

Natura Impact Statement

Foigha Solar Farm

Co. Longford

Report prepared for Foigha Solar Farm Ltd

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Appendices

Appendix A	Appropriate Assessment Screening Report
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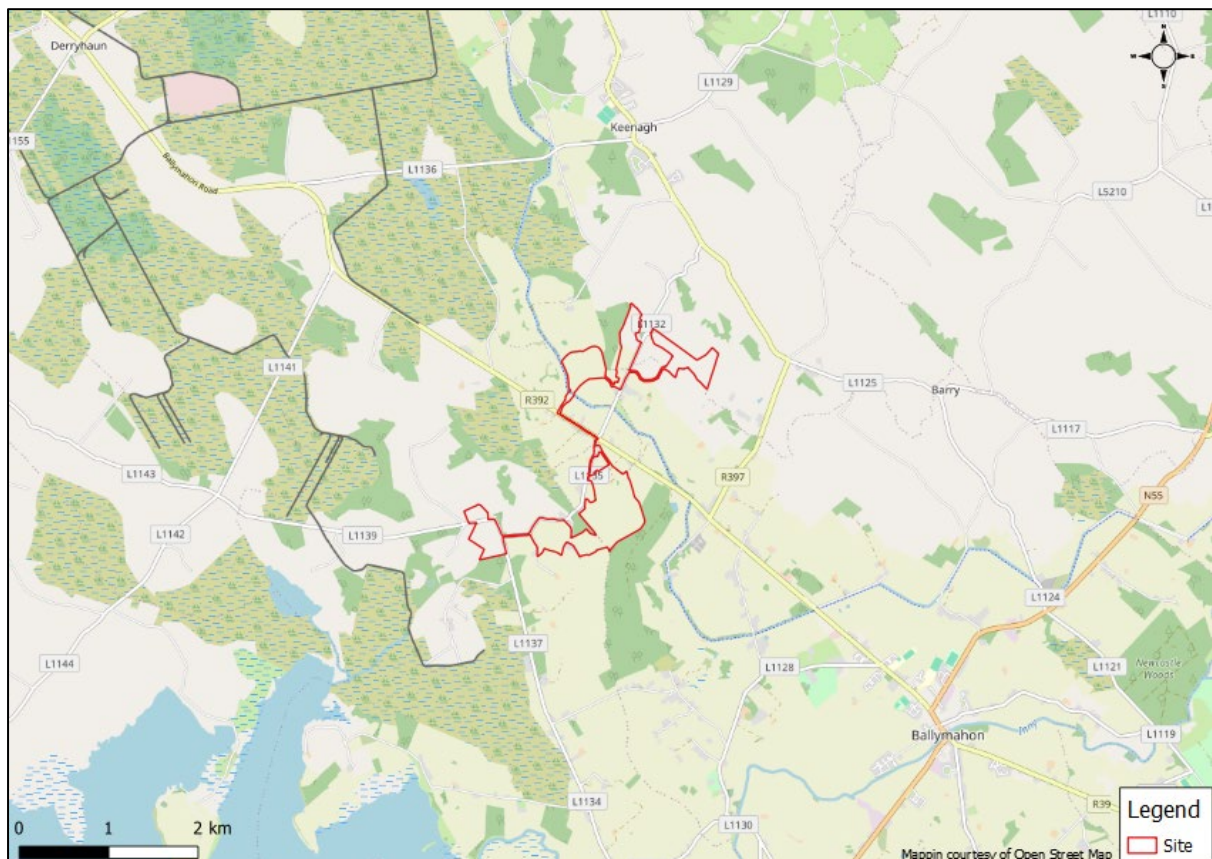
1 Introduction

This Natura Impact Statement (NIS) provides information in support of the Appropriate Assessment (AA), prepared by Greenleaf Ecology on behalf of Foigha Solar Farm Ltd, in respect of the proposed Foigha Solar Farm, Co. Longford (hereafter referred to as the Proposed Development). This report provides information and appraises the potential that the proposed development, alone or in combination with other plans and projects, will have an adverse effect on the integrity of European sites in view of best scientific knowledge and the conservation objectives of the sites. European sites are those identified as sites of European Community importance designated as Special Areas of Conservation under the Habitats Directive (92/43/EEC) or as Special Protection Areas under the Birds Directive (79/409/ECC as codified by Directive 2009/147/EC).

This report has been updated in response to the Request for Further Information from An Coimisiún Pleanála (Ref: PL-500085-LD).

The location of the proposed development is illustrated in Figure 1-1.

Figure 1-1: Site Location Map



University and is a full member of the Chartered Institute of Ecology and Environmental Management. Karen has extensive experience in ecological field survey and impact assessment. In her career as an ecologist Karen has completed reports to inform Appropriate Assessments (AA) covering the transport, energy and land use sectors, with work including assessment of Plans at the national, regional and local level, and numerous AAs of projects.

1.2 Study Area and Zone of Influence

Determination of this project's Zone of Influence (Zoi) was achieved by assessing all elements of the proposed project against the ecological receptors within the proposed project footprint, in addition to all ecological receptors that could be connected to and subsequently impacted by the proposed project through impact pathways. To this end, the zone of influence extends outside of the Proposed Development footprint to include ecological receptors connected to the project through overlap / intersection, proximity and connectivity through features such as watercourses.

The proposed site is located c.1.6km from Lough Ree SAC (Site Code: 000440) and c.1.7km from Lough Ree SPA (Site Code: 004064) (see Figure 4-1).

1.3 Findings of the Screening for Appropriate Assessment

The Appropriate Assessment Screening Report (AASR) found that the proposed development will require earthworks, drainage and construction of access tracks areas of hardstanding and trenching. There is potential for run-off of deleterious substances from these works to the surrounding environment. Potential conduits to Lough Ree SAC and Lough Ree SPA comprise 5 no. streams and active drainage ditches, which all ultimately drain towards Lough Ree. Applying the precautionary principle, there is potential for likely significant effects on the aquatic QI habitats *Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150]* and *Alkaline fens [7230]* and the semi-aquatic QI species *Lutra lutra (Otter) [1355]* for the Lower River Shannon SAC and SCI species for Lough Ree SPA as a result of degradation of water quality.

1.4 NIS Objectives

This NIS considers impacts to Lough Ree SAC and Lough Ree SPA. The study focuses on the suitability and importance of the study area for the aquatic habitats natural eutrophic lakes and alkaline fens and the semi-aquatic species otter, all of which are QI for Lough Ree SAC; and SCI species for Lough Ree SPA. Potential impacts, such as the release of water borne pollutants to Lough Ree SAC and SPA are considered in this assessment.

2 Project Description

Statutory Description

Foigha Solar Farm Limited intend to apply for a 10 Year Planning Permission for a solar farm and energy storage compound with a total area of circa 130 hectares in Cornacarta, Doonacurry, Foygh, Kilcommock Glebe, Ledwithstown and Tirlickeen (Townlands), Keenagh and Ballymahon, Co. Longford. The proposed development will consist of a solar farm comprising of c. 661,500 sq.m of solar photovoltaic panels on ground mounted frames, associated string inverters mounted to rear of panels and 42 no. single storey electrical transformer stations. The proposed development includes an energy storage compound consisting of 38 no. containerised energy storage modules and associated plant and equipment, 10 no. transformers, 2 no. auxiliary transformers, 1 no. Medium voltage control / switching substation and 1 no. spare parts container. The proposed development will also include underground electrical ducting and cabling within the development site and within the L1139, L1137, L1135, R392 and L1132 public roads, and crossing of the Royal Canal (either by open trench or horizontal directional drill), temporary construction compounds, security fencing, CCTV, access tracks (including clear span bridge over Donacurry River), landscaping, drainage and all ancillary development works and apparatus necessary to facilitate the proposed development. Construction and operational access will be via 5 no. existing entrances from the L1139, L1137, L1135 and L1132 which will be upgraded and 2 no. new entrances from the L11351. The operational lifespan of the solar farm will be 40 years and planning permission is requested for this duration.

Solar Panels

The working title for the project is Foigha Solar Farm. The civil works for the panels themselves use a simple, ground-mounted system that avoids undue ground disturbance and works with the existing site topography. The PV panels will sit on angled racks comprised of galvanized steel arranged in portrait or landscape configuration depending on the final system deployed¹. It is envisaged that these will be screw or driven-piled following geotechnical assessment². Across the majority of the site, the panels will be positioned on the rack at a minimum height of 0.8 m above the ground and rise to a maximum height of up to 2.44 m. In focused sections of the site, the minimum point of the panels will be raised to 1.6 m above the ground rising to a maximum height at the back of the panel of 3.4 m, having regard to the findings of the completed flood risk assessment.

The PV panels will be orientated to the south in order to capture maximum solar energy. The panels will be positioned at a tilt angle between 15-25 degrees from the horizontal having regard to natural site topographical and orientation conditions to ensure the best solar absorption. The panels will be stationary with no movable parts. Low voltage direct current cabling will connect the panels to the inverter/transformer stations across the site.

Inverters / Transformers / Ring Main Units

A total of 42 no. transformer stations are incorporated into the layout to convert direct current generated by the PV panels into alternating current which can be subsequently used by the electricity network. These units are manufactured offsite and delivered installation ready. These units are 3.88

¹ Refer to technical drawings for panel and array system options. Final technical specification to be agreed with Longford County Council prior to construction. The final design will be subject to standard micro-siting arising from site survey work.

² The exact nature of the foundations will be determined at detailed design stage. Other alternative foundations arrangements include ballasting systems and piles. Final foundation type will be confirmed with Longford County Council prior to construction.

m in height and will be installed on a hardcore or concrete slab base. The transformer units are equipped with a weather station, ventilation and a security light.

The proposed development includes c.280 no. string inverter units. These are small units which are mounted at the top underside of the solar panels and positioned at the end of the array rows. These units collect the electricity from the solar panels before onward passage to the transformers.

The design includes 1 no. medium voltage substation within the energy storage compound which will 'step-up' electricity produced by the solar farm for supply to the national grid. This is a modular unit 3 m high and 26 sq.m in area which will be delivered to the site for installation.

Underground Cabling

The solar farm comprises of a small number of interconnected agricultural fields. Underground cabling ducts will be laid across the site for the purposes of connecting the solar arrays, inverter / transformers and on-site medium voltage substation. The cabling will be trenched and contained within the footprint of the internal access tracks where possible. All ducting will be banded where necessary and will be laid in compliance with method statements set out in the submitted Construction and Environmental Management Plan.

As per the submitted plans, the solar farm field parcels which do not directly adjoin each other will be connected by means of 33kV underground interconnector cabling in identified public roads (c.1,311 metres of cabling). The laying of this cabling will be subject to road opening licence procedures to be agreed with Longford County Council. The cable route includes a crossing of the Royal Canal either by open trench or horizontal directional drill. A letter of consent has been provided by Waterways Ireland for this crossing, with the final method to be agreed subject to planning consent. Both crossing methods are described and assessed in the application³. The 33kV collector network considers watermain and culvert crossings, as described in the submitted plans, technical details and construction methodology by TLI Group.

Access

A compacted gravel access track up to 3.5 m wide will provide internal access to the solar arrays and associated infrastructure. This will extend to approximately 9,000 linear metres of track across the land parcels. Stripped soil arising from the construction of these access tracks will be sustainably reused across the site as part of landscaping, filling in the verges of access tracks and grass reinstatement in the areas of temporary construction compounds.

It is proposed to access the site via 7 no. entrances 5 no. of which are existing entrances from the L1139, L1137, L1135 and L1132 which will be upgraded to include widening, small elements of hedgerow removal, and provision of roadside drainage, as described in the submitted plans. The design includes 2 no. new entrances from the L11351. These entrances are located opposite each other to facilitate managed cross movement between two proximate field parcels particularly during the construction phase. This will avoid additional traffic movements on the wider local road network during the construction phase. The design retains 2 no. existing entrances in Parcel 1 and 2, but these will not be used for construction or operational phases of the project for traffic access, with provision made for turning areas within the internal fields at these locations.

Other Infrastructure

³ Refer to Construction Methodology by TLI Group.

A perimeter fence up to 2.2 m in height will be erected to provide security and restrict unauthorised entry to the solar farm. This fence will be stock proof in nature, sympathetic to the agricultural character of the site. The footings for the fence will either be pre-moulded or localised in-situ concrete, to be determined once a contractor is appointed. The installed fencing will incorporate mammal friendly access, with a maximum 100 mm gap retained at the bottom between the fence and the ground, as per the submitted technical plans.

The proposed development will be an unmanned facility; however, it will be monitored 24 hours a day remotely by the Applicant's operation system and the Engineer Procurement and Construction provider. The site will be subject to routine inspections. The CCTV will be orientated towards this infrastructure rather than any third-party lands.

Energy Storage Compound

The proposed development will be contained within a secure, fenced development compound of approximately 8,900 m² in area, enclosed by a 2.4m high palisade perimeter fence.

The layout includes 38 no. grouped container modules housing electrical and control equipment for energy storage. These units are manufactured offsite and delivered installation ready. These will have a maximum floor area of approximately 22.5 m². The energy storage modules are low lying in nature and may be sourced in a 'moss green' colour (RAL colour code of 6005 or similar) aiding assimilation in the local landscape⁴. The design includes 1 no. medium voltage substation within the energy storage compound which will 'step-up' electricity produced by the solar farm for supply to the national grid. This is a modular unit 3 m high and 26 sq.m in area which will be delivered to the site for installation. 10 no. transformers and 2 no. auxiliary transformers support the energy storage function on site.

The system as proposed will incorporate battery modules connected to inverters that convert direct current (DC) to alternating current (AC) in turn connecting to grid infrastructure via associated transformers within the compound. Fire protection for the facility will be designed in accordance with required standards. The level of protection is subject to detailed design by the plant's supplier, utilising industry safety standards and certification.

Landscaping & Biodiversity

A total of 317 linear metres of hedgerow will be permanently removed throughout the site to facilitate site entrance, access tracks and underground cabling⁵. This will be offset by 114 linear metres of new hedgerow planting (Type 2), as well as the bolstering of an additional 18,192 linear metres (Type 1) where necessary, to fill any gaps in existing hedgerows. 10,254 square metres of native woodland will be planted throughout the site. Ecology on the site will be further fostered to deliver significant biodiversity gains to the receiving environment through the establishment of focused ecological biodiversity areas and species rich grasslands.

The solar farm will contribute directly to a carbon dioxide emission reduction of 27,952 tonnes per annum or the equivalent of approximately 1.18 million tonnes of CO₂ over the 40 year lifetime of the project.

⁴ Final colour will be subject to available electrical infrastructure. Prepared photomontages illustrate in grey.

⁵ The figure for hedgerow removal excludes that required for the future provision of the substation which will be the subject of a future SID application. 180 metres of additional hedgerow will be removed for the construction of the substation.

Other Works

The solar farm and energy storage compound facility will connect to the transmission network via a 110 kV substation 'loop-in / loop-out' grid connection as detailed below. The grid connection for the solar farm will be the subject of a future planning consenting process. This is referenced within this solar farm and energy storage compound planning application for information purposes only, to ensure that a full, robust assessment can be made of the entire development.

110 kV substation and 'loop-in / loop-out' grid connection

The solar farm will connect to the Lanesboro / Mullingar 110kV overhead line by means of new 110kV substation. This includes an underground cable route of c. 292m. The substation will include a 'loop-in / loop-out' underground 110kV cable grid connection which will connect into the existing Lanesboro / Mullingar 110kV overhead lines via 2 no. new Interface Towers. This connection method will constitute a new node of the transmission network, connecting the proposed substation and associated solar farm generation to the National Grid. Please refer to the TLI Construction Methodology Statement for further detail.

The 110kV substation is based on EirGrid design specifications. The substation will consist of the EirGrid and Independent Power Producers (IPP) control room buildings and high voltage electrical equipment including a 110/33kV Transformer (TRAFO) with associated equipment.

All works will be undertaken to EirGrid / ESB specifications and in full compliance with environmental and other mitigation measures contained in the final Construction and Environmental Management Plan.

Longford County Council Request for Further Information

Longford County Council issued a Request for Further Information (RFI) on the 20/02/2025. At the expressed request of the Council's Roads Office, the proposed layout of the solar farm has been amended in a number of small areas. These design changes were detailed on the submitted revised site layout plans, and in summary, comprised the following:

- Relocation of entrance on L1132 to provide for increased sightlines;
- Provision of identified improvement works on the L1135 and L1139 comprising the setting back of existing boundaries at 3 no. locations in support of improved forward visibility. Removed hedgerow to be reinstated behind revised boundaries.
- Consequent minor revision to solar panel layout in the identified areas, providing for a small reduction in overall panels;
- Provision has also been made for temporary construction phase passing bays on the L1132, as identified in the Site Access Report;
- The proposed landscaping figures have been altered as a result of the design revisions. A total of c. 332 linear metres of hedgerow will be permanently removed throughout the site to facilitate site entrance, access tracks and underground cabling. This will be offset by 2,621 linear metres of new hedgerow planting (Type 2), as well as the bolstering of an additional 16,613 linear metres where necessary, to fill any gaps in existing hedgerows. To facilitate improved forward visibility on the local road network, c.285 linear metres of hedgerow will be removed and reinstated fully behind the relocated boundary.

An Coimisiún Pleanála Request for Further Information

An Coimisiún Pleanála issued a Request for Further Information dated 27th February 2026 related to 2 no. items, namely:

1. Consideration of firewater requirements and associated management for the energy storage component of the project, reflecting the relatively new nature of such technology in Ireland.
2. The need for additional archaeological investigations.

The completed work packages referenced above have resulted in some small design changes to the layout of the proposed development, as follows:

- Provision of archaeological buffers to 10 no. areas providing for a reduction in panelled area of the proposed solar farm of c.404 sqm. Minor localised relocation of tracks / supporting infrastructure in some cases.
- Alterations to the Energy Storage compound layout for firewater provision and management comprising localised reorganisation of plant, addition of water storage tank and hydrants, compound drainage network, including water attenuation pond, and rainwater discharge soakaway. The revised compound layout includes 32 no. energy storage modules, 8 no. transformers, 2 no. auxiliary transformers, 1 no. medium voltage control / switching substation, 2 no. spare parts containers, and 1 no. office container.

