularly for Annexed birds.

It is unlikely that there would be a pollution event from fuel or chemical spillage. However, such an event could significantly affect the Treananearla Stream or Kilcrow River and/or the trophic status of Lough Derg which would be contrary to the conservation objectives of the Lough Derg (Shannon) SPA.



### 3.3.3. Ecological Network Supporting Natura 2000 Sites

An analysis of the proposed Natural Heritage Areas and designated Natural Heritage Areas in terms of their role in supporting the species using Natura 2000 sites was undertaken. These supporting roles mainly relate to mobile fauna such as mammals and birds which may use pNHAs and NHAs as "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 during the AA process.

There are no Natural Heritage Areas or proposed Natural Heritage Areas that will be affected by the Proposed Development.

## 3.4. Effects on the Qualifying Interests of European Sites

### 3.4.1. Direct Effects

There will be no direct impacts on the Lough Derg, North-east Shore SAC or the Lough Derg (Shannon) SPA as a result of the Proposed Development. Direct impact refers to physical impacts defined in the Departmental Guidance as 'Loss of habitat area' and/or 'Habitat Fragmentation'. There are no direct impacts identified which may affect the Annexed habitats or species of the SAC or SPA. The proposed development will have **no impacts** upon the integrity or the site structure of the Lough Derg, North-east Shore SAC or the Lough Derg (Shannon) SPA.

Having established this, the assessment emphasis is placed on potential indirect and cumulative impacts.

The primary consideration in terms of source-vector-pathways for indirect impacts relates to surface water and potential indirect impacts on hydrologically linked habitats and aquatic species.

### 3.4.2. Indirect Effects

The potential for impact is considered whereby the Proposed Development would result in a significant detrimental change in water quality either alone or in combination with other projects or plans as a

result of indirect pollution of surface water. The effect would have to be considered in terms of changes in water quality which would affect the habitats or species for which the Lough Derg, North-east Shore SAC and the Lough Derg (Shannon) SPA are designated.



*Consideration of Effects on Surface Water*

The likelihood of impacts on hydrologically connected environmental sites is low and will be avoided by best practice construction management, with particular attention paid to the diversion of the Treananearla Stream.

Accidental spillages and contaminated runoff and will be avoided by construction management measures which will be set out in a Construction Environmental Management Plan (CEMP). Management measures will include appropriate site-specific measures from the CIRIA Report C532 Control of Water Pollution from Construction Sites.

The CEMP will include a reference to this NIS for the Proposed Development which establishes the connectivity of the Treananearla Stream, Kilcrow River and Lough Derg, and the requirement for avoidance in terms of potential indirect construction activity.

## 3.5. Mitigation Measures

Ground disturbance is unlikely to have indirect impacts the Lough Derg, North-east Shore SAC or the Lough Derg (Shannon) SPA. However, as a precaution, best practice construction methods are proposed to include standard site management to prevent local impacts. The standard best practices also outline methods for the prevention of chemical pollution.

*Surface Water Management*

Prior to any works, all personnel involved will receive an on-site induction relating to operations adjacent to watercourses and the environmentally sensitive nature of the Treananearla Stream and re-emphasise the precautions that are required as well as the construction management measures to be implemented, in particular in relation to the diversion of this stream.

The project proponent will ensure that the engineer setting out the works is fully aware of the ecological constraints and construction management requirements.

Run-off into excavations/earthworks cannot be prevented entirely and is largely a function of prevailing weather conditions. Care will be taken to ensure that exposed soil surfaces are stable to minimize erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for

any offsite impacts. All runoff will be prevented from directly entering any water courses as no construction will be undertaken directly adjacent to open water.



During the construction phase as part of standard practice, appropriate measures to prevent water pollution to any watercourses near the site will be implemented during all of the construction phases and will include referral to:

1. Control of Water Pollution from construction Sites, Guidance for consultants and contractors (C532).
2. Environmental Good Practice on Site (3rd edition) (C692).

3. Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016).

*Pollution of watercourses*

- Site boundary markings to safeguard features of interest/value, including drains and streams.

- Silt fencing will be installed strategically around and through the site. The location of the silt fencing will be determined in the construction stage CEMP and will be subject to a detailed assessment of the planned works methodology and works area. The purpose of the silt fencing is to prevent silt laden water leaving the site and entering adjoining lands and the existing watercourse with the potential to impact watercourses. A typical silt fence detail is shown below in the Figure below. It will consist of a double layer of geotextile membrane fixed to wooden stakes approximately 600mm high. The membrane will be anchored into the ground to form a continuous barrier to silt laden water from the works site. Silt fences will be monitored via a silt inspection log (to be maintained by the Environmental Manager/ ECoW) and periodically maintained during the construction period. Typical maintenance will consist of repairs to damaged sections of membrane and removal of a build-up of silt on the upslope side of the fence. Daily silt fence inspections are recommended as part of their operation ensuring that any necessary repairs can be expedited.



Typical silt fence to be employed

- Drainage ditches will be installed to intercept surface water where there is a risk of significant water flow into excavations, adjoining lands or the existing watercourse. There will also be a requirement to periodically pump water from excavations. All collected and pumped water will have to be treated.
- Emergency contact numbers for the Local Authority Environmental Section, Inland Fisheries Ireland, the Environmental Protection Agency and the National Parks and Wildlife Service will be displayed in a prominent position within the site compound. These agencies will be notified immediately in the event of a pollution incident.
- Site personnel will be trained in the importance of preventing pollution and the mitigation measures described here to ensure same.
- The Environmental Manager or ECoW will be responsible for the implementation of these measures. They will be inspected on at least a daily basis for the duration of the works, and a record of these inspections will be maintained.
- Any temporary storage of soil, hardcore, crushed concrete or similar material will be stored 50m from any surface water drains. All temporary storage areas should also have surface run-off controls in place to prevent migration of possible materials. There can be no direct pumping of silty water from the works directly to any watercourse. All water from excavations must be treated by infiltration over lands or via settlement areas, silt busters etc.

*Management of Ground Water contamination*

The following measures will be required to avoid easy and rapid pathways to the ground water via high level bedrock:

- Stockpiles of soil shall be kept at areas of the site with low bedrock levels where there is at least 1m of soil above the bedrock.
- Silt fencing and settlement ponds shall be placed in areas with low bedrock levels where there is at least 1m of soil above the bedrock. Silt fences shall be inspected as part of the daily inspection regime. Trapped silt shall be removed from silt fencing at regular intervals and especially prior to any predicated flood event.
- Earthworks shall be left exposed for the minimum time possible. Earthworks formations shall be protected by a layer of imported granular fill.
- Landscaping and seeding of the site shall be carried out as early as possible.
- Site compounds, fuel storage areas, generators and the like shall be sited away from areas of high level bedrock.

*Concrete*

- Wet concrete and cement are very alkaline and corrosive and can cause serious pollution to watercourses.

- Disposal of raw or uncured waste concrete will be controlled to ensure that watercourses will not be impacted.

- Best practice in bulk-liquid concrete management addressing pouring and handling, secure shuttering / form-work, adequate curing times will be implemented.

- Wash water from cleaning ready mix concrete lorries and mixers may be contaminated with cement and is therefore highly alkaline, therefore, washing will not be permitted on site.

*Accidental Spills and Leaks*

- Bulk fuel storage areas should be adequately protected with the provision of appropriate bunding to provide a minimum storage volume of 110% of total fuel storage capacity with the provision of a spill kit and the use of drip trays. Fuel storage must be sited away from any watercourse or on-site services as far as possible and have a designated area.
- Where sub-contractors are required to refuel vehicles on-site, this will be carried out at a central refuelling location only. The sub-contractor will be required to make the necessary arrangements with the Main Contractor to access and purchase fuel oil from a central supply. All refuelling areas will be on areas of hard standing only at designated agreed locations. Open valves will not be left unattended.
- All fuel, oil and chemical deliveries will be supervised by a responsible person who will be trained to deal with any spillage to prevent a pollution problem occurring.