3 Methodology

3.1 Legislative Background for Appropriate Assessment

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, better known as “The Habitats Directive”, provides legal protection for habitats and species of European importance. Articles 3 to 9 provide the legislative means to protect habitats and species of Community interest through the establishment and conservation of an EU-wide network of sites known as Natura 2000. As defined under the Habitats Directive (Article 3(1)) Natura 2000 is a European ecological network composed of sites hosting the natural habitat types listed in Annex I and habitats of the species listed in Annex II, shall enable the natural habitat types and the species' habitats concerned to be maintained or, where appropriate, restored at a favourable conservation status in their natural range.

In Ireland, these sites are designated as European sites and include SPAs, established under the EU Birds Directive (79/409/EEC, as codified by 2009/147/EC) for birds and SACs, established under the Habitats Directive 92/43/EEC for habitats and species.

The Habitats Directive has been transposed into Irish law by Part XAB of the Planning and Development Act (as amended) and the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477/2011) as amended.

Articles 6(3) and 6(4) of the Habitats Directive sets out the decision-making tests for plans and projects likely to have a significant effect on or to adversely affect the integrity of European sites. Article 6(3) establishes the requirement for Appropriate Assessment (AA):

Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to 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.

Both EU and national guidance exists in relation to Member States fulfilling their requirements under the EU Habitats Directive, with particular reference to Article 6(3) and 6(4) of that Directive. The methodology followed in this report to inform the assessment has had regard to the following legislation and guidance listed in Section 2.2:

- Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (also known as the ‘Habitats Directive’);
- Council Directive 2009/147/EC on the conservation of wild birds, codified version, (also known as the ‘Birds Directive’);
- The European Communities (Birds and Natural Habitats) Regulations 2011 to 2015; and
- The Planning and Development Act (as amended).

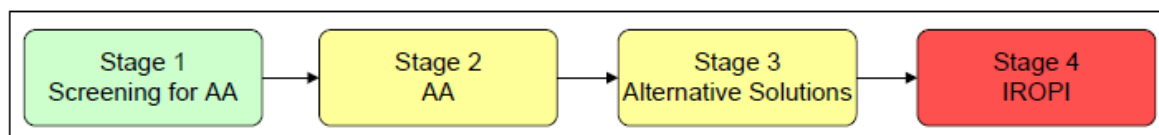
3.2 Stages of Appropriate Assessment

Article 6(3) & (4) of the Habitats Directive defines a stepwise procedure where plans or projects are considered. The Department of the Environment, Heritage and Local Government guidelines (DoELHG, 2009, rev 2010) outlines the European Commission's methodological guidance (EC, 2002) promoting 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.

The four stages are summarised diagrammatically in Figure 3-1. Stages 1-2 deal with the main requirements for assessment under Article 6(3). Stage 3 may be part of the Article 6(3) Assessment or may be a necessary precursor to Stage 4. Stage 4 is the main derogation step of Article 6(4).

Figure 3-1: Four stages of appropriate assessment⁶



Stage 1 Appropriate Assessment

Stage 1 AA comprises the Screening process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3) as follows:

- i. whether a plan or project (in this instance the proposed project) is directly connected to or necessary for the management of the European sites, and
- ii. whether a plan or project, alone or in combination with other plans and projects, is likely to have significant effects on the European sites in view of their conservation objectives.

If the effects are deemed to be significant, potentially significant, or uncertain, or if the screening process becomes overly complicated, then the process must proceed to Stage 2 (AA).

Stage 2: Appropriate Assessment

The aim of the stage 2 AA process is to identify any adverse impacts that the plan or project might have on the integrity of relevant European sites. As part of the assessment, a key consideration is ‘in combination’ effects with other plans or projects. Where adverse impacts are identified, mitigation measures can be proposed that would avoid, reduce or remedy any such negative impacts and the plan or project can be amended and / or conditions and restrictions imposed. If it is considered that mitigation measures will not be able to satisfactorily reduce potential adverse impact on a Natura 2000 site then an assessment of alternative solutions is considered in Stage 3. This is then followed by Stage 4 in the event that adverse impacts remain and the proposed activity or development is deemed to be of Imperative Reasons of Overriding Public Interest (IROPI), allowing an assessment of compensatory measures to be considered.

This NIS informs Stage 2 of the AA process and determines if the project is likely to affect the integrity (structure and function) of European sites. As the screening process identified that potential impacts to Lough Ree SAC and Lough Ree SPA are unknown, uncertain or cannot be ruled out without further assessment, then an AA is required.

The NIS represents a detailed, targeted assessment of the nature and potential significance of direct and indirect impacts arising from the proposed project. An assessment of cumulative impacts (both from the project objectives, and other policies, plans and programmes) is also completed as part of

⁶ IROPI – Imperative Reasons for Overriding Public Interest

the NIS. The NIS also incorporates best practice and mitigation measures to eliminate potential adverse impacts.

This NIS has been prepared having regard to the following guidance and legislation:

Guidance

- Department of the Environment, Heritage and Local Government (DoEHLG) (2009, rev 2010a), Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities.
- Department of the Environment, Heritage and Local Government (DoEHLG, 2010b), Department of Environment Heritage and Local Government Circular NPWS 1/10 and PSSP 2/10 on Appropriate Assessment under Article 6 of the Habitats Directive – Guidance for Planning Authorities.
- EPA (2013) Integrated Biodiversity Impact Assessment – Streamlining AA, SEA and EIA Processes: Practitioners Manual. Environmental Protection Agency.
- European Commission (2018), Managing Natura 2000 Sites: the provisions of Article 6 of the ‘Habitats’ Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg.
- European Commission (2000a), Communication from the Commission on the Precautionary Principle, Office for Official Publications of the European Communities, Luxembourg.
- European Commission Notice Brussels C (2021) 6913 final ‘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).
- 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 interest, compensatory measures, overall coherence, opinion of the Commission. Office for Official Publications of the European Communities, Luxembourg.
- European Commission (2013), Interpretation Manual of European Union Habitats. Version EUR 28.
- European Commission (2006), Nature and biodiversity cases: Ruling of the European Court of Justice. Office for Official Publications of the European Communities.

4 European Sites within Project Zone of Influence

Two European sites, namely Lough Ree SAC and Lough Ree SPA are located within the likely zone of influence (Zoi) of the proposed development and have been identified within the AASR completed for the proposed Foigha Solar Farm as being at risk of likely significant effects from the proposed development.

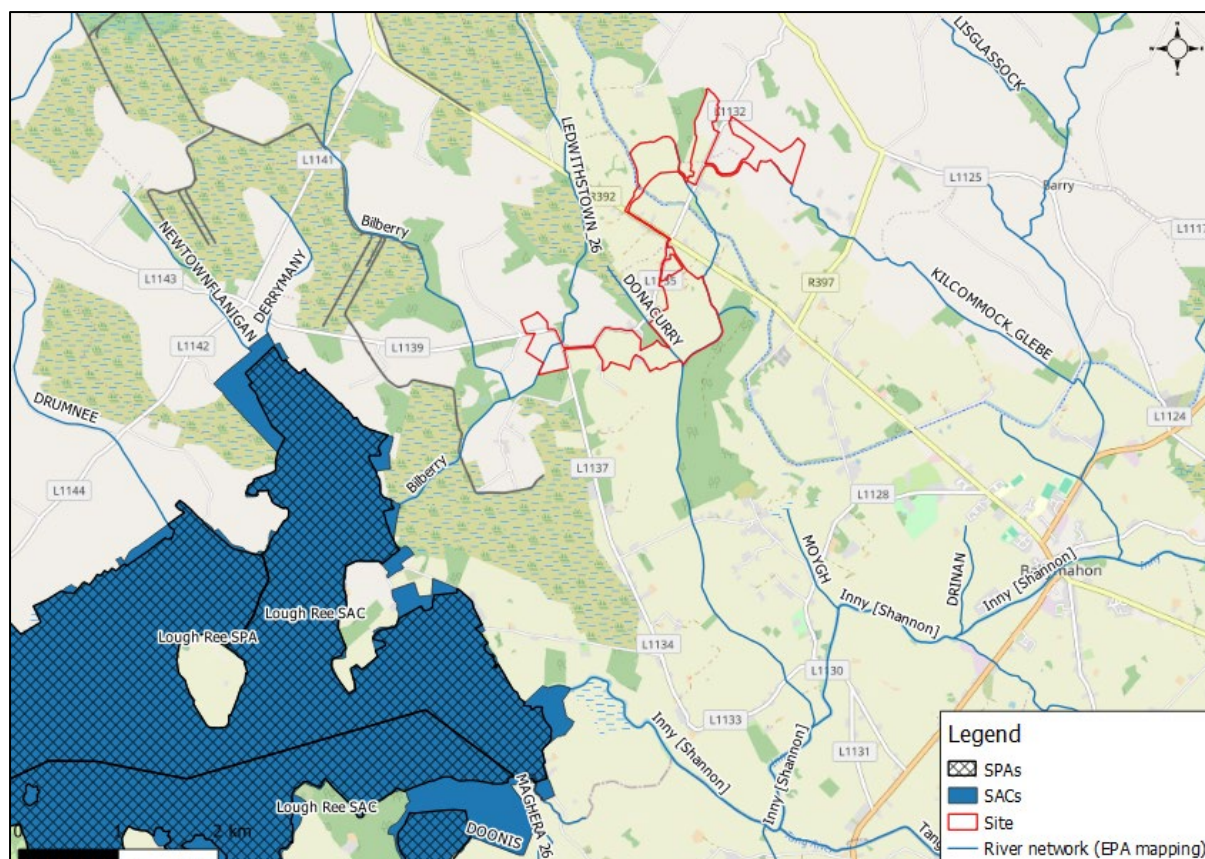
Table 4-1 details these European sites and their proximity and connectivity to the proposed development. Figure 4-1 provides an illustration of the location of the proposed development in relation to Lough Ree SAC and Lough Ree SPA.

Table 4-1: Connectivity of the proposed development to Lough Ree SAC and Lough Ree SPA

European Site	Distance from Proposed Site (km) ⁷	Connectivity
Lough Ree SAC (000440)	1.6km	There is hydrological connectivity via streams that drain the proposed site, which flow Lough Ree c.2.0km downstream of the site at its closest point. The proposed site and this SAC are in relatively close proximity.
Lough Ree SPA (004064)	1.7km	There is hydrological connectivity via streams that drain the proposed site, which flow Lough Ree c.2.0km downstream of the site at its closest point. The proposed site and this SPA are in relatively close proximity.

⁷ Distance measured “as the crow flies”

Figure 4-1: Map illustrating the location of the Proposed Development in relation to Lough Ree SAC and Lough Ree SPA



4.1 Summary of European Sites Relevant to the Stage 2 Appropriate Assessment

4.1.1 Lough Ree SAC (Site Code: 000440)

According to the Standard Data Form for Lough Ree SAC⁸, this is a large mesotrophic moderate-eutrophic lake situated in an ice deepened depression in carboniferous limestone on the River Shannon. Greater part is less than 10 m in depth but there are deep troughs from north to south of depths between 17-33 m. Lough Ree has a long and much indented shoreline, mostly stony with some gravel and sand. In parts, reed swamp, alkaline fen, bog, freshwater marshes, wet and dry grassland and wet woodland occurs. Numerous islands, some wooded, occur in the lake. Dry broad-leaved woodland of good quality is included in site. Lough Ree is surrounded by agricultural land of moderate to high intensity and is close to Athlone town. Eutrophication may be a problem but at present Lough Ree is less affected than other midland lakes, notably Lough Derg.

One of the largest and most important lakes in Ireland, Lough Ree is an excellent example of a natural eutrophic system. The woodlands at the site are considered the best in the midlands. The site also contains very good examples of degraded raised bog much of which retain a typical raised bog flora and which could be improved by restoration works. Bog woodland is also represented though some of this is planted *Pinus* species. A further area of wet woodland on cutover peat is notable for the abundance of *Frangula alnus*. Good to moderate examples of alkaline fens and calcareous dry grasslands also occur. Limestone pavement with species-rich woodland occurs at Rathcline. Several Red Data plant species occur. *Lutra lutra* is frequent on the site and the fish *Coregonus autumnalis*

⁸ Available at [N2K IE0000440 dataforms \(europa.eu\)](https://n2k.ie/0000440/dataforms/europa.eu), accessed 16/10/2024

pollan has been recorded. It is an important bird site for wintering and breeding waterfowl, and has a colony of *Sterna hirundo*. It is of particular importance for the breeding population of *Melanitta nigra*, as it is one of only three sites for the species in Ireland. Water quality of the lake is considered good.

Qualifying habitats and qualifying species for Lough Ree SAC are presented in Table 4-2 and Table 4-3 below.

Table 4-2: Lough Ree Annex I (Qualifying) Habitats

Habitat Name and Code (SAC Qualifying Feature)	Cover (ha)	Representivity ⁹
Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150]	12935.1	A
Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]	143.71	B
Degraded raised bogs still capable of natural regeneration [7120]	44.72	B
Alkaline fens [7230]	143.71	A
Limestone pavements* [8240]	143.71	C
Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	Not listed	Not listed
Bog woodland [91D0]	143.71	C

Table 4-3: Lough Ree SAC Annex II (Qualifying) Species

Species Name and Code	Population Significance ¹⁰
<i>Lutra lutra</i> (Otter) [1355]	C

4.1.2 Lough Ree SPA (Site Code: 004064)

According to the Standard Data Form for Lough Ree SPA¹¹, this site is situated on the River Shannon between Lanesborough and Athlone, Lough Ree is the third largest lake in the Republic of Ireland. It lies in an ice-deepened depression in Carboniferous Limestone. Some of its features (including the islands) are based on glacial drift. The main inflowing rivers are the Shannon, Inny and Hind, and the main outflowing river is the Shannon. The greater part of Lough Ree is less than 10 m in depth, but there are six deep troughs running from north to south, reaching a maximum depth of about 36 m just west of Inchmore. The lake has a very long, indented shoreline and hence has many sheltered bays. It also has a good scattering of islands, most of which are included in the site. The lake is classified as a mesotrophic system. The water of Lough Ree tends to be strongly peat-stained, restricting macrophytes to depths of less than 2 m. Swamp vegetation, especially of *Phragmites australis*, occurs in the sheltered areas around the lake. The swamp often grades to species-rich calcareous fen or

⁹ The degree of representativity of the natural habitat type on the site: A: excellent representativity, B: good representativity, C: significant representativity and D: non-significant presence

¹⁰ Size and density of the population of the species present on the site in relation to the populations present within national territory. A: 100% >= p > 15% B: 15% >= p > 2% C: 2% >= p > 0% D: non-significant population

¹¹ Available at: [N2K IE0004064 dataforms \(europa.eu\)](https://n2k.ie0004064/dataforms/europa.eu), accessed 16/10/2024

freshwater marsh. Lowland wet grassland, some of which floods in winter, is found in abundance around the shore. Some of the islands are wooded.

Lough Ree is one of the most important Midland sites for wintering waterfowl, with nationally important populations of *Anas penelope*, *Anas crecca*, *Anas acuta*, *Anas clypeata*, *Aythya fuligula* and *Bucephala clangula*. Nationally important populations of *Pluvialis apricaria* and *Vanellus vanellus* are also associated with the lake. Regionally important numbers of *Cygnus cygnus* and *Anser albifrons flavirostris* are also found in the vicinity of the lake. The site supports a nationally important population of *Sterna hirundo*. *Larus ridibundus* breeds (nationally important) and *Larus fuscus* and *Larus canus* have bred in the past (recent census information is poor). Lough Ree is an important site for breeding duck and grebes, with *Aythya fuligula* and *Podiceps cristatus* having populations of national importance. Of particular note is that it is one of the two main sites in the country for breeding *Melanitta nigra*, a Red Data Book species. The woodland around the lake is a stronghold for *Sylvia borin* and this scarce species probably occurs on some of the islands within the SPA. *Lutra lutra* is frequent within the site and the fish *Coregonus autumnalis* pollan occurs.

4.1.2.1 Species of Conservation Interest for Lough Ree SPA

The Species of Conservation Interest for Lough Ree SPA are listed in Table 4-4, as detailed in the Standard Data Form available at [N2K IE0004064 dataforms \(europa.eu\)](https://n2k.ie0004064.dataforms.europa.eu).

Table 4-4: Species of Conservation Interest for Lough Ree SPA

Species Name and Code	Population Significance ¹²
Little Grebe (<i>Tachybaptus ruficollis</i>) [A004]	Not listed
Whooper Swan (<i>Cygnus cygnus</i>) [A038]	C
Wigeon (<i>Anas penelope</i>) [A050]	C
Teal (<i>Anas crecca</i>) [A052]	C
Mallard (<i>Anas platyrhynchos</i>) [A053]	C
Shoveler (<i>Anas clypeata</i>) [A056]	C
Tufted Duck (<i>Aythya fuligula</i>) [A061]	B
Common Scoter (<i>Melanitta nigra</i>) [A065]	A
Goldeneye (<i>Bucephala clangula</i>) [A067]	C
Coot (<i>Fulica atra</i>) [A125]	C
Golden Plover (<i>Pluvialis apricaria</i>) [A140]	C
Lapwing (<i>Vanellus vanellus</i>) [A142]	C
Common Tern (<i>Sterna hirundo</i>) [A193]	B
Wetland and Waterbirds [A999]	N/A

4.2 Conservation Objectives of European Site

Article 6.3 of the Habitats Directive and Part XAB of the Planning and Development Act (as amended) require that the impact of the project (either alone or in combination with other projects or plans) on the integrity of the European site is considered with respect to the conservation objectives of the site and to its structure and function. The European Commission guidance on Natura 2000 (MN2000) states that:

¹² Size and density of the population of the species present on the site in relation to the populations present within national territory. A: 100% >= p > 15% B: 15% >= p > 2% C: 2% >= p > 0% D: non-significant population

“The integrity of the site involves its constitutive characteristics and ecological functions. The decision as to whether it is adversely affected should focus on and be limited to the habitats and species for which the site has been designated and the site’s conservation objectives” (MN2000, Section 4.6.4).”