- Storage tank levels will be checked before delivery to prevent overfilling and to ensure that the product is delivered to the correct tank.
- The storage of materials in the main compound and work sites will be controlled in such a manner to ensure that materials are not damaged prior to use either through vehicle or people movements or through exposure to the elements.
- All fuel, oil and chemicals will be stored on an impervious base within a bunded area and secured. The bund shall have a capacity of 110% of the volume of the products stored within it. All tanks and containers will be kept in a secure compound and be protected from vandalism and will be clearly marked with their contents. Stores shall be located at least 10 metres from any watercourse.
- All mobile plant will be refuelled in a designated area on an impermeable surface and away from drains. In case of any spillages, there will be a spill response kit available at each refuelling point and within each machines working area. Where it is impractical to refuel within a bunded area, a drip tray will be available to catch any spills caused by over fuelling.

Every effort will be made to prevent pollution incidents associated with spills during the construction of the proposed development. The risk of oil/ fuel spillages will exist on the site and any such incidents will require an emergency response procedure. Given the scale and extent of the proposed development all contractors will carry spill kit materials in their site cabins.

The following steps provide the procedure to be followed in the event of an oil/ fuel spill occurring on site:

- Identify and stop the source of the spill and alert people working in the vicinity.
- Notify the Environmental Manager immediately giving information on the location, type and extent of the spill so that they can take appropriate action.
- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident.
- Contain the spill using the spill control materials, track mats or other material as required. Do not spread or flush away the spill.
- If possible, cover or bund off any vulnerable areas where appropriate such as drains, watercourses and/ or sensitive habitats.
- If possible, clean up as much as possible using the spill control materials.
- Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited.
- The Environmental Manager will notify the appropriate stakeholders, such as Galway County Council, National Parks and Wildlife Service, Department of Communications, Climate Action and Environment and Department of Housing, Planning and Local Government and/or the EPA.

- Environmental incidents are not limited to just fuel spillages, therefore any environmental incident must be reported, recorded and investigated in accordance with the procedures described.



## 3.6. Assessment of In-Combination Effects

The Commission services' interpretation document 'Managing Natura 2000 sites', makes clear that the phrase 'in combination with other plans or projects' in Article 3(3) refers to cumulative effects caused by the projects or plans that are currently under consideration together with the effects of any existing or proposed projects or plans. When impacts are assessed in combination in this way, it can be established whether or not there may be, overall, an impact which may have significant effects on a Natura 2000 site or which may adversely affect the integrity of a site.

As part of the Appropriate Assessment, in addition to the proposed works, other relevant projects and plans in the region must also be considered at this stage. This step aims to identify at this early stage any possible significant in-combination or cumulative effects / impacts of the proposed development with other such plans and projects on the Natura 2000 site.

A review of the National Planning Application Database was undertaken. The first stage of this review confirmed that there were no data outages in the area where the Proposed Development is located. The database was then queried for developments granted planning permission within 1km of the Proposed Development within the last three years, these are presented in Table 3 below.

*Table 3. Planning Application granted permission in the vicinity of the Proposed Development.*

| Planning Ref. | Description of development | Comments |
|---|---|---|
| 211906 | (a) Retention of existing dwelling house, domestic store and site Entrance on revised site boundaries from previously permitted under 34490 (b) Permission for a new wastewater treatment system with percolation area within the curtilage of the revised site boundary (c) and all associated site works. | No potential for in-combination effects given that with proposed CEMP, the Proposed Development will have no effect on any European site. |
| 211935 | to construct a new dwelling house, domestic garage, treatment unit with percolation area and all associated site works. Gross floor space of proposed works: 296.06 sqm (house) & 60 sqm (garage) | No potential for in-combination effects given that with proposed CEMP, the Proposed Development will have no effect on any European site. |
| 22837 | to construct a shed to accommodate milking parlour, dairy, plant room, slatted area with cubicles and feed passage to include collection area, concrete apron, meal bin and all associated site works. Gross floor space of proposed works: 276.52 sqm (shed to accommodate parlour, dairy, | No potential for in-combination effects given that with proposed CEMP, the Proposed Development will have no effect on any European site. |

| Planning Ref. | Description of development | Comments |
|---|---|---|
| | etc). Gross floor space of work to be retained : 93.60 sqm (concrete apron) | |
| 23438 | for the following development: installation of a new wastewater treatment system & percolation area to serve an existing dwelling & all associated site works | No potential for in-combination effects given that with proposed CEMP, the Proposed Development will have no effect on any European site. |
| 2360849 | for the demolition of an existing vacant farmhouse & all associated farm outbuildings (total gross floorspace of demolition works is approximately 609m2); three 400 kV single circuit angle masts (approximately 36.5m high) to facilitate the diversion of the existing Oldstreet-Woodland 400 kV overhead line into the proposed compound; three 400 kV gantry structures to allow connection of the existing 400 kV circuit to the proposed series compensation equipment (approximately 29m high measured to top of lightning rod); three series compensation platforms comprising capacitor bank, metal oxide varistor, triggered air gap & discharge damping circuit (approximately 12m high to top of equipment on platform); a communication & protection equipment single storey control building (gross floorspace approximately 125.8m2 & 5.5m high) with 8no. parking spaces; 400 kV associated electrical equipment, including, insulators, instrument transformers, overhead conductors, lightning masts, disconnectors, circuit breakers & filter reactors; removal of two existing 400 kV overhead line towers & associated overhead cables, conductors & surge arrestors; bat roost compensatory structure (gross floorspace approximately 16m2 & height of 4.5m); & all ancillary site development works including, site preparation works, site clearance & levelling; hardstanding & internal access tracks; underground cabling & earthgrid, surface water drainage network including a soakaway & attenuation tank; palisade internal fencing & gates (approximately 2.6m high) & landscaping as required to facilitate the development | No potential for in-combination effects given that with proposed CEMP, the Proposed Development will have no effect on any European site. |



### 3.6.1. Conclusion of In-combination Effects

Given the inclusion of strict Best Practice Construction Measures to be included and enforced through a Construction Environmental Management Plan, the proposed development will have no predicted impacts on local ecology and biodiversity or on hydrologically linked European sites, therefore in-combination impacts can be ruled out.

The Galway 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 zone of impact 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 development area and surrounding townlands in which the development site is located, would be avoided.



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

# 4. Natura Impact Statement & Conclusion

This NIS has reviewed the predicted impacts arising from the Proposed Development and found that with the implementation of appropriate measures specifically with regard to surface water during construction and operation, there will be no adverse effects on the integrity of the Lough Derg, North-east Shore SAC and the Lough Derg (Shannon) SPA.

It is the conclusion of this NIS, on the basis of the best scientific knowledge available, and with the implementation of the mitigation and restriction measures set out under Section 3.6., that the possibility of any adverse effects on the integrity of the European Sites considered in this NIS (having regard to their conservation objectives), or on the integrity of any other European Sites (having regard to their conservation objectives,) arising from the proposed development, either alone or in combination with other plans or projects, can be excluded beyond reasonable scientific doubt.

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

# 5. References

Department of the Environment, Heritage and Local Government (2009) Guidance on Appropriate Assessment of plans and projects in Ireland (as amended February 2010).

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 Culture, Heritage and the Gaeltacht.

NPWS (2019) Conservation Objectives: Lough Derg, North-east Shore SAC 002241. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.

NPWS (2022) Conservation objectives for Lough Derg (Shannon) SPA [004058]. First Order Site-specific Conservation Objectives Version 1.0. Department of Housing, Local Government and Heritage.

NPWS (2024) 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