The maintenance of favourable condition of qualifying interests at the site level will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. Favourable conservation status of habitats and species is described in the Guidance as follows:

- **Favourable conservation status of a habitat** can be described as being achieved when: *“its natural range, and the area it covers within that range, is stable or increasing, and the ecological factors that 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”*.
- **Favourable conservation status of a species** can be described as being achieved when: *“population data on the species concerned indicate that it is maintaining itself, and the natural range of the species is neither being reduced or likely to be reduced for the foreseeable future, and there is, and will probably continue to be, sufficiently large habitat to maintain its populations on a long term basis”*.

Site-specific conservation objectives aim to define favourable conservation conditions for the qualifying interests, i.e. Annex I habitat and Annex II species, as applicable. The conservation objectives are presented as a list of attributes against which targets have been set. All of the attributes in relation to each qualifying interest (QI) for Lough Ree SAC of relevance to this NIS (i.e. Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150], Alkaline fens [7230] and *Lutra lutra* (Otter) [1355]) have been considered in relation to the potential impacts associated with the Proposed Development. Site specific conservation objectives (SSCOs) for the QI habitats and species Natural eutrophic lakes, Alkaline fens and Otter for Lough Ree SAC are detailed in Table 4-4.

Table 4-5: Site Specific Conservation Objectives, Attributes and Targets for the Relevant QI Habitats and Species of Lough Ree SAC (NPWS, 2016, available at: [ConservationObjectives.rdl \(npws.ie\)](https://www.npws.ie/ConservationObjectives.rdl))

Conservation Objectives Lough Ree SAC (Site specific cons_obj (npws.ie))			
Attribute	Measure	Target	Notes
Natural eutrophic lakes with Magnopotamion or Hydrocharition – type vegetation [3150] To restore the favourable conservation condition of Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation in Lough Ree 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	Two measures of extent should be used: 1. the area of the lake itself and; 2. the extent of the vegetation communities/zones that typify the habitat.
Habitat distribution	Occurrence	No decline, subject to natural processes	habitat 3150 is considered to occur in Lough Ree, Killinure Lough, Coosan Lough and Ballaghkeeran Bay (map 3 of CO's ConservationObjectives.rdl (npws.ie))
Typical species	Occurrence	Typical species present, in good condition, and	For lists of typical plant species, see Article 17 habitat assessment for 3150 (NPWS, 2013) and the lake habitats

		demonstrating typical abundances and distribution	supporting document (O Connor, 2015).
Vegetation composition: characteristic zonation	Occurrence	All characteristic zones should be present, correctly distributed and in good condition	The characteristic zonation of lake habitat 3140 has been described (Roden and Murphy, 2013; in prep.), however significant further work is necessary to describe the characteristic zonation and other spatial patterns in the remaining four Annex I lake habitats, including 3150
Vegetation distribution: maximum depth	Metres	Maintain maximum depth of vegetation, subject to natural processes	The maximum depth of vegetation is likely to be specific to the lake shoreline in question.
Hydrological regime: water level fluctuations	Metres	Maintain appropriate natural hydrological regime necessary to support the habitat	Fluctuations in lake water level are typical in Ireland, but can be amplified by activities such as abstraction and drainage.
Lake substratum quality	Various	Maintain appropriate substratum type, extent and chemistry to support the vegetation	Research is required to further characterise the substratum types (particle size and origin) and substratum quality (notably pH, calcium, iron and nutrient concentrations) favoured by each of the five Annex I lake habitats in Ireland. It is likely that soft muddy substrata dominate habitat 3150.
Water quality: transparency	Metres	Maintain/restore appropriate Secchi transparency. There should be no decline in Secchi depth/transparency	Transparency relates to light penetration and, hence, to the depth of colonisation of vegetation.
Water quality: nutrients	µg/l P; mg/l N	Maintain the concentration of nutrients in the water column to sufficiently low levels to support the habitat and its typical species	As a relatively productive habitat, mesotrophic and Water Framework Directive (WFD) 'good' status targets apply.
Water quality: phytoplankton biomass	µg/l Chlorophyll <i>a</i>	Maintain appropriate water quality to support the habitat, including good chlorophyll <i>a</i> status	Mesotrophic and WFD 'good' status targets apply to habitat 3150.
Water quality: phytoplankton composition	EPA hytoplankton composition metric	Maintain appropriate water quality to support the habitat, including good phytoplankton composition status	The EPA has developed a phytoplankton composition metric for nutrient enrichment of Irish lakes. As for other water quality indicators, habitat 3150 requires WFD good status.
Water quality: attached algal biomass	Algal cover and EPA phytobenthos metric	Maintain trace/absent attached algal biomass (<5% cover) and good phytobenthos status	Nutrient enrichment can favour epiphytic and epipelagic algae that can out-compete the submerged vegetation. The cover abundance of attached algae in habitat 3150 should, ideally

			therefore, be trace/ absent (<5% cover).
Water quality: macrophyte status	EPA macrophyte metric (The Free Index)	Restore good macrophyte status	Nutrient enrichment can favour more competitive submerged macrophyte species that out-compete the typical and characteristic species for the lake habitat. The EPA monitors macrophyte status for WFD purposes using the 'Free Index'. The target for lake habitat 3150 is good status.
Acidification status	pH units; mg/l	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes	The specific requirements of habitat 3150, in terms of water and sediment pH, alkalinity and cation concentration, have not been fully determined. Acidification is not considered a threat to habitat 3150, however eutrophication can lead to at least temporary increases in pH to toxic levels (>9/9.5 pH units). Maximum pH should be <9.0 pH units, in line with the surface water standards.
Water colour	mg/l PtCo	Maintain appropriate water colour to support the habitat	Increased water colour and turbidity decrease light penetration and can reduce the area of available habitat for lake macrophytes, particularly at the lower euphotic depths. The primary source of increased water colour in Ireland is disturbance to peatland.
Dissolved organic carbon (DOC)	Mg/l	Maintain appropriate organic carbon levels to support the habitat	Dissolved (and particulate) organic carbon (OC) in the water column is linked to water colour and acidification (organic acids). Increasing DOC in water has been documented across the Northern Hemisphere, including afforested peatland catchments in Ireland. Damage and degradation of peatland, leading to decomposition of peat is likely to be the predominant source of OC in Ireland.
Turbidity	Nephelometric turbidity units/ mg/l SS/ other appropriate units	Maintain appropriate turbidity to support the habitat	Turbidity can significantly affect the quantity and quality of light reaching rooted and attached vegetation and can, therefore, impact on lake habitats. The settlement of higher loads of inorganic or organic material on lake vegetation communities

			may also have impacts on sensitive, delicate species. Turbidity can increase as a result of re-suspension of material within the lake, higher loads entering the lake, or eutrophication.
Fringing habitat: area	Hectares	Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of the lake habitat	3150 lakes typically have well-developed reedswamp, fen and/or marsh communities around much of their shoreline. Wet woodland would have surrounded much of their shoreline in the past and has survived or re-colonised patches of many 3150 lake shores. These fringing habitats intergrade with and support the structure and functions of the lake habitat.
Alkaline Fens [7230] To maintain the favourable conservation condition of Alkaline fens in Lough Ree 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	The full extent of this Alkaline fens in the SAC is currently unknown. The main area is considered to occur in the vicinity of St. John's Wood, on the western side of the lake but there are likely to be additional areas around the lake. Alkaline fens occur in association with other habitats such as wet grassland and marsh (internal NPWS files)
Habitat distribution	Occurrence	No decline, subject to natural processes	See note for area above
Hydrological regime	Metres	Appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat	Maintenance of groundwater, surface water flows and water table levels within natural ranges is essential for this wetland habitat
Peat formation	Flood duration	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 (Jim Ryan, pers. comm.)
Water quality: nutrients	Water chemistry measures	Appropriate water quality 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
Vegetation structure: typical species	Percentage	Maintain vegetation cover of typical species including brown mosses and vascular plants	Vascular plants listed for fen in this SAC include saw sedge (<i>Cladium mariscus</i>), yellow sedge (<i>Carex viridula</i>), black bog rush (<i>Schoenus nigricans</i>), blunt-flowered rush (<i>Juncus subnodulosus</i>), whorlgrass (<i>Catabrosa aquatica</i>), water mint (<i>Mentha aquatica</i>), grass-of-Parnassus (<i>Parnassia palustris</i>) and marsh pennywort (<i>Hydrocotyle vulgaris</i>) (Internal NPWS files)
Vegetation composition: trees and shrubs	Percentage	Cover of scattered native trees and shrubs less than 10%	Scrub and trees will tend to invade if fen conditions become drier. Attribute and target based on upland habitat conservation assessment criteria (Perrin et al., 2014)
Physical structure: disturbed bare ground	Percentage	Cover of disturbed bare ground less than 10%. Where tufa is present, disturbed bare ground less than 1%	While grazing may be appropriate in this habitat, excessive areas of disturbed bare ground may develop due to unsuitable grazing regimes. Attribute and target based on upland habitat conservation assessment criteria (Perrin et al., 2014)
Physical structure: drainage	Percentage	Areas showing signs of drainage as a result of drainage ditches or heavy trampling less than 10%	Attribute and target based on upland habitat conservation assessment criteria (Perrin et al., 2014)
Otter <i>Lutra lutra</i> [1355]			
To maintain the favourable conservation condition of Salmon in Lough Ree SAC, which is defined by the following list of attributes and targets:			
Attribute	Measure	Target	Notes
Distribution	Percentage positive survey sites	No significant decline	Measure based on standard otter survey technique.
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 330.6ha along river banks/lake/shoreline/around pools	No field survey. Areas mapped to include 10m terrestrial buffer along shoreline and river banks identified as critical for otters (NPWS, 2007)
Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 22.7km	No field survey. River length calculated on the basis that otters will utilise freshwater habitats from estuary to headwaters (Chapman and Chapman, 1982)

Extent of freshwater (lake) habitat	Hectares	No significant decline. Area mapped and calculated as 2097.4ha	No field survey. Area mapped based on evidence that otters tend to forage within 80m of the shoreline (NPWS, 2007)
Couching sites and holts	Number	No significant decline	Otters need lying up areas throughout their territory where they are secure from disturbance (Kruuk, 2006; Kruuk and Moorhouse, 1991)
Fish biomass available	Kilograms	No significant decline	Broad diet that varies locally and seasonally, but dominated by fish, in particular salmonids, eels and sticklebacks in freshwater (Bailey and Rochford, 2006)
Barriers to connectivity	Number	No significant increase. For guidance, see map 9 of the CO's	Otters will regularly commute across stretches of open water up to 500m e.g. between the mainland and an island; between two islands; across an estuary (De Jongh and O'Neill, 2010). It is important that such commuting routes are not obstructed

The First Order Conservation Objectives for Lough Ree SPA¹³ are:

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

The second objective is included as follows:

"To maintain or restore the favourable conservation condition of the wetland habitat at Lough Ree SPA as a resource for the regularly-occurring migratory waterbirds that utilise it."

The Special Conservation Interests (SCI) for Lough Ree SPA are detailed in Table 4-4.

¹³ NPWS (2022) Conservation objectives for Lough Ree SPA [004064]. First Order Site-specific Conservation Objectives Version 1.0. Department of Housing, Local Government and Heritage.

5 Existing Environment

Ecology surveys of the proposed site were undertaken by ecologist Ms. Karen Banks between August 2023 and February 2024. The surveys assessed the potential for Qualifying Interests (QIs) of European sites within the likely ZOI of the proposed development.

This chapter provides a summary of habitats and species present at the proposed site and describes the results of the desktop study and field surveys undertaken for qualifying interests of Lough Ree SAC and Lough Ree SPA.

5.1 Habitats

The proposed site is dominated by agriculturally improved grassland fields (GA1) and wet grassland (GS4) bound by a network of hedgerows (WL1) and treelines (WL2), some with associated drainage ditches (FW4). The Kilcommock Glebe stream (FW2) bounds the south of Parcel 1 and an unnamed stream bounds the east of Parcel 3 and Parcel 4. The Donacurry stream bounds the west of Parcel 4. These streams all flow to the east/ south-east to the Inny River. The Ledwithstown stream flows through the centre of Parcel 6 and flows in a south-westerly direction to the Bilberry River. The Royal Canal is located to the south of Parcel 3 and is crossed by the proposed underground interconnecting cables. Waterbodies are further described in Section 3.1.1 of this report.

No invasive species were recorded within the proposed site and its immediate environs.

No Annex I habitats were recorded at the proposed site.

5.2 Species

Fauna were surveyed through observation of field signs such as direct observation, tracks, feeding signs and droppings. Habitats were assessed for their potential for use, or confirmed use, by protected species of fauna during the ecology surveys undertaken between 2023 and 2024.

5.2.1 Otter

The NBDC holds records of otter roadkill from Ardoghil to the south of the proposed site, last recorded in 2017.

Survey Methodology

An otter survey of the extent of the watercourses within and accessible areas adjoining the proposed site boundary was conducted on 29th August 2023 and 23rd February 2024.

The banks of the watercourses were searched for field signs including:

- Sleeping and resting places including holts, couches and natal dens;
- Breeding sites;
- Spraints;
- Pathways/ trails;
- Slides;
- Hairs;
- Footprints; and
- Food remains.

Natal dens tend to be well hidden and therefore can be hard to locate. Survey for natal dens was undertaken by searching for field signs including:

- Any heavily used path or paths from the water into dense cover or an enclosed structure;
- Bedding within the structure which may consist of grass, ferns or reeds (bedding may also be present in other types of resting places);

- A latrine containing a large number of spraints at the den or within 2m of it (however, it is important to note that there are often no droppings at a natal den as the female will excrete in the water to ensure that there are no signs of occupation near the natal den);
- A cub play area which may be a well-worn area around a tree or on a bank; and
- Different sized otter prints.

Survey Results

No evidence of otter was recorded during the site survey and the small streams located within the proposed site are unlikely to provide a sustained foraging resource for this species. However, there is potential for otter to utilise these streams occasionally to commute through the landscape. The Royal Canal provides suitable habitat for foraging and commuting otter and it is likely that otter forage and commute along the river at the location of the proposed interconnector cable crossing.

5.2.2 Avifauna

The NBDC hold records of eleven species included in Annex I of the EU Bird's Directive from the 10km OS grid squares within which the site is located, namely Kingfisher, Common Tern, Corn Crake, Dunlin, Golden Plover, Greater White-fronted Goose, Hen Harrier, Little Egret, Merlin, Peregrine Falcon and Whooper Swan.

Twelve BoCCI Red List species (Gilbert, G. *et al* (2021)) have been recorded from the 10km OS grid squares within which the site is located: Barn Owl, Black-headed Gull, Common Redshank, Corn Crake, Eurasian Curlew, Golden Plover, Herring Gull, Northern Lapwing, Northern Pintail, Northern Shoveler, Red Grouse and Yellowhammer.

Survey Methodology

Wintering bird survey was undertaken within Parcel 4 in winter 2022/ 2023 by Michael Stinson. The target species for the survey was Whooper Swan, an SCI species for Lough Ree SPA; potential for Lapwing or Golden Plover to be present was also identified. Vantage Point surveys were conducted within Parcel 4 due to the presence of potential Whooper Swan habitat within this parcel of the proposed site. The surveys were spread across six days with a maximum of six hours observation on each day. The results of the survey are enclosed in Appendix A of the AASR (see Appendix A of this report).

Wintering bird survey transects were undertaken across the proposed site on 27th January 2024 and 23rd February 2024. The method utilised was based on the British Trust for Ornithology (BTO) Breeding Bird Survey (BBS or CBS; Bibby *et al*. 2000). The study area for this survey comprised transects through each solar farm land parcel. Birds were counted over two visits in January and February 2024. The surveyor recorded all birds seen or heard along the transect routes.

Survey Results

No Whooper Swan, Lapwing or Golden Plover were observed within Parcel 4 and its environs (i.e. within 500m) during the surveys conducted in winter 2022/ 2023. No flights were recorded over Parcel 4 or within 500m of the site. No other species of conservation significance were observed in Parcel 4 or in fields within 500m.

During the wintering bird surveys undertaken on 27th January 2024 and 23rd February 2024, the occurrence and activity of avifauna using the habitats and hinterland of the proposed development site were identified and noted.

A list of avifaunal species identified during the site walkover survey undertaken on 27th January 2024 and 23rd February 2024 is presented in Table 5-1 below.

Table 5-1: Avifaunal species identified during the wintering bird surveys conducted on 27th January 2024 and 23rd February 2024

Common Name	Species Name	Conservation Status ¹⁴	Activity and occurrence within the study area
Blackbird	<i>Turdus merula</i>	Green	Foraging within hedgerows and treelines across the proposed site.
Blue Tit	<i>Cyanistes caeruleus</i>	Green	Foraging within hedgerows and treelines within Parcel 2.
Buzzard	<i>Buteo buteo</i>	Green	Flying over Parcel 2, 3 and 4
Chaffinch	<i>Fringilla coelebs</i>	Green	Foraging within hedgerows and treelines within the proposed site.
Collared Dove	<i>Streptopelia decaocto</i>	Green	Within the treeline at the south of Parcel 4
Dunnock	<i>Prunella modularis</i>	Green	Foraging within hedgerows in Parcel 4
Goldcrest	<i>Regulus regulus</i>	Amber	Foraging within the hedgerows at Parcel 5
Great Black-backed Gull	<i>Larus marinus</i>	Green	Group of 7 field feeding within Parcel 4
Great Tit	<i>Parus major</i>	Green	Foraging within hedgerows and treelines within the proposed site.
House Sparrow	<i>Passer domesticus</i>	Amber	Foraging within hedgerows within Parcel 4
Jackdaw	<i>Coloeus monedula</i>	Green	Within Parcel 4 and Parcel 5
Jay	<i>Garrulus glandarius</i>	Green	Heard within Parcel 3
Hooded Crow	<i>Corvus cornix</i>	Green	Field feeding within Parcel 3
Long-tailed Tit	<i>Aegithalus caudatus</i>	Green	A flock foraging within Parcel 2.
Magpie	<i>Pica pica</i>	Green	Within Parcel 4
Mistle Thrush	<i>Turdus viscivorus</i>	Green	Heard singing within Parcel 4 and Parcel 5
Pheasant	<i>Phasianus colchicus</i>	Green	Within Parcel 6
Raven	<i>Corvus corax</i>	Green	Field feeding Parcel 2
Redwing	<i>Turdus iliacus</i>	Red	Small group present in Parcel 1, 3, 4 and 6
Robin	<i>Erithacus rubecula</i>	Green	Foraging within hedgerows and treelines across the proposed site.
Rook	<i>Corvus frugilegus</i>	Green	Flying over and field feeding in Parcel 2
Song Thrush	<i>Turdus philomelos</i>	Green	Foraging within hedgerows in Parcel 3 and Parcel 4
Wood Pigeon	<i>Columba palumbus</i>	Green	Within Parcel 2
Wren	<i>Troglodytes troglodytes</i>	Green	Foraging within hedgerows and treelines across the proposed site.

Avifaunal species recorded at the proposed site reflected the habitats present. The fields of agriculturally improved pasture supported relatively low levels of avifaunal diversity, with species

¹⁴ Conservation status assigned in accordance with the Birds of Conservation Concern in Ireland (Gilbert *et al.*, 2021).

recorded during the site walkover restricted to corvids and a small group of field feeding Great Black-backed Gulls; flocks of Redwing were also recorded in Parcels 1, 3, 4 and 6.

The treeline and hedgerow habitats at the field boundaries supported a higher diversity of bird species. Passerines such as Robin, Wren, Great Tit, Blue Tit Long-tailed Tit and House Sparrow were recorded, in addition to Song Thrush, Mistle Thrush and several Blackbird. Of the bird species recorded at the proposed development site, Redwing is on the Red List (High Conservation Concern); Goldcrest and House Sparrow are on the Amber List (Moderate Conservation Concern); the remaining species are on the Green List (Least Conservation Concern).

No SCI species for Lough Ree SPA, wetland bird species or ground nesting birds were recorded within the proposed site.

5.3 Surface Water

5.3.1 Water Bodies

The proposed Foigha Solar Farm is located within the Water Framework Directive (WFD) SubCatchments Inny[Shannon]_SC_080 and Bilberry_SC_010. Lands within the Inny[Shannon]_SC_080 drain in a generally south-easterly direction via the Kilcommock_Glebe stream at the north-east of the site, an unnamed stream bounding the east of Parcel 3 and Parcel 4 and the Donacurry stream bounding the west of Parcel 4 all drain into the Inny (Shannon) River. In turn, the Inny River flows into Lough Ree c.9.0km downstream of the proposed site boundary at its closest point.

The River Inny rises near Oldcastle in Co. Meath and has a catchment of over 1,128km². The Inny is a major tributary of the River Shannon, draining several large lakes in the Midlands and is the largest river that flows into Lough Ree, apart from the Shannon. An aqueduct carrying the Royal Canal crosses the Inny near Abbeyshrule in Co. Longford. The Inny is a noted brown trout fishery and also holds large stocks of coarse fish. During surveys completed for WFD surveys in 2008, nine fish species were recorded in the Inny River at Shrule Bridge, Co Longford. The most abundant species was brown trout, followed by minnow.¹⁵ Lamprey species have been recorded in the upper reaches of the River Inny at Oldcastle and Tully¹⁶

The Ledwithstown_26 stream drains the westernmost land parcel within the proposed solar farm. The Ledwithstown_26 flows into the Bilberry River c.0.4km downstream of the site, the Bilberry River in turn flows into Lough Ree c.2.0km downstream of the proposed site boundary.

Lough Ree is classified as a mixed fishery with good stocks of trout, pike, and coarse fish present (ShRFB, 2010).¹⁷

The Royal Canal pNHA is located to the south of Parcel 3. The features of conservation importance for the Royal Canal are habitats, including hedgerow, tall herbs, calcareous grassland, reed fringe, open water, scrub and woodland and the presence of otter. The Royal Canal is also noted as an amenity area and for coarse fishing, with fish including Roach, Bream, Tench, Rudd, Perch and Pike.

The proposed project overlies the Inny Ground Waterbody (GWB).

¹⁵ The Central and Regional Fisheries Board (2008) Sampling Fish for the Water Framework Directive- Rivers 2008: Shannon International River Basin District.

¹⁶ Inland Fisheries Ireland (2011) Sampling Fish for the Water Framework Directive- Rivers 2011: Shannon International River Basin District and SHIRBD (2022) Fish in Rivers Factsheet: Upper Inny River Catchment Factsheet 2022/02.

¹⁷ ShRFB (2010) <http://www.shannon-fishery-board.ie/guides/game/lough-ree.htm>

5.3.1.1 Surface Water Quality and Risk Characterisation

The EPA don't monitor the small streams draining the proposed solar farm development site. Table 5-2 shows recently available (2020-2023) river Q-value results from relevant, nearest downstream EPA stations on the River Inny. The River Inny is currently 'good' ecological status (Q4) based on monitoring at three stations at Ballymahon, Shrule and Red Bridge, downstream of the proposed solar farm development lands; a fourth station located 500m downstream of Ballymahon Bridge is currently 'moderate' ecological status (Q3-4) (last available sampling date is 1996).

The Inny 100, Inny 110 and Ledwithstown 010 waterbodies draining the proposed site are of 'moderate' status. Lough Ree is of 'Good' status. Current EPA assigned waterbody status (2016-2021) for relevant receiving waterbodies is listed in Table 5-2.

Table 5-2: EPA Waterbody Status, Risk and Pressures

EPA Waterbody name and code	EPA Watercourse/ Lake Name	EPA assigned Waterbody Status (2016-2021)	EPA Identified Risk / Issue / Pressures
Inny_100 (IE_SH_26I011350)	Kilcommock Glebe Inny (Shannon)	Moderate	At risk
Inny_110 (IE_SH_26I011400)	Unnamed streams	Moderate	Review
Ledwithstown_010 (IE_SH_26L840850)	Ledwithstown_26 Bilberry	Moderate	Review
Lough Ree (IE_SH_26_750a)	Lough Ree	Good	Not at risk

5.3.2 Flooding

The Site Specific Flood Risk Assessment (SSFRA) undertaken by IE consulting (2024) concluded that:

- A Site-Specific Flood Risk (SSFRA) assessment, appropriate to the type and scale of development proposed, and in accordance with 'The Planning System and Flood Risk Management Guidelines – DoEHLG-2009' has been undertaken.
- The proposed solar farm development site has been screened, scoped, and assessed for flood risk in accordance with the above guidelines.
- The proposed solar farm development site has been divided into six parcels, referred to as Parcel 1, Parcel 2, Parcel 3, Parcel 4, Parcel 5, and Parcel 6.
- The primary flood risk to the proposed solar farm development site can be attributed to a fluvial flood event in the Kiltaffrey Stream, Donacurry Stream and/or the Donacurry Stream.
- Small limited portions of the proposed solar farm development site may also be susceptible to pluvial flood risk. The site is not at risk of groundwater flooding.

Fluvial Flood Risk

- The OPW NIFM and PRFA mapping indicates that Parcel 1 within the proposed solar farm development site is entirely located in Flood Zone 'C'.
- The PRFA mapping indicates that the vast majority of Parcel 2 of the proposed solar farm development site is located in Flood Zone 'C'. The southern area of the proposed solar farm development site is potentially located in the 0.1% AEP (1 in 1000 Year – Flood Zone 'B') fluvial

flood extent. However, no solar panels are proposed within this area of Parcel 2 of the proposed solar farm development site.

- The PRFA mapping indicates that the western portion of Parcel 3 of the proposed solar farm development site is located in Flood Zone 'C'. The eastern portion of Parcel 3 is located in the 0.1% AEP (1 in 1000 Year – Flood Zone 'B') fluvial flood extent.
- The NIFM mapping indicates that the majority of Parcel 4 of the proposed solar farm development site is located in Flood Zone 'C'. The eastern and southern boundary of Parcel 4 is located in the 0.1% AEP (1 in 1000 Year – Flood Zone 'B') fluvial flood extent.
- The NIFM mapping indicates that the vast majority of Parcel 5 of the proposed solar farm development site is located in Flood Zone 'C'. The eastern boundary of Parcel 5 is located in the 0.1% AEP (1 in 1000 Year – Flood Zone 'B') fluvial flood extent.
- The NIFM mapping indicates that the northern portion of Parcel 6 of the proposed solar farm development site is located in Flood Zone 'C'. The southern portion of Parcel 6 is located in the 0.1% AEP (1 in 1000 Year – Flood Zone 'B') fluvial flood extent.
- The solar panels are considered to be water compatible development. There are no standard solar panels proposed within the proposed solar farm development site where the estimated 0.1% AEP (1 in 1000 year – Flood Zone 'B') fluvial flood depths are greater than 0.8m. Locations where the flood depths are greater than 0.8m and intercept with the proposed solar panels will use elevated PV panels. The elevated PV panels are capable of raising the lowest edge of the panel up to a height of 1.6m. Panels located in these areas will be raised above the 0.1% AEP flood levels to ensure no PV panels are located within the 0.1% AEP (1 in 1000 Year – Flood Zone 'B') fluvial flood levels.
- There is no highly vulnerable development such as inverter/transformer stations proposed within areas of indicative fluvial flooding.
- There is no history of fluvial flooding recorded in the location of the proposed solar farm development site or the proposed substation and therefore the fluvial flood risk to the proposed development is considered to be LOW.

Pluvial Flood Risk

- Secondary flood risk to the proposed solar farm development site can be attributed to pluvial flooding from overland flow of surface water runoff.
- There are three small limited areas of indicative pluvial flooding mapped within the site. The pluvial flood located within Parcel 1 is located where there is a field drain and therefore surface water runoff will likely be captured by the field drain channel rather than resulting in ponding on the surface. The pluvial flooding within Parcel 2 and Parcel 3 are located where no PC Modules are proposed.
- Overall, the pluvial flood risk to the proposed solar farm development is considered to be low.

Flood Risk from the Development

- The proposed solar panel arrays are considered to be a water compatible development. The proposed arrays shall be supported by small ground driven steel piles a minimum of 0.8m above existing ground levels. The solar panel arrays shall therefore not impede surface water runoff that may occur within or in the vicinity of the site. The proposed inverters and transformers, which are considered to be highly vulnerable development, are located away from any areas of potential flood risk identified within the site.

- The proposed access tracks shall be constructed using permeable materials at or close to existing ground level throughout the site and therefore is not expected to have any impact on any floodwater volumes or overland flow paths.
- The solar farm will connection the transmission network. The proposed underground cables shall be laid a minimum of 0.75m below the existing ground surface and therefore will have no impact on overland flow paths or fluvial floodwater volumes or flow paths associated with any of the watercourses within the site. The cables and cable ducting shall be designed and installed to prevent ingress of water during their design life.
- The proposed construction and operational drainage strategy for the proposed solar farm development is based on utilising the existing topography, watercourses and field drains within the site.
- The existing ground beneath the solar panel arrays shall remain a permeable grassy surface and there will be no net increase in discharge rate or runoff volume from the site. Therefore, the proposed solar farm development will not result in an increased flood risk to adjacent lands or properties.

Overall, and in consideration of the type and form of development proposed, this Site Specific Flood Risk Assessment indicates that the proposed solar farm development is not expected to result in an adverse impact to the hydrological regime of the area or increase flood risk elsewhere and is therefore considered to be appropriate from a flood risk perspective.

5.4 Soil, Geology and Hydrogeology

The Geological Survey of Ireland (GSI) online database (www.gsi.ie) was consulted for available edaphic, geological and hydrological information of the site and its environs. The site is predominantly overlaid by deep, well drained mineral (mainly acidic) soils and peaty poorly drained mineral (Mainly acidic) soils, with areas of basin peats also present. In terms of bedrock geology, Waulsortian Limestones, composed of massive unbedded lime-mudstone underly the north-east of the site and the Lucan Formation, composed of dark limestone and shale underly the south-west of the site.

The bedrock units which underlie the site are mapped by the GSI as part of the same Locally Important Aquifer. Groundwater vulnerability is a term used to represent the intrinsic geological and hydrogeological characteristics that determine the ease at which groundwater may be contaminated. The study area is of 'Moderate' to 'High' groundwater vulnerability. There are no karst features located in the vicinity of the proposed works.

6 Impact Assessment

Impacts can be direct and indirect and the impacts that could potentially occur through the construction and operation of the Proposed Development are as follows:

- Changes in key indicators of conservation value such as decrease in water quality within Lough Ree SAC and Lough Ree SPA.

The assessment of impacts identifies the potential construction and operational phase impacts on Lough Ree SAC and Lough Ree SPA in the absence of mitigation.

6.1 Direct Impacts

The proposed development is not located within lands designated for nature conservation, including Lough Ree SAC and Lough Ree SPA. Further, there are no resource requirements (e.g. excavation or abstraction) from European sites for the proposed development. Consequently, none of the lands designated as part of European sites will be directly impacted or removed as a result of the proposed development. Therefore, there will be no direct impacts to European sites in this regard.

6.2 Indirect Impacts

6.2.1 Construction Phase

The proposed site supports hydrological connectivity to Lough Ree SAC via 5 no. EPA mapped streams. Parcels 1, 2, 3, 4 and 5 of the solar farm development lands drain via 4 no. EPA mapped streams which flow into the Inny River c.4.2km downstream of the site. The Inny River flows into Lough Ree SAC a total of 9.0km downstream of the site at its closest point.

Parcel 6 is drained by the Ledwithstown stream, which flows into the Bilberry River c.0.4km downstream. The Bilberry River flows into Lough Ree SAC a total of 2.0km downstream of the proposed site.

Impacts resulting from civil engineering works near watercourses are primarily related to three aspects of potential water borne pollutant loss: suspended sediment, concrete and hydrocarbons.

Suspended Sediment

The principal source of potentially negative impact on aquatic receptors arises from the escape of excessive amounts of suspended sediment during the construction phase. Sediment export could occur as a result of earthworks and erosion of soil stockpiles and excavated areas relating to, e.g., access tracks, hardstand areas, trenching (ducting, cabling). Installation of any temporary or permanent drainage features (swales, check dams, stilling ponds as referenced in the CEMP) can also be sediment sources until they settle and revegetate. Sediment release may also be associated with machinery traversing lands during PV panel piling, mounting and installation, although this will be minimal if well managed.

Escaped solids can settle in watercourses, smothering plants and macroinvertebrates and causing fish to abandon the area at least in the short-term. At worst, such sedimentation could occur within watercourses at the proposed site and be transported to salmonid (trout) spawning beds of the Inny River, which could result in reduced recruitment of young fish from affected reaches as a result of egg and fry mortalities. Elevated concentrations of suspended solids and resulting turbidity within the water column can also potentially damage the gills, physiology and behaviour of fish (e.g., respiration, migration) and/or benthic macroinvertebrates (e.g., respiration, drift responses). Similar to salmonids, lampreys also depend on clean gravels for spawning. Lamprey nursery areas are less likely to be significantly adversely affected by small amounts of instream sedimentation, since juveniles (ammocoetes) inhabit areas of silt deposition during their nursery stage.

Both the streams within the proposed site and the Inny River and Bilberry River downstream are at risk if sediment loss was not controlled during the proposed development construction phase.

Potential Impacts in relation to Suspended Sediment Loss

The solar farm soil stripping involves linear construction within green fields predominantly located on relatively flat to gently rolling land which is easier to manage in terms of run-off controls (check dams, silt fencing) than, for example, broad-scale excavations or field ploughing. Drainage features (swales, check dams) will be installed as part of the track construction to manage run-off as set out in the CEMP. Redistributed spoil can be managed at spreading areas or in berm creation in a focused way and quickly tamped / rolled and reseeded.

Parcels 1, 2, 3, 4 and 5 of the solar farm development lands drain via 4 no. EPA mapped streams which flow into the Inny River c.4.2km downstream of the site. Parcel 6 is drained by the Ledwithstown stream, which flows into the Bilberry River c.0.4km downstream. The Inny River and Bilberry River then flow into Lough Ree SAC and Lough Ree SPA, as illustrated in Figure 4-1. Given the level of management proposed for the solar farm site and energy storage compound works and the future substation development, the risk of uncontrolled sediment loss is considered low. However, if appropriate construction strategy and environmental controls were not employed, there is potential for locally significant effects (in the absence of mitigation) on salmonid (trout) habitat within the Inny River and Bilberry River. Applying the precautionary principle, it is assumed that there is also potential for the transport of sediment further downstream within Lough Ree SAC.

Cement

Relatively small amounts of liquid cement usage will be required during the solar farm construction phase, e.g., transformer plinths and battery energy storage system. Owing to its highly alkaline and corrosive nature, cement is potentially toxic to instream fauna and can cause fish and invertebrate kills downstream. Any concrete spills that did enter the watercourses in proximity to the solar farm development could result in locally moderate mortality of trout and lamprey species as well as aquatic invertebrates. Less likely potential sources of high alkalinity run-off are from uncured or recently cured concrete. There will be no on-site batching of concrete and no-washing out of concrete batch delivery trucks on-site. Adverse impact on the watercourses within the site and Inny River and Bilberry River during the solar farm construction phase as a result of concrete loss is considered very unlikely but if it did occur could result (in the absence of mitigation) in temporary, moderate negative impact on trout and lamprey habitat. All of these possibilities can and will be avoided using the best practice in construction site layout and construction management, with such measures incorporated into the construction methods set out in the CEMP. However, in the absence of mitigation, and applying the precautionary principle, it is assumed that there is potential for the transport of deleterious substances further downstream within Lough Ree SAC and SPA.

Hydrocarbons

Hydrocarbon spills and leakages can result in oil slicks and tainting of fish, or (if large enough) fish and invertebrate kills. They can be very detrimental to salmonid eggs and young fry in spawning areas. Hydrocarbons can reach drains and watercourses as a result of spills and leakage from poorly secured or non-bunded fuel storage areas; spills during re-fuelling; leaks from on-site vehicles, plant and equipment. Loss of hydrocarbons during the construction phase can be avoided and prevented by best practice in terms of site layout including fuel storage and best practice construction management. These issues have been addressed in the CEMP, including the necessary environmental control measures. Adverse impact on the streams draining the proposed site and the Inny River and Bilberry River downstream during the solar farm construction phase as a result of hydrocarbon loss is considered unlikely. However, in the absence of mitigation, and applying the precautionary principle, it is assumed that there is potential for the transport of deleterious substances to the receiving watercourses and further downstream within Lough Ree SAC and SPA.

Watercourse Crossing Construction

Four stream crossings are required to facilitate access tracks and underground cabling. These watercourses will be crossed with a clear span bridge, which will also accommodate the proposed 33kV underground cables within the deck of the bridge. A precast reinforced concrete slab deck will be lifted into position onto new foundations constructed either side of the stream. No instream works are required, as such, potential impacts would be limited to minor adverse effects locally as a result of sedimentation and release of toxic substances (cement and hydrocarbons).

Underground Cabling

Underground cabling ducts will be laid across the site for the purposes of connecting the solar arrays, inverter / transformers and on-site medium voltage substation. The cabling will be trenched and contained within the footprint of the internal access tracks where possible. Solar farm field parcels which do not directly adjoin each other will be connected by means of 33kV underground interconnector cabling in identified public roads (c.1,311 metres of cabling). The underground cabling route along public roads does not have any direct run-off routes to watercourses. Trenching, however, can give rise to potential for sediment export into road-side drains, which may eventually outfall to nearby streams. Only short lengths of trench will be open at any one time, with backfill and reinstatement occurring immediately. The limited source areas at any one time, separation distances involved and the mainly gently sloping topography are such that the potential for water-borne sediment to reach the Inny River and Bilberry River downstream of the site as a result of in-road cable trenching is low, with potential effects on aquatic receptors considered unlikely and not significant.

Potential Impacts on the Conservation Objectives of Lough Ree SAC

The solar farm lands drain to points that are, at nearest, 2.0km upstream of the SAC boundary via a stream draining Parcel 6; Parcel numbers 1-5 are located 9.0km upstream of the SAC boundary at their closest point. In consideration of the location of the proposed site c.2.0km upstream of Lough Ree SAC at its closest point, the potential for impacts on the QI habitat Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150] as a result of degradation in water quality cannot be excluded. The location of the QI habitat Alkaline fens [7230] is not mapped within the conservation objectives for Lough Ree SAC. Applying the precautionary principle, it is assumed that this habitat is present downstream of the proposed site and that there is potential for suspended sediment loss to affect the water quality within this habitat.

The use of the proposed site by otter is likely limited to occasional foraging and commuting along the 5 no. streams present at the site and the Royal Canal. The potential for temporary visual and noise disturbance to otters within the watercourses at the site during construction cannot be discounted. However, otters are generally nocturnal, with a peak of activity occurring around dawn and dusk, therefore the main activity period for otter is outside standard construction working hours. In view of these factors, and in consideration of the abundance of available aquatic habitat downstream of the proposed site, disturbance impacts will not have a significant adverse effect on otters. The proposed development will not form a barrier to otter commuting through the landscape. However, applying the precautionary principle, there is potential for impacts on otter within Lough Ree SAC as a result of a reduction in available food biomass due to degradation of water quality.

Potential Impacts on the Conservation Objectives of Lough Ree SPA

As detailed above, there is potential for degradation of water quality within Lough Ree as a result of the release of deleterious substances within surface water run-off and accidental spillages. Applying

the precautionary principle, there is potential for impacts on SCI species for Lough Ree SPA as a result of a reduction in available food biomass due to degradation of water quality.

6.2.2 Operational Phase

The proposed solar farm is on generally flat-to-gently-rolling topography and will continue to be drained by existing on-site field drains which flow towards 5 no. streams, which ultimately flow into Lough Ree. There will not be any significant change to the hydrological regime of the lands in question, with no anticipated increase in volume or peak of rainfall runoff. There will be no additional soil disturbance during the operation phase. In view of these factors, there will be no significant release of sediment into watercourses during the operational phase.

The development includes a 10m set-back at a minimum from the drainage ditches and streams. This buffer will be enhanced through management as uncropped tussocky grassland, with native woodland planting also proposed adjacent to the unnamed stream on the eastern boundary of Parcel 4 as described in the Landscaping Plan and Biodiversity Management Plan accompanying the planning application. Once established, these set-backs will enhance filtering function and on-site attenuation, helping to protect the drainage ditches and streams in periods of run-off. Panels will be cleaned with pure water (no chemical additives). Given there are no significant sources of contaminants from the operational panel array, nor their maintenance, and no further soil disturbance, there is virtually no risk of contaminated run-off from the solar array having any significant impact on the watercourses during operation.

The design of the Energy Storage Compound has been updated in response to the Further Information Request from An Coimisiún Pleanála (as summarised in Section 3) with input from specialist consultants (Cairn Risk Consulting, 2026) on firefighting water and firewater storage requirements for the operational facility. Provision has been made for a water storage tank and hydrants for firefighting water and a site drainage system to manage any potential firewater event. The design includes a firewater run-off drainage network and associated water attenuation pond. The design also includes a rainwater discharge soakaway south of the Energy Storage Compound. During normal operations, any rainwater from the Energy Storage compound will drain to the attenuation pond and subsequently discharge by gravity to the rainwater discharge soakaway. In any unforeseen fire water management scenario, automated shut-off valves will be activated meaning no discharge of collected fire water to the soakaway.

The energy storage compound and all of the above referenced infrastructure is set back away from the Kiltaffrey stream (stream unnamed by EPA) on the eastern boundary of Parcel 4, with no elements in any area of flood risk. A 1m high bund will surround the perimeter of the attenuation pond. The proposals, including sizing of firefighting water storage and fire water management infrastructure, complies with National Fire Chiefs Council (NFCC) guidelines, and will ensure there is no contamination of surface or groundwater in an unforeseen or expected firewater management event.

In view of the above detailed design proposals, no adverse effects on the water quality within the Kiltaffrey stream and potentially in turn, Lough Ree SAC and Lough Ree SPA, are expected to occur in the event of a firewater event at the Energy Storage Compound.

Polarised Light Pollution

With reference to the potential impact of solar panels on the behaviour of aquatic insects, it is first important to note that the proposed site boundary is located a minimum of 2.8km distant from the nearest watercourse of salmonid significance, i.e., the Inny River. At nearest, the proposed site is located c.1.6km from Lough Ree SAC and c.1.7km from Lough Ree SPA.

Most of the aquatic insects with aerial life-stages that are important sources of food to fish (e.g., mayflies, stoneflies, caddisflies) are delicate as adults and are poor fliers. When they emerge from the water, they rest on nearby riparian vegetation for a short terrestrial phase in which they complete egg-laying and die (O’Grady, 2006). These groups of insects therefore have life-cycles primarily localized to the natal river and the near-river corridor. Water beetles are better fliers and can be attracted to shiny objects that look like open water (e.g., car windscreens, windows). Some water beetles have the ability to fly as adults (at least some distance from the river bank where they pupate) but their primary dispersal method is through invertebrate-drift in the river.

A limited number of recent studies have reported on the possible effect of solar panel arrays on groups of flying aquatic insects in terms of being attracted away from natural water bodies to lay their eggs on solar panels, which mimic the horizontal polarization of water-reflected light (Fritz, 2020; Black & Robertson, 2020; Lovich & Ennen, 2011; Kriska *et al.*, 2008). The potential attractiveness of PV panels has been demonstrated for species of mayfly (Ephemeroptera), caddisfly (Trichoptera), non-biting midge (Chironomidae) and blackfly (Simuliidae) (Black & Robertson, 2020). It is important to note that laying of eggs (oviposition) on surfaces that mimic PV panels has been observed for mayfly by Fritz (2020), but not specifically reported for other groups. It is also notable, for context, that surfaces such as black asphalt (roads), cars and windows can act as alternative sources of polarising light pollution, not just PV panels. The artificial Royal Canal water body could attract aquatic insects locally and is located between Parcel 3 and Parcel 4 at the proposed site. However, there were no studies located in the literature search that showed *preferential* attractiveness to alternative polarising light surfaces over water surfaces. Kriska *et al.* (2020) report that flying stages of aquatic insects tend to rise only a short distance from the water surface, where dark silhouettes of trees and bushes on the riverbank against the sky form markers which can keep emerging swarms together. In addition, they observed that caddis flies, for example, usually move away from the emergence sites only at distances from which they can still see the horizontally polarized water-reflected light. Their study concentrated on tall glass-fronted buildings near large rivers, where aquatic insects would also have obvious visual contact with the alternative polarising light (glass) surfaces. Given the separation distance from the Inny River to the nearest panel is c.2.8km and the distance from Lough Ree SAC and SPA is c.1.6km at its closest point, it is reasonable to deduce that there will be limited potential for emerging aquatic insects to be attracted to the alternative polarising surfaces of the solar array. The effect of potential polarised light pollution on local aquatic invertebrate communities is considered not significant for the invertebrate communities of the watercourses at the proposed site, and neutral with respect to the Inny River and the conservation objectives of the Lough Ree SAC and Lough Ree SPA.

Collision Risk

The “lake effect”, where birds mistake a reflective solar facility for a water body, leading to potential fatalities, is thought to be of concern primarily where the solar array is located in close proximity to a large stop-over site for water birds.¹⁸ However, as noted by Bennun *et al.* (2021), to date, there is little evidence to support the existence of the suggested ‘lake-effect’. The results of site walkover surveys undertaken in August 2023 and ornithological surveys undertaken in winter 2024 indicate that the proposed site does not provide a supporting role for SCI species for the nearby Lough Ree SPA and is not located on a flight path for SCI species. Further, it is proposed to use an anti-reflective coating on the solar panels. In view of these factors, there is not considered to be a significant risk for the lake effect to occur at the proposed site.

¹⁸ Kosciuch K, Riser-Espinoza D, Gerringer M, Erickson W (2020) A summary of bird mortality at photovoltaic utility scale solar facilities in the Southwestern U.S.. PLoS ONE 15(4): e0232034

The interconnector cables for the solar farm will be installed underground. The solar farm and energy storage compound facility will connect to the transmission network via a 110 kV substation 'loop-in / loop-out' grid connection, to include an underground cable route of c. 292m. The substation will include a 'loop-in / loop-out' underground 110kV cable grid connection which will connect into the existing Lanesboro / Mullingar 110kV overhead lines via 2 no. new Interface Towers (to be the subject of a future planning consenting process). The proposed solar farm will not require additional overhead transmission lines. As such, there is no risk to birds from collision with transmission lines as a result of the proposed solar farm.

6.3 Assessment of Habitats and Species of Conservation Interest

6.3.1 Lough Ree SAC

The site-specific Conservation Objectives for relevant qualifying interests for Lough Ree SAC are presented in Section 3.2. This section assesses the likelihood of the proposed development impacting the site-specific conservation objectives assigned for the relevant qualifying interests of Lough Ree SAC, namely *Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation* [3150], *Alkaline fens* [7230] and *Lutra lutra (Otter)* [1355].

Attributes and proposed targets to maintain favourable conservation condition for these species, in addition to potential impacts are presented in Table 6-1 below.

Table 6-1: Potential Impacts on the Specific Conservation Objectives for the Relevant Qualifying Habitats and Species of Lough Ree SAC (NPWS, 2016)

Conservation Objectives Lough Ree SAC (Site specific cons obj (npws.ie))			
Attribute	Measure	Target	Notes
Natural eutrophic lakes with Magnopotamion or Hydrocharition – type vegetation [3150] To restore the favourable conservation condition of Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation in Lough Ree SAC, which is defined by the following list of attributes and targets:			
Attribute	Measure	Target	Potential Impacts
Habitat area	Hectares	Area stable or increasing, subject to natural processes	No: given the nature, scale and location of the proposed development, no impacts on habitat area or distribution are expected
Habitat distribution	Occurrence	No decline, subject to natural processes	
Typical species	Occurrence	Typical species present, in good condition, and demonstrating typical abundances and distribution	Yes: applying the precautionary principle, there is potential for temporary impacts on species as a result of degradation of water quality.
Vegetation composition: characteristic zonation	Occurrence	All characteristic zones should be present, correctly distributed and in good condition	No: given the nature, scale and location of the proposed development, no impacts on vegetation zonation are expected
Vegetation distribution: maximum depth	Metres	Maintain maximum depth of vegetation, subject to natural processes	No: given the nature, scale and location of the proposed development, no impacts on vegetation distribution are expected

Hydrological regime: water level fluctuations	Metres	Maintain appropriate natural hydrological regime necessary to support the habitat	No: the site specific flood risk assessment concludes that the proposed development will not result in an adverse effect on the hydrological regime of the area or increase flood risk elsewhere
Lake substratum quality	Various	Maintain appropriate substratum type, extent and chemistry to support the vegetation	No: as noted in the CO's for the SAC, it is likely that soft muddy substrata dominate habitat 3150. As such, a temporary increase in sediment is not likely to impact on lake substratum quality.
Water quality: transparency	Metres	Maintain/restore appropriate Secchi transparency. There should be no decline in Secchi depth/transparency	Yes: applying the precautionary principle, there is potential for temporary impacts on water transparency during construction.
Water quality: nutrients	µg/l P; mg/l N	Maintain the concentration of nutrients in the water column to sufficiently low levels to support the habitat and its typical species	No: the proposed development is not likely to result in the release of nutrients to the water within Lough Ree.
Water quality: phytoplankton biomass	µg/l Chlorophyll <i>a</i>	Maintain appropriate water quality to support the habitat, including good chlorophyll <i>a</i> status	Yes: applying the precautionary principle, there is potential for temporary impacts on water quality during construction.
Water quality: phytoplankton composition	EPA hytoplankton composition metric	Maintain appropriate water quality to support the habitat, including good phytoplankton composition status	Yes: applying the precautionary principle, there is potential for temporary impacts on water quality and, in turn, phytoplankton composition during construction.
Water quality: attached algal biomass	Algal cover and EPA phytobenthos metric	Maintain trace/absent attached algal biomass (<5% cover) and good phytobenthos status	No: the proposed development is not likely to result in the release of nutrients to the water within Lough Ree.
Water quality: macrophyte status	EPA macrophyte metric (The Free Index)	Restore good macrophyte status	Yes: applying the precautionary principle, there is potential for temporary impacts on water quality and macrophyte status during construction.
Acidification status	pH units; mg/l	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes	No: the proposed development is not likely to result in the acidification of water within Lough Ree.
Water colour	mg/l PtCo	Maintain appropriate water colour to support the habitat	No: the proposed development is not likely to result in the alteration to water colour within Lough Ree.

Dissolved organic carbon (DOC)	Mg/l	Maintain appropriate organic carbon levels to support the habitat	No: the proposed development is not likely to result in the acidification or alteration of water colour within Lough Ree.
Turbidity	Nephelometric turbidity units/ mg/l SS/ other appropriate units	Maintain appropriate turbidity to support the habitat	Yes: applying the precautionary principle, there is potential for temporary impacts on turbidity of water within Lough Ree during construction.
Fringing habitat: area	Hectares	Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of the lake habitat	No: the proposed development is not likely to result in changes to the area of fringing habitat.
Alkaline Fens [7230]			
To maintain the favourable conservation condition of Alkaline fens in Lough Ree SAC, which is defined by the following list of attributes and targets:			
Attribute	Measure	Target	Potential Impacts
Habitat area	Hectares	Area stable or increasing, subject to natural processes	No: given the nature, scale and location of the proposed development, no impacts on habitat area or distribution are expected
Habitat distribution	Occurrence	No decline, subject to natural processes	
Hydrological regime	Metres	Appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat	No: the site specific flood risk assessment concludes that the proposed development will not result in an adverse effect on the hydrological regime of the area or increase flood risk elsewhere
Peat formation	Flood duration	Active peat formation, where appropriate	No: the proposed development will not affect peat formation within this habitat.
Water quality: nutrients	Water chemistry measures	Appropriate water quality to support the natural structure and functioning of the habitat	Yes: applying the precautionary principle, there is potential for temporary impacts on water quality during construction.
Vegetation structure: typical species	Percentage	Maintain vegetation cover of typical species including brown mosses and vascular plants	No: given the nature, scale and location of the proposed development, no impacts on vegetation structure or composition or the cover of bare ground are expected
Vegetation composition: trees and shrubs	Percentage	Cover of scattered native trees and shrubs less than 10%	
Physical structure: disturbed bare ground	Percentage	Cover of disturbed bare ground less than 10%. Where tufa is present, disturbed bare ground less than 1%	
Physical structure: drainage	Percentage	Areas showing signs of drainage as a result of drainage ditches or heavy trampling less than 10%	No: the proposed development will not increase drainage within this habitat.
Otter <i>Lutra lutra</i> [1355]			

To maintain the favourable conservation condition of Salmon in Lough Ree SAC, which is defined by the following list of attributes and targets:			
Attribute	Measure	Target	Potential Impacts
Distribution	Percentage positive survey sites	No significant decline	No: no couching sites or holts were recorded within the proposed site and its environs; the use of the proposed solar farm site by otter is likely limited to occasional foraging and commuting along streams at the site and along the Royal Canal to the south of Parcel 3. The potential for temporary visual and noise disturbance to otters within the streams and the Royal Canal in the vicinity of the site during construction cannot be discounted. However, otters are generally nocturnal, with a peak of activity occurring around dawn and dusk, therefore the main activity period for otter is outside standard construction working hours. In view of these factors, and in consideration of the abundance of available aquatic habitat downstream of the proposed site, disturbance impacts will not have a significant adverse effect on otters.
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 330.6ha along river banks/lake/shoreline/around pools	
Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 22.7km	
Extent of freshwater (lake) habitat	Hectares	No significant decline. Area mapped and calculated as 2097.4ha	
Couching sites and holts	Number	No significant decline	
Fish biomass available	Kilograms	No significant decline	Yes: applying the precautionary principle, there is potential for a reduction in water quality to have an adverse effect on aquatic organisms and in turn a reduction in prey species available for otter that forage within Lough Ree SAC downstream of the proposed site.
Barriers to connectivity	Number	No significant increase. For guidance, see map 9 of the CO's	No: the proposed development will not form a barrier to otter commuting through the landscape.

6.3.2 Lough Ree SPA

The site-specific Conservation Objectives for relevant qualifying interests for Lough Ree SPA are presented in Section 3.2. This section assesses the likelihood of the proposed development impacting the site-specific conservation objectives assigned for the SCI and supporting habitat for Lough Ree SPA:

- Little Grebe (*Tachybaptus ruficollis*) [A004]

- Whooper Swan (*Cygnus cygnus*) [A038]
- Wigeon (*Anas penelope*) [A050]
- Teal (*Anas crecca*) [A052]
- Mallard (*Anas platyrhynchos*) [A053]
- Shoveler (*Anas clypeata*) [A056]
- Tufted Duck (*Aythya fuligula*) [A061]
- Common Scoter (*Melanitta nigra*) [A065]
- Goldeneye (*Bucephala clangula*) [A067]
- Coot (*Fulica atra*) [A125]
- Golden Plover (*Pluvialis apricaria*) [A140]
- Lapwing (*Vanellus vanellus*) [A142]
- Common Tern (*Sterna hirundo*) [A193]
- Wetland and Waterbirds [A999]

Applying the precautionary principle, there is potential for the proposed development to result in a risk of a temporary reduction in available prey species as a result of degradation of water quality within wetland habitat utilised a resource by the SCI species for this SPA.

6.4 In-combination Impacts

It is a requirement of Appropriate Assessment that the in-combination effects of the proposed development together with other Plans or projects are assessed. In-combination impacts can result from the successive, incremental, and/or combined effects of a development (plan, project or activity) when added to other existing, planned, and/or reasonably anticipated developments.

A search of the Longford County Council planning enquiry system¹⁹ was conducted for developments that may have in-combination effects on European sites with the Proposed Development. The search included developments that are proximal to the proposed site and those that may have an adverse cumulative or in-combination impact with the proposals on the water quality of Lough Ree SAC and SPA.

Plans relevant to the area were searched in order to identify any elements of the Plans that may act cumulatively or in-combination with the proposed development.

A list of those projects and Plans which may potentially contribute to cumulative or in-combination impacts with the Proposed Development was generated for as listed in Table 6-2 below.

Table 6-2: List of Potential Plans which may Contribute to Cumulative Impacts

Plan / Programme/Policy	Key Objectives/Policies/Proposals	Potential for In-combination Effects and Mitigation
Longford County Development Plan 2021-2027	CPO 5.157: Promote the development of solar energy infrastructure in the county, in particular for on-site energy use, including solar PV, solar thermal and seasonal storage technologies. Such projects will be considered subject to environmental safeguards and the protection of natural or built heritage features, biodiversity,	Policies and objectives of the Longford County Development Plan 2021-2027 ensure that local planning applications comply with proper planning and sustainability and with the requirements of relevant EU Directives and

¹⁹ [Select Search Type \(eplanning.ie\)](https://eplanning.ie)

	views and prospects, and other relevant planning considerations. CPO 12.1: Protect, conserve and enhance to the County's natural heritage and biodiversity. This includes wildlife (flora and fauna), habitats, landscapes and/or landscape features of importance to wildlife, or which play a key role in the conservation and management of natural resources. CPO 12.5: Protect and conserve the conservation value of Special Areas of Conservation, candidate Special Areas of Conservation, Special Protection Areas, Natural Heritage Areas and proposed Natural Heritage Areas and any other sites that may be proposed for designation during the lifetime of this Plan. CPO 12.6: Ensure that no plans, programmes, etc. or projects giving rise to significant cumulative, direct, indirect or secondary impacts on European Sites arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall be permitted on the basis of this Plan (either individually or in combination with other plans, programmes, etc. or projects). Except as provided for in Article 6(4) of the Habitats Directive; in so far as there must be – (a) no alternative solution available, (b) imperative reasons of an overriding public interest for the project to proceed; and (c) Adequate compensatory measures in place. CPO 12.7: Ensure that any plan or project that could have a significant adverse impact (either by themselves or in combination with other plans and projects) upon the conservation objectives of any Natura 2000 Site or would result in the deterioration of any habitat or any species reliant on that habitat will not be permitted. Except as provided for in Article 6(4) of the Habitats Directive; in so far as there must be – (a) no alternative solution available (b) imperative reasons of an overriding public interest for the project to proceed; and (c) Adequate compensatory measures in place. CPO 12.9: Ensure an Appropriate Assessment is carried out in respect of any plan or project not directly connected with or necessary for the management of the site but likely to have a significant effect on the integrity of a European Site(s), either individually or in-combination with	environmental considerations, there is no potential for adverse in-combination effects on European Sites.
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	other plans or projects, in view of the site's conservation objectives to comply with the Habitats Directive.	
Draft River Basin Management Plan 2022-2027	The project should comply with the environmental objectives of the Irish RBMP which are to be achieved generally by 2027. Ensure full compliance with relevant EU legislation Prevent deterioration Meeting the objectives for designated protected areas Protect high status waters Implement targeted actions and pilot schemes in focus sub-catchments aimed at: targeting water bodies close to meeting their objective and addressing more complex issues which will build knowledge for the third cycle.	The implementation and compliance with key environmental policies, issues and objectives of this management plan will result in positive in-combination effects to European sites. The implementation of this plan will have a positive impact for the biodiversity. It will not contribute to in-combination effects with the proposed development.
River Basin Management Plan 2018-2021	The project should comply with the environmental objectives of the Irish RBMP which are to be achieved generally by 2021. Ensure full compliance with relevant EU legislation Prevent deterioration Meeting the objectives for designated protected areas Protect high status waters Implement targeted actions and pilot schemes in focus sub-catchments aimed at: targeting water bodies close to meeting their objective and addressing more complex issues which will build knowledge for the third cycle.	The implementation and compliance with key environmental policies, issues and objectives of this management plan will result in positive in-combination effects to European sites. The implementation of this plan will have a positive impact for the biodiversity. It will not contribute to in-combination or cumulative impacts with the proposed development.
WWTP discharges	Ballymahon.	Discharges from municipal WWTPs are required to meet water quality standards. Irish Water Capital Investment Plan 2020-2024 proposes to upgrade water treatment services countrywide. The long-term cumulative impact is predicted to be negligible.
IPPC Programme	Kepak Longford Unlimited Company (P1084), located c.4.2km south-east of the proposed site.	Discharges from these facilities are governed by strict limits to ensure compliance with quality standards. The long-term in-combination impact is predicted to be negligible.
Holiday Lodge Site (LCC Planning Ref: 24/5).	The proposed construction of a holiday lodge site consisting of 9 no. 3 bed lodges, 4 no. 2 bed lodges, a manager's office, plant room and laundry, site entrance, internal road & footpaths,	The AA screening completed for the development concluded that no impacts were identified. There will be no discharge from the

	lighting, play area, boundary fence, wastewater treatment system, percolation area & all ancillary site works.	proposed development site directly, indirectly or cumulatively to the lake environment of Lough Ree. The proposed development will not cause additional nutrient enrichment of the lake water of Lough Ree. No potential for significant adverse in combination effects on European Sites has been identified.
Showroom Building (ABP Ref: 317761).		The planners report for the development notes that <i>"Having regard to the nature and scale of the proposed development, I am satisfied that no appropriate assessment issues arise and it is not considered that the proposed development would be likely to have a significant effect individually or in combination with other plans or projects on a European site"</i>. No potential for significant adverse in combination effects on European Sites has been identified.
Industrial Commercial Warehouse Unit (LCC Planning Ref: 23/60195).	The proposed construction of an industrial/commercial/warehousing unit which was previously granted full planning permission under planning reference number PL04/1253 to the rear of existing car showroom & garage, connection to existing services and all ancillary site works.	The AA screening completed for the development concluded that: <i>"Having regard to the proximity of the nearest Natura 2000 site and given the nature of the proposed development, it is not envisaged that there will be a significant impact on the Natura 2000 network"</i>. No potential for significant adverse in combination effects on European Sites has been identified.
Lodges (ABP Ref: 314886)		The Natura Impact Statement identified the potential for impacts on Lough Ree SAC and SPA as a result of degradation of water quality. Mitigation measures are set out in the NIS. With the application of the proposed measures, it was concluded that the proposed development, individually or in combination with other plans or projects would not adversely affect the integrity of the European site No. 000440 Lough Ree SAC or European site No 004064 Lough Ree SPA or any

		other European site, in view of the sites' Conservation Objectives. No potential for significant adverse in combination effects on European Sites has been identified.
Integrated Constructed Wetland Planning (LCC Ref: 22/225)	An integrated constructed wetland (ICW) over a total area of 5.58 ha located within the existing LRP ADF site, including formation of wetland cells, associated works and access roads using onsite soils. The development will include landscaping both within the wetland cells and surrounding area. The purpose of the ICW is for the management and treatment of leachate arising from the ADF, which is planned as part of their closure, restoration and aftercare management plan. Any discharge waters following treatment through the ICW will flow to two open water cells for containment. LRP station and the ADF are licenced by the Environmental Protection Agency under an Industrial Emissions (IE) licence (Ref. P0610-03). A Natura impact statement (NIS) has been prepared for the purposes of this project.	The AA screening report for the development found that there is potential for significant adverse effects on otter, a QI species for Lough Ree SAC as a result of a reduction in food availability. Mitigation measures are set out in the NIS. With the application of the proposed measures, it was concluded that the proposed construction of an ICW will not, either alone or in combination with other plans or projects, adversely impact the integrity of the Natura 2000 network. No potential for significant adverse in combination effects on European Sites has been identified.
Agricultural infill of Quarry Planning (LCC Ref: 20/303)	The filling of lands with clean, inert soil and stone for the purposes of the restoration of a 10.4 hectare quarry to agricultural use; and all associated ancillary facilities at Tennalough, Carrickboy, Co Longford. This development also requires a Waste Facility Permit and an application will be made to Longford County Council for a Waste Facility Permit.	The AA screening completed for the development concluded that: "Having regard to the location, nature and scale of the proposed development, it is considered that there is no potential for significant effects either from the proposed development on its own or on combination with other plans and projects. No potential for significant adverse in combination effects on European Sites has been identified.
Construction of 37 dwelling houses (ABP Ref: 307880)		No potential for significant effects on European sites was identified. No potential for significant adverse in combination effects on European Sites has been identified.
ABP Ref: 322485	22 no. Wind Turbines & 1 no. 110kV Electrical Substation & All Associated Works.	The AA screening identified potential for likely significant effects on Lough Ree SAC and Lough Ree SPA as a result of contaminants, dust and habitat degradation during construction. The NIS concluded that, following a thorough examination of the predicted effects, the implementation of mitigation, and

		with regard to the site-specific conservation objectives, it is concluded that the proposed development will not result in adverse effects on the integrity of any European site, either alone or in combination with other plans or projects.. No potential for significant adverse in combination effects on European Sites has been identified.
ABP Ref: 322204	Application under s.177E of the Planning and Development Act 2000 (as amended) for Substitute Consent relating to peat extraction on lands within Derrayadd, Derryaroge, and Bannow Bogs, Co. Longford.	The AA screening report found that, after a thorough examination, evaluation, and analysis, conducted in accordance with the best scientific knowledge and the conservation objectives of the European Sites, it has been determined, based on objective information, that the peat extraction activities and all associated works at the Application Site during the Extraction Phase have not adversely affect the integrity of any European Site. This conclusion holds true both in isolation and in combination with other plans or projects. No potential for significant adverse in combination effects on European Sites has been identified.
ABP Ref: 302597	Permission for the development at this site, the existing Cloon to Lanesboro 110 kV Overhead Line which is approximately 65 kilometres long.	The Inspectors Report found that having regard to the nature of the receiving environment, the type of works proposed, their highly localised nature and the measures proposed to manage the works, the proposed development either alone, or, in combination with other plans or projects would not be likely to have significant impacts on any European site in view of the sites conservation objectives. Stage 2 Appropriate Assessment with respect to these two sites is not required. No potential for significant adverse in combination effects on European Sites has been identified.
Solar Farm (LCC Ref: 501476)	10 year permission for a solar farm and energy storage compound with a total area of circa 111.1ha. This development is covered by the	The AA screening report identified potential for likely significant effects on Lough Ree SAC and

	provisions of the Renewable Energy Directive III (directive(EU) 2023/2024). A Natura Impact Statement (NIS) has been submitted to the Planning Authority with the application.	Lough Ree SPA, primarily as a result of degradation of water quality. The NIS concluded that Where the potential for any adverse effect on any Natura 2000 site has been identified, the pathway by which any such effect may occur has been robustly mitigated, through the use of avoidance, appropriate design and mitigation measures as set out within this report and its appendices. The measures ensure that the construction, operation and decommissioning of the Proposed Development will not adversely affect the integrity of Natura 2000 sites. Therefore, it can be objectively concluded that the Proposed Development, individually or in combination with other plans or projects, will not adversely affect the integrity of any Natura 2000 site. No potential for significant adverse in combination effects on European Sites has been identified.
Foigha Solar Farm Sub-station and Grid Connection	The solar farm and energy storage compound facility will connect to the transmission network via a 110 kV substation 'loop-in / loop-out' grid connection as detailed below. The grid connection for the solar farm will be the subject of a future planning consenting process. The solar farm will connect to the Lanesboro / Mullingar 110kV overhead line by means of new 110kV substation. This includes an underground cable route of c. 292m. The substation will include a 'loop-in / loop-out' underground 110kV cable grid connection which will connect into the existing Lanesboro / Mullingar 110kV overhead lines via 2 no. new Interface Towers. This connection method will constitute a new node of the transmission network, connecting the proposed substation and associated solar farm generation to the National Grid.	The grid connection route will not cross any watercourses. However, in the absence of mitigation, there is potential for sediment laden surface water to enter the stream on the eastern boundary of Parcel 4 via overland flow during construction. Applying the precautionary principle, there is potential for in-combination impacts between the future substation development and the proposed Foigha Solar Farm on water quality within the unnamed stream on the eastern boundary of Parcel 4 and, potentially Lough Ree SAC and SPA further downstream. There is no potential for significant adverse cumulative or in-combination impacts with the proposed development.

6.5 Conclusion of Impact Assessment

The proposed site is located c.2.0km upstream of the SAC and SPA boundary via the Ledwithstown stream and Bilberry River, which drain Parcel 6. Parcels 1, 2, 3, 4 and 5 of the solar farm development

lands drain via 4 no. EPA mapped streams which flow into the Inny River c.4.2km downstream of the site; the Inny River flows into Lough Ree SAC a total of 9.0km downstream of the site. The solar farm will connect to the Lanesboro / Mullingar 110kV overhead line by means of new 110kV substation. This includes an underground cable route of c. 292m. The substation will include a 'loop-in / loop-out' underground 110kV cable grid connection which will connect into the existing Lanesboro / Mullingar 110kV overhead lines via 2 no. new Interface Towers. An unnamed stream on the eastern boundary of Parcel 4 is located downgradient of the proposed future substation development; Lough Ree SAC is located c.9.3km downstream of this stream at its location in the vicinity of the proposed substation. There is potential for export of sediment and small amounts of potentially damaging waterborne pollutants (e.g., sediment, wet cement, hydrocarbons) during the construction phase of the 110kV substation to result in significant cumulative and in-combination effects on the conservation objectives of aquatic and semi-aquatic QI for the Lough Ree SAC and the SCI for Lough Ree SPA downstream of the site with the proposed Foigha Solar Farm.

Foigha and its environs support a number of relatively small-scale local developments that have been granted planning permission. Where relevant, the Appropriate Assessments completed for these developments include targeted and site-specific mitigation to minimise potential impacts to Lough Ree SAC and SPA. Assuming that best practice construction methods and mitigation measures are effectively implemented for all other local developments, cumulative and in-combination impacts with the proposed development are expected to be limited to slight short-term, but not significant negative effects.

Loss of sediment and release of polluting substances as a result of construction works on site, and control of same, is considered to be the main issue in relation to contribution to negative impacts on Lough Ree SAC and Lough Ree SPA during the construction phase. No potential adverse impacts on the water quality of Lough Ree SAC and Lough Ree SPA have been identified during the operational phase of the development.

All possible sources of effects from the proposed solar farm development, in combination with all other sources in the existing environment and any other effects likely to arise from other proposed plans or projects have been identified.

Robust and effective mitigation measures to avoid and or ameliorate these impacts are provided in Section 7.

7 Mitigation

As stated in MN2000:

“Mitigation measures may be proposed by the plan or project proponent and/or required by the competent national authorities in order to avoid the potential impacts identified in the appropriate assessment or reduce them to a level where they will no longer adversely affect the site’s integrity” (Section 4.6.6).

Potential impacts identified in the above chapters primarily relate to the deterioration in the water quality of the receiving watercourses, which support connectivity with Lough Ree SAC and Lough Ree SPA, during the construction phase of the Proposed Development. Mitigation measures to avoid or reduce the potential impacts on Lough Ree SAC and Lough Ree SPA are provided in the following sections.

7.1 Construction Phase

7.1.1 General

A comprehensive construction method statement must be prepared by the contractor and reviewed and approved by the relevant statutory authorities before any works take place. This will include all measures set out in the CEMP document accompanying the planning application. The CEMP sets out fundamental Best Practise methods and measures in relation to the solar farm construction, watercourse crossings and drainage. The CEMP prepared by the contractor shall include those measures set out in Table 7-1.

7.1.2 Solar Farm Construction Phase Mitigation

Table 7-1: Solar Farm Construction Phase Mitigation Measures

Objective	Measure	Details of Mitigation
Prevention and control of sediment loss	Best Management Practice – Cable Trenching	All trenching works shall be undertaken using a cut and fill procedure to ensure that only short sections of the trench ($\leq 100\text{m}$) are open at any time; Any run-off water which gathers in an excavated trench must be collected and treated appropriately using Best Practice methods (e.g., silt bags, settlement systems) before being discharged. There will be no discharge of silt contaminated pump-out water to on-site drains or watercourses; Spoil heaps are unlikely to accumulate because trenches will be immediately back filled following ducting installation. However, freshly excavated spoil must be retained in an area over 10m away from any drain or watercourse until such time as the trench is refilled. The spoil heap must be located on either a well vegetated area surrounded by silt fencing or with the use of containment measures (geotextile mat or bag) and covered to reduce potential for sediment export. A ready supply of these materials must be on site at all times to deal with such eventualities; Where ancillary on-site drains are crossed with underground ducting, the release of sediment over baseline conditions will be prevented by the use of silt traps, check dams and/or bunds. These will be put in place on either side of the dry drain crossing location in advance of construction works.

Prevention and control of sediment loss	Best Management Practice – Soil storage	Soil stripped in the construction of access tracks will be stored for reinstatement of the temporary work compound. Such material will be stored not less than 10m from any on-site drain and must be tamped down, reseeded with grass and allowed to revegetate for the duration of the construction phase. The stockpiles will be surrounded by staked-down silt fencing.
Prevention and control of sediment loss	Best Management Practice – Soil spreading	Striped soil that is used for site infill, must be tamped down and immediately reseeded and rolled with an appropriate grass seed mix to establish vegetative cover and reduce potential solids washout. The use of hydroseeding is encouraged to quickly establish vegetation cover.
Avoid Hydrocarbon Loss	Best Management Practice - Hydrocarbons	No storage of hydrocarbons or any polluting chemicals can occur within 50m of watercourses or surface water features. Any diesel or fuel oils stored on site will be banded to 110% of the capacity of the storage tank. Design and installation of fuel tanks to be in accordance with best practice guidelines and oil storage guidelines. Drip trays and spill kits must be kept available on site. Temporary parking and refuelling areas must be designated within the construction compound. These areas will be at least 50m away from watercourses and drains.
Prevention of spread of pathogens and invasive species	Biosecurity Measures	Adherence to IFI biosecurity protocol (Caffrey, 2010) for avoidance of spread of pathogens must be followed by contractors and surveyors. Extremely careful disinfection and biosecurity measures is essential to prevent transfer of damaging pathogen between sites and river catchments within and outside of the watercourses. This will apply to all personnel (contractors, surveyors etc.) and machinery that come in contact with surface water and/or drainage to surface waters. Transfer of invasive plant species between sites within catchments and to other catchments must be prevented. An invasive species management plan must identify specific locations of invasive plants, (e.g., Japanese Knotweed) at watercourse crossings and along any cable trenching routes. The final Construction Method Statement must set out methods for management and prevention of invasive species transfer.
Prevention and control of water-borne pollutant loss	Best Management Practice - drainage	Wheel washout facility water to be treated via settlement pond/stilling area that is correctly dimensioned to allow for suitable residence time to settle solids; Outflow from stilling ponds must be monitored for suspended solids (sediment) and pH (to detect concrete pollution) on a regular basis by an ECoW during the construction phase. If elevated pH occurs (>9.5) the water must be removed for treatment in an appropriate facility.
Overseeing of environmental controls	Monitoring during Construction	A suitably qualified Site Environmental Manager (SEM) acting as Ecological Clerk of Works (ECoW) must be employed to oversee the construction phase, including any advance works period, to ensure compliance with methods, mitigation measures and

		monitoring set out in the CEMP and Section 5 of this document. The ECoW must be present during key parts of the construction phase, i.e., bridge crossings, HDD crossing, in order to protect water quality and avoid potential impacts on aquatic receptors. See the CEMP for details of the ECoW role and responsibilities.
Control of silt / sediment loss- HDD crossing	Best Practice during Construction	There must be no discharge of suspended solids or any other deleterious matter to the Royal Canal during the HDD works.
Control of silt / sediment loss- HDD crossing	Best Practice during Construction	When carrying out HDD crossing, any silt contaminated water from the works area (launch/reception pits) must be treated prior to discharge. The Contractor shall employ best practice settling systems to ensure maximum removal of suspended solids prior to discharge of any surface water or groundwater from excavations to receiving waterbodies. This may include treatment via settlement tanks. There must be no direct pumping of silt/sediment laden water from the works to the canal at any time. Any preferential over-land flow paths or drains between the launch and reception pit sites must be bunded or have temporary check dams installed prior to works commencing to prevent any escaped drilling fluid from reaching the canal.
Aquatic habitat and species protection	Emergency Procedure for HDD Frack-out	An emergency response procedure for accidental frack-out (burst of drilling fluid from drilled ground) is included in the CEMP. A tool-box talk must be delivered by the SEM to all plant operators/ on-site personnel to ensure the emergency procedure is understood, and all necessary equipment and materials to deal with escaped fluids must be on hand and ready for use. The aim of the emergency response will be to immediately cease drilling and withdraw fluids from the bore to reduce sources of suspended solids, and / or contain and treat any frack-out to land before it reaches the canal.
Cumulative Impacts		
Minimize combination of effects of sediment loss	Phasing of works	The rigorous implementation and maintenance of construction phase best practise (CEMP) and specific mitigation measures set out in this document will reduce potential for cumulative impact arising from possible simultaneous construction of Foigha Solar Farm and the (future proposed) 110kV sub-station.
Overseeing of environmental controls	Monitoring during Construction	A suitably qualified Site Environmental Manager (SEM) acting as Ecological Clerk of Works (ECoW) must be employed to oversee the construction phase, including any advance works period, to ensure compliance with methods, mitigation measures and monitoring set out in the CEMP and Section 5 of this document. The ECoW must be present during key parts of the construction phase, i.e., bridge installations, HDD canal crossing, in order to protect water quality and avoid potential impacts on aquatic receptors. See the CEMP for details of the ECoW role and responsibilities.

7.1.3 Operational Phase Mitigation

No significant adverse effects have been identified during the operational phase, therefore no specific mitigation measures are required.

7.2 Likely Success of Mitigation

The mitigation provided in Section 7.1 is based on best practice measures provided in current best practice pollution prevention guidelines. With the effective implementation of these measures, there is a high level of confidence in their likely success.

8 Analysis and Conclusions

8.1 Integrity of the European Site

From “Managing Natura 2000 sites: The provisions of Article 6 of the ‘Habitats’ Directive 92/43/EEC” (EC, 2018), the meaning of integrity is described as follows:

‘The integrity of the site involves its constitutive characteristics and ecological functions. The decision as to whether it is adversely affected should focus on and be limited to the habitats and species for which the site has been designated and the site’s conservation objectives.’ (MN2000, Section 4.6.4)’.

8.2 Integrity of the Lough Ree SAC

Site specific Conservation Objectives were published for Lough Ree SAC in 2016. This document provides specific attributes and targets by which the maintenance of favourable conservation conditions of the qualifying interests within Lough Ree SAC are measured. The overarching conservation objective for this European Site is as follows:

Objective: *To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected (see Section 4).*

Potential exists for impacts to qualifying interests of Lough Ree SAC during the construction phase of the Proposed Development; however, these can be readily mitigated through the implementation of mitigation as outlined in **Section 7**.

From the information gathered and the predictions made about the changes that are likely to result from the construction stage of the project and the mitigation measures proposed to avoid impacts to the SAC, the ‘Integrity of Site’ checklist is completed for Lough Ree SAC in Table 8-1 below.

Table 8-1: Integrity of Site Checklist for Lough Ree SAC

Conservation Objectives		
Does the project have the potential to:	Yes or No	Comment
Cause delays in progress towards achieving the conservation objectives of the site?	No	The Proposed Development will not cause delays in achieving the conservation objectives of the site. Potential impacts in the form of water quality deterioration to Lough Ree SAC can be readily mitigated. Required mitigation measures are outlined in Section 7 .
Interrupt progress towards achieving the conservation objectives of the site?	No	The Proposed Development will not interrupt progress towards achieving the conservation objectives of the site. Potential impacts in the form of water quality deterioration to Lough Ree SAC can be readily mitigated. Required mitigation measures are outlined in Section 7 .
Disrupt those factors that help to maintain the favourable conditions of the site?	No	The Proposed Development will not disrupt factors that help to maintain the favourable conditions of the site. Potential impacts in the form of water quality deterioration to Lough Ree SAC can be readily mitigated. Required mitigation measures are outlined in Section 7 .
Interfere with the balance, distribution and density of key species that are the indicators of the favourable condition of the site?	No	The Proposed Development will not interfere with the balance, distribution and density of key species that are the indicators of the favourable condition of the site. Potential impacts in the form of water quality deterioration to the Lough Ree SAC can be readily mitigated. Required mitigation measures are outlined in Section 7 .

Other Indicators		
Does the project or plan have the potential to:		
Cause changes to the vital defining aspects (e.g. nutrient balance) that determine how the site functions as a habitat or ecosystem?	No	Potential impacts in the form of water quality deterioration to Lough Ree SAC can be readily mitigated. Required mitigation measures are outlined in Section 7 .
Change the dynamics of the relationships (between, for example, soil and water or plants and animals) that define the structure and/or function of the site?	No	Potential impacts in the form of water quality deterioration to Lough Ree SAC can be readily mitigated. Required mitigation measures are outlined in Section 7 .
Interfere with predicted or expected natural changes to the site (such as water dynamics or chemical composition)?	No	Potential impacts in the form of water quality deterioration to Lough Ree SAC can be readily mitigated. Required mitigation measures are outlined in Section 7 .
Reduce the area of key habitats?	No	There will be no direct loss of key habitats within Lough Ree SAC. Potential indirect impacts may occur as a result of contaminated surface water run-off during the construction phase, but this can be readily mitigated. Required mitigation measures are outlined in Section 7 .
Reduce the population of key species?	No	There will be no direct reduction of key species within Lough Ree SAC. Potential indirect impacts may occur as a result of contaminated surface water run-off during the construction phase, but this can be readily mitigated. Required mitigation measures are outlined in Section 7 .
Change the balance between key species?	No	The Proposed Development will not change the balance between key species associated with Lough Ree SAC. Mitigation measures are prescribed to safeguard Lough Ree SAC. Required mitigation measures are outlined in Section 7 .
Reduce diversity of the site?	No	The Proposed Development will not reduce the diversity of Lough Ree SAC. Potential impacts through the deterioration of water quality in Lough Ree SAC can be readily mitigated. Required mitigation measures are outlined in Section 7 .
Result in disturbance that could affect population size or density or the balance between key species?	No	No impacts have been identified that would result in disturbance that could affect population size or density or balance between key species associated with Lough Ree SAC.
Result in fragmentation?	No	No impacts have been identified that would result in fragmentation of habitats for which Lough Ree SAC has been designated.
Result in loss or reduction of key features (e.g. tree cover, tidal exposure, annual flooding, etc.)?	No	No key features associated with Lough Ree SAC will be lost as a result of construction or operation of the proposed development.

8.3 Integrity of Lough Ree SPA

Potential exists for impacts to the SCI for Lough Ree SPA during the construction phase of the proposed development; however, these can be readily mitigated through the implementation of mitigation as outlined in Section 7.

From the information gathered and the predictions made about the changes that are likely to result from the construction, operation and decommissioning stages of the project and the mitigation measures proposed to avoid impacts to the SPAs, the integrity of site checklist is completed for Lough Ree SPA in Table 7-2 below.

Table 8-2: Integrity of Site Checklist for Lough Ree SPA

Conservation Objectives		
Does the project have the potential to:	Yes or No	Comment
Cause delays in progress towards achieving the conservation objectives of the site?	No	The Proposed Development will not cause delays in achieving the conservation objectives of the site. Potential impacts in the form of water quality deterioration to Lough Ree SPA can be readily mitigated. Required mitigation measures are outlined in Section 7 .
Interrupt progress towards achieving the conservation objectives of the site?	No	The Proposed Development will not interrupt progress towards achieving the conservation objectives of the site. Potential impacts in the form of water quality deterioration to Lough Ree SPA can be readily mitigated. Required mitigation measures are outlined in Section 7 .
Disrupt those factors that help to maintain the favourable conditions of the site?	No	The Proposed Development will not disrupt factors that help to maintain the favourable conditions of the site. Potential impacts in the form of water quality deterioration to Lough Ree SPA can be readily mitigated. Required mitigation measures are outlined in Section 7 .
Interfere with the balance, distribution and density of key species that are the indicators of the favourable condition of the site?	No	The Proposed Development will not interfere with the balance, distribution and density of key species that are the indicators of the favourable condition of the site. Potential impacts in the form of water quality deterioration to the Lough Ree SPA can be readily mitigated. Required mitigation measures are outlined in Section 7 .
Other Indicators		
Does the project or plan have the potential to:		
Cause changes to the vital defining aspects (e.g. nutrient balance) that determine how the site functions as a habitat or ecosystem?	No	Potential impacts in the form of water quality deterioration to Lough Ree SPA can be readily mitigated. Required mitigation measures are outlined in Section 7 .
Change the dynamics of the relationships (between, for example, soil and water or plants and animals) that define the structure and/or function of the site?	No	Potential impacts in the form of water quality deterioration to Lough Ree SPA can be readily mitigated. Required mitigation measures are outlined in Section 7 .

Interfere with predicted or expected natural changes to the site (such as water dynamics or chemical composition)?	No	Potential impacts in the form of water quality deterioration to Lough Ree SPA can be readily mitigated. Required mitigation measures are outlined in Section 7 .
Reduce the area of key habitats?	No	There will be no direct loss of key habitats within Lough Ree SPA. Potential indirect impacts may occur as a result of contaminated surface water run-off during the construction phase, but this can be readily mitigated. Required mitigation measures are outlined in Section 7 .
Reduce the population of key species?	No	There will be no direct reduction of key species within Lough Ree SPA. Potential indirect impacts may occur as a result of contaminated surface water run-off during the construction phase, but this can be readily mitigated. Required mitigation measures are outlined in Section 7 .
Change the balance between key species?	No	The Proposed Development will not change the balance between key species associated with Lough Ree SPA. Mitigation measures are prescribed to safeguard Lough Ree SPA. Required mitigation measures are outlined in Section 7 .
Reduce diversity of the site?	No	The Proposed Development will not reduce the diversity of Lough Ree SPA. Potential impacts through the deterioration of water quality in Lough Ree SPA can be readily mitigated. Required mitigation measures are outlined in Section 7 .
Result in disturbance that could affect population size or density or the balance between key species?	No	No impacts have been identified that would result in disturbance that could affect population size or density or balance between key species associated with Lough Ree SPA.
Result in fragmentation?	No	No impacts have been identified that would result in fragmentation of habitats for which Lough Ree SPA has been designated.
Result in loss or reduction of key features (e.g. tree cover, tidal exposure, annual flooding, etc.)?	No	No key features associated with Lough Ree SPA will be lost as a result of construction or operation of the proposed development.

8.4 Conclusions

This NIS has been prepared following the Department of the Environment, Heritage and Local Government guidance *‘Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities’* (DoEHLG, 2010a). The assessment for the Proposed Development investigates the potential adverse effects on the qualifying interests of European sites arising from the proposals. The assessment considers whether the proposed development works and operation, 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.

Provided that the mitigation measures recommended in Section 7 are implemented in full, it can be objectively concluded that the proposed development at Foigha will not adversely affect the integrity of Lough Ree SAC or Lough Ree SPA in view of the sites conservation objectives and that the conservation status of the qualifying interests will not be compromised by the proposed development directly, indirectly or cumulatively.

The key considerations that have contributed towards this conclusion are summarised as follows:

- The Proposed Development is not located within Lough Ree SAC or Lough Ree SPA. There are no resource requirements (e.g. excavation or abstraction) from European sites for the Proposed Development and no QI habitats or species have been recorded within the proposed site. Consequently, none of the lands designated as part of European sites will be directly impacted or removed as a result of the proposed development.
- No indirect impacts on the water quality of Lough Ree SAC and Lough Ree SPA are expected in relation to sediment or pollution laden surface water run-off during the construction phase of the Proposed Development due to the requirement for the proposed construction works to adhere to best practice construction guidelines and the specific mitigation measures provided in Section 7.
- No potential for likely significant effects on Lough Ree SAC or Lough Ree SPA during the operational phase has been identified.

The conclusion of this NIS is that with the implementation of best practice there will be no potential for direct, indirect or cumulative impacts arising from the proposed Foigha Solar Farm either alone or in combination with any other plans or projects. The integrity of Lough Ree SAC or Lough Ree SPA will not be adversely affected. No reasonable scientific doubt remains as to the absence of such adverse effects.

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Appendix A: Appropriate Assessment Screening Report

Report to Inform Screening for Appropriate Assessment

Foigha Solar Farm
Co. Longford

Report prepared for Foigha Solar Farm Ltd

By Karen Banks MCIEEM

11th August 2026



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1 Introduction

This report has been prepared by Greenleaf Ecology on behalf of Foigha Solar Farm Ltd. The purpose of this report is to inform screening for Appropriate Assessment for the proposed Foigha Solar Farm, Co. Longford (hereinafter referred to as 'the Proposed Development').

This report comprises information in support of screening for AA to be undertaken by the competent authority for the purposes of Article 6(3) of the EU Habitats Directive (Directive 92/43/EEC) on the Conservation of Natural Habitats and of Wild Fauna and Flora as transposed by the Planning and Development Act (as amended) and the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011) as amended.

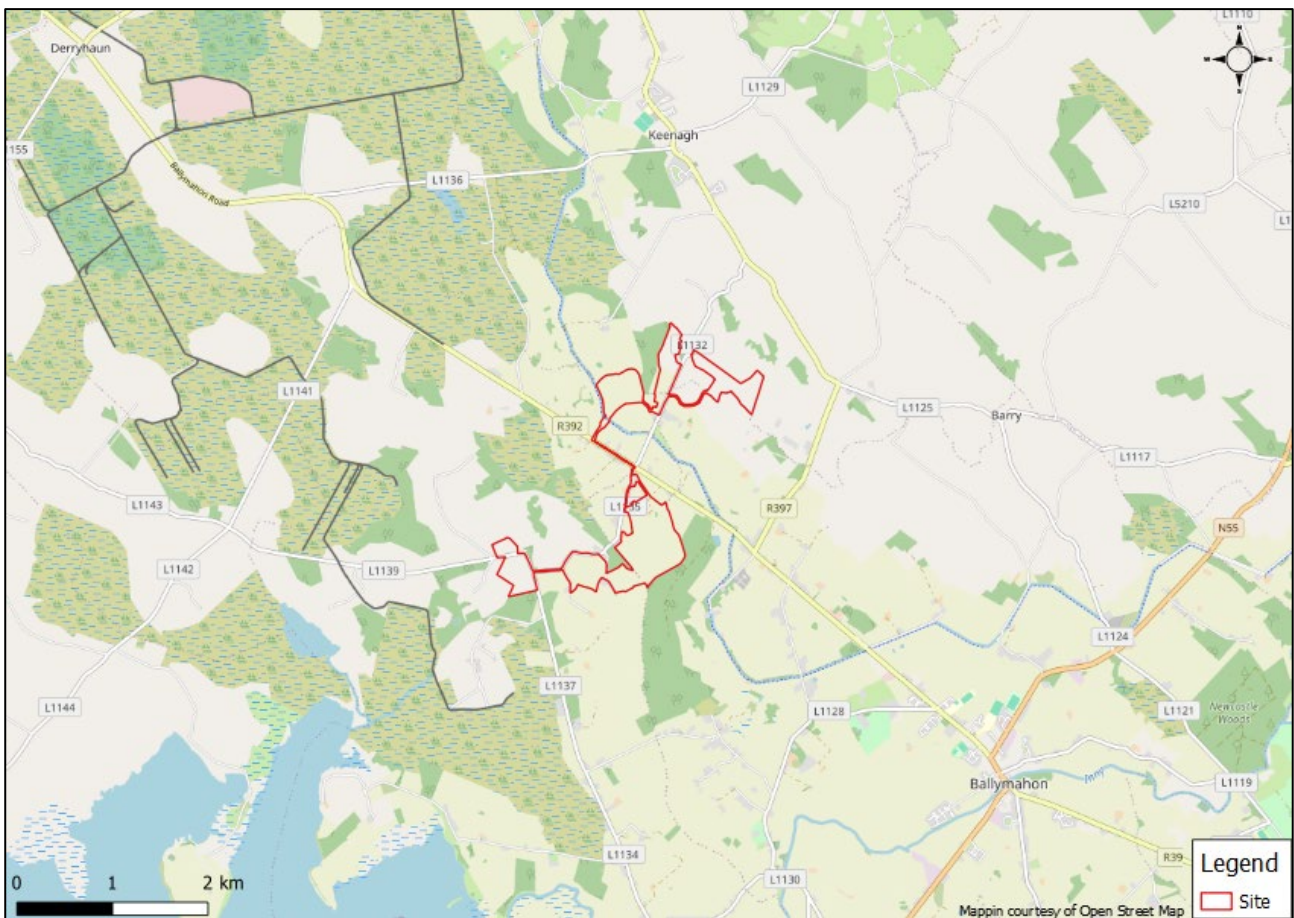
This report has been updated in response to the Request for Further Information from An Coimisiún Pleanála (Ref: PL-500085-LD).

1.1 Study Area

The proposed site is located in the townlands of Cornacarta, Doonacurry, Foygh, Kilcommock Glebe, Ledwithstown and Tirlickeen in Co. Longford. The location of the proposed development is illustrated in Figure 1-1.

The solar farm and energy storage compound facility will connect to the transmission network via a 110 kV substation 'loop-in / loop-out' grid connection as detailed in Section 3. The grid connection for the solar farm will be the subject of a future planning consenting process. This is referenced within this solar farm and energy storage compound planning application for information purposes only, to ensure that a full, robust assessment can be made of the entire development.

Figure 1-1: Site Location Map



1.2 Statement of Authority

This AA Screening was carried out by Karen Banks, MCIEEM. Karen is an ecologist with Greenleaf Ecology and has 18 years' experience in the field of ecological assessment. Karen has extensive experience in the production of reports to inform AAs and Natura Impact Statements including those for transport infrastructure, small to large scale housing and mixed-use developments, flood alleviation schemes, solar farms and wind farms.

1.3 Legislative Context for Appropriate Assessment

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, better known as "The Habitats Directive", provides legal protection for habitats and species of European importance. Articles 3 to 9 provide the legislative means to protect habitats and species of Community interest through the establishment and conservation of an EU-wide network of sites known as Natura 2000.

The Habitats Directive has been transposed into Irish law by Part XAB of the Planning and Development Act (as amended) and the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477/2011) as amended. In the context of the Proposed Development, the governing legislation is Part XAB of the Planning and Development Act (as amended).

Articles 6(3) of the Habitats Directive set out the decision-making tests for plans and projects likely to adversely affect the integrity of European sites (Annex 1.1). Article 6(3) establishes the requirement for AA:

Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to 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.

Natura 2000 sites are defined under the Habitats Directive (Article 3) as a coherent European ecological network of special areas of conservation, composed of sites hosting the natural habitat types listed in Annex I and habitats of the species listed in Annex II, shall enable the natural habitat types and the species' habitats concerned to be maintained or, where appropriate, restored at a favourable conservation status in their natural range. In Ireland, these sites are designated as European sites and include Special Protection Areas (SPAs), established under the EU Birds Directive (79/409/EEC, as codified by 2009/147/EC) for birds and Special Areas of Conservation (SACs), established under the Habitats Directive 92/43/EEC for habitats and species.

The competent authority is obliged to consider, in view of best scientific knowledge, whether the proposed development is likely to have a significant effect either individually or in combination with other plans and projects. If screening determines that there is likely to be significant effects on a European site, then AA must be carried out for the proposed development at Foigha, including the compilation of a Natura Impact Statement (NIS) to inform the decision making.

2 Methodology

2.1 Stages of Appropriate Assessment

The Department of the Environment, Heritage and Local Government guidelines (DELHG, 2009, rev. 2010) outlines the European Commission's methodological guidance (EC, 2002) promoting 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.

The four stages are summarised diagrammatically in Figure 2-1. Stages 1-2 deal with the main requirements for assessment under Article 6(3) and Regulation 42 of the European Communities (Birds and Natural Habitats) Regulations 2011 as amended. Stage 3 may be part of the Article 6(3) Assessment or may be a necessary precursor to Stage 4. Stage 4 is the main derogation step of Article 6(4).

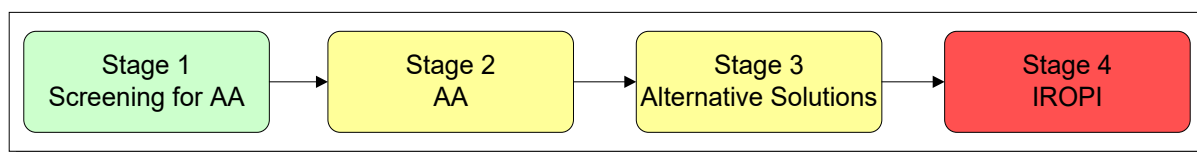


Figure 2-1: Stages of Appropriate Assessment - Taken from *Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (2010)*

Stage 1 - Screening is the process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3):

- i. whether a plan or project (in this instance the proposed project) is directly connected to or necessary for the management of the European sites, and
- ii. whether a plan or project, alone or in combination with other plans and projects, is likely to have significant effects on the European sites in view of their conservation objectives.

If the effects are deemed to be significant, potentially significant, or uncertain, or if the screening process becomes overly complicated, then the process must proceed to Stage 2 (AA). This report fulfils the information necessary to enable the competent authority to screen the proposal for the requirement to prepare an AA.

This report forms Stage 1 of the AA process and sets out the following information:

- Description of the proposed works;
- Characteristics of the proximal European sites; and
- Assessment of significance of the proposed works on the European sites in question.

The methodology followed in relation to this assessment has had regard to the following guidance and legislation:

- European Union Habitats Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora 92/43/EEC;
- Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities (DOEHLG 2009, rev 2010);
- The Planning and Development Act 2000 (as amended);
- Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg (EC, 2018);
- European Commission Notice Brussels C (2021) 6913 final '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);
- Interpretation Manual of European Union Habitats. Version EUR 28. European Commission 2013;
- The European Union (Environmental Impact Assessment and Habitats) Regulations 2011; and

- The European Communities (Birds and Natural Habitats) Regulations, S.I. No. 477 of 2011 (as amended).

2.2 Information consulted for this report

The Screening assessment had regard to the following sources of data and information:

- Information on the location, nature and design of the proposed project;
- Department of Housing, Planning, and Local Government – online land use mapping www.myplan.ie/en/index.html;
- Department of Housing, Planning, and Local Government- EIA Portal <https://www.housing.gov.ie/planning/environmental-assessment/environmental-impact-assessment-eia/eia-portal>
- Environmental Protection Agency (EPA) – Water Quality www.epa.ie, <http://gis.epa.ie/Envision>;
- Geological Survey of Ireland – Geology, soils and Hydrogeology www.gsi.ie;
- [Water Framework Directive website – www.catchments.ie](http://www.catchments.ie);
- National Parks and Wildlife Service – online European site network information, including site conservation objectives www.npws.ie;
- National Parks and Wildlife Service – Information on the status of EU protected habitats in Ireland (NPWS 2019a, 2019b);
- National Biodiversity Data Centre – www.biodiversityireland.ie;
- Ordnance Survey of Ireland – Mapping and Aerial photography www.osi.ie; and
- Site surveys, undertaken between August 2023 and February 2024 by Ms K. Banks (see Section 3.3).

2.3 Screening Protocol

The sequence of events when completing the AA Screening process is provided below:

- Ascertain whether the plan or project is necessary for the management of the European site;
- Description of the plan or project;
- Definition of the likely zone of influence for the proposed development;
- Identification of the European sites that are situated (in their entirety or partially or downstream) within the zone of influence of the proposed works;
- Identification of the most up-to-date QIs and SCIs for each European site within the zone of influence;
- Identification of the environmental conditions that maintain the QIs/SCIs at the desired target of Favourable Conservation Status;
- Identification of the threats/impacts – actual or potential that could negatively impact the environmental conditions of the QIs/SCIs within the European sites;
- Highlighting the activities of the proposed works that could give rise to significant negative impacts; and
- Identification of other plans or projects, for which in-combination impacts would likely have significant effects.

2.3.1 Screening Determination

In accordance with Regulation 42(7) of the Birds and Natural Habitats Regulations 2011 (S.I. No. 477/2011) as amended, the competent authority shall:

“determine that an Appropriate Assessment of a plan or project is not required where the plan or project is not directly connected with or necessary to the management of the site as a European site and if it can be excluded on the basis of objective scientific information following screening under this Regulation, that the plan or project, individually or in combination with other plans or projects, will have a significant effect on a European site”.

2.3.2 Zone of Influence

In accordance with EC (2011) *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*, identification of the European 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 European 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 European 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 European 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;
- European 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);
- European sites whose connectivity or ecological continuity can be affected by the plan or project.
- The range of European 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.

3 Project Description

Statutory Description

Foigha Solar Farm Limited intend to apply for a 10 Year Planning Permission for a solar farm and energy storage compound with a total area of circa 130 hectares in Cornacarta, Doonacurry, Foygh, Kilcommock Glebe, Ledwithstown and Tirlickeen (Townlands), Keenagh and Ballymahon, Co. Longford. The proposed development will consist of a solar farm comprising of c. 661,500 sq.m of solar photovoltaic panels on ground mounted frames, associated string inverters mounted to rear of panels and 42 no. single storey electrical transformer stations. The proposed development includes an energy storage compound consisting of 38 no. containerised energy storage modules and associated plant and equipment, 10 no. transformers, 2 no. auxiliary transformers, 1 no. Medium voltage control / switching substation and 1 no. spare parts container. The proposed development will also include underground electrical ducting and cabling within the development site and within the L1139, L1137, L1135, R392 and L1132 public roads, and crossing of the Royal Canal (either by open trench or horizontal directional drill), temporary construction compounds, security fencing, CCTV, access tracks (including clear span bridge over Donacurry River), landscaping, drainage and all ancillary development works and apparatus necessary to facilitate the proposed development. Construction and operational access will be via 5 no. existing entrances from the L1139, L1137, L1135 and L1132 which will be upgraded and 2 no. new entrances from the L11351. The operational lifespan of the solar farm will be 40 years and planning permission is requested for this duration.

Solar Panels

The working title for the project is Foigha Solar Farm. The civil works for the panels themselves use a simple, ground-mounted system that avoids undue ground disturbance and works with the existing site topography. The PV panels will sit on angled racks comprised of galvanized steel arranged in portrait or landscape configuration depending on the final system deployed¹. It is envisaged that these will be screw or driven-piled following geotechnical assessment². Across the majority of the site, the panels will be positioned on the rack at a minimum height of 0.8 m above the ground and rise to a maximum height of up to 2.44 m. In focused sections of the site, the minimum point of the panels will be raised to 1.6 m above the ground rising to a maximum height at the back of the panel of 3.4 m, having regard to the findings of the completed flood risk assessment.

The PV panels will be orientated to the south in order to capture maximum solar energy. The panels will be positioned at a tilt angle between 15-25 degrees from the horizontal having regard to natural site topographical and orientation conditions to ensure the best solar absorption. The panels will be stationary with no movable parts. Low voltage direct current cabling will connect the panels to the inverter/transformer stations across the site.

Inverters / Transformers / Ring Main Units

A total of 42 no. transformer stations are incorporated into the layout to convert direct current generated by the PV panels into alternating current which can be subsequently used by the electricity network. These units are manufactured offsite and delivered installation ready. These units are 3.88 m in height and will be installed on a hardcore or concrete slab base. The transformer units are equipped with a weather station, ventilation and a security light.

¹ Refer to technical drawings for panel and array system options. Final technical specification to be agreed with Longford County Council prior to construction. The final design will be subject to standard micro-siting arising from site survey work.

² The exact nature of the foundations will be determined at detailed design stage. Other alternative foundations arrangements include ballasting systems and piles. Final foundation type will be confirmed with Longford County Council prior to construction.

The proposed development includes c.280 no. string inverter units. These are small units which are mounted at the top underside of the solar panels and positioned at the end of the array rows. These units collect the electricity from the solar panels before onward passage to the transformers.

The design includes 1 no. medium voltage substation within the energy storage compound which will 'step-up' electricity produced by the solar farm for supply to the national grid. This is a modular unit 3 m high and 26 sq.m in area which will be delivered to the site for installation.

Underground Cabling

The solar farm comprises of a small number of interconnected agricultural fields. Underground cabling ducts will be laid across the site for the purposes of connecting the solar arrays, inverter / transformers and on-site medium voltage substation. The cabling will be trenched and contained within the footprint of the internal access tracks where possible. All ducting will be bundled where necessary and will be laid in compliance with method statements set out in the submitted Construction and Environmental Management Plan.

As per the submitted plans, the solar farm field parcels which do not directly adjoin each other will be connected by means of 33kV underground interconnector cabling in identified public roads (c.1,311 metres of cabling). The laying of this cabling will be subject to road opening licence procedures to be agreed with Longford County Council. The cable route includes a crossing of the Royal Canal either by open trench or horizontal directional drill. A letter of consent has been provided by Waterways Ireland for this crossing, with the final method to be agreed subject to planning consent. Both crossing methods are described and assessed in the application³. The 33kV collector network considers watermain and culvert crossings, as described in the submitted plans, technical details and construction methodology by TLI Group.

Access

A compacted gravel access track up to 3.5 m wide will provide internal access to the solar arrays and associated infrastructure. This will extend to approximately 9,000 linear metres of track across the land parcels. Stripped soil arising from the construction of these access tracks will be sustainably reused across the site as part of landscaping, filling in the verges of access tracks and grass reinstatement in the areas of temporary construction compounds.

It is proposed to access the site via 7 no. entrances 5 no. of which are existing entrances from the L1139, L1137, L1135 and L1132 which will be upgraded to include widening, small elements of hedgerow removal, and provision of roadside drainage, as described in the submitted plans. The design includes 2 no. new entrances from the L11351. These entrances are located opposite each other to facilitate managed cross movement between two proximate field parcels particularly during the construction phase. This will avoid additional traffic movements on the wider local road network during the construction phase. The design retains 2 no. existing entrances in Parcel 1 and 2, but these will not be used for construction or operational phases of the project for traffic access, with provision made for turning areas within the internal fields at these locations.

Other Infrastructure

A perimeter fence up to 2.2 m in height will be erected to provide security and restrict unauthorised entry to the solar farm. This fence will be stock proof in nature, sympathetic to the agricultural character of the site. The footings for the fence will either be pre-moulded or localised in-situ concrete, to be determined once a contractor is appointed. The installed fencing will incorporate mammal friendly access, with a maximum 100 mm gap retained at the bottom between the fence and the ground, as per the submitted technical plans.

³ Refer to Construction Methodology by TLI Group.

The proposed development will be an unmanned facility; however, it will be monitored 24 hours a day remotely by the Applicant's operation system and the Engineer Procurement and Construction provider. The site will be subject to routine inspections. The CCTV will be orientated towards this infrastructure rather than any third-party lands.

Energy Storage Compound

The proposed development will be contained within a secure, fenced development compound of approximately 8,900 m² in area, enclosed by a 2.4m high palisade perimeter fence.

The layout includes 38 no. grouped container modules housing electrical and control equipment for energy storage. These units are manufactured offsite and delivered installation ready. These will have a maximum floor area of approximately 22.5 m². The energy storage modules are low lying in nature and may be sourced in a 'moss green' colour (RAL colour code of 6005 or similar) aiding assimilation in the local landscape⁴. The design includes 1 no. medium voltage substation within the energy storage compound which will 'step-up' electricity produced by the solar farm for supply to the national grid. This is a modular unit 3 m high and 26 sq.m in area which will be delivered to the site for installation. 10 no. transformers and 2 no. auxiliary transformers support the energy storage function on site.

The system as proposed will incorporate battery modules connected to inverters that convert direct current (DC) to alternating current (AC) in turn connecting to grid infrastructure via associated transformers within the compound. Fire protection for the facility will be designed in accordance with required standards. The level of protection is subject to detailed design by the plant's supplier, utilising industry safety standards and certification.

Landscaping & Biodiversity

A total of 317 linear metres of hedgerow will be permanently removed throughout the site to facilitate site entrance, access tracks and underground cabling⁵. This will be offset by 114 linear metres of new hedgerow planting (Type 2), as well as the bolstering of an additional 18,192 linear metres (Type 1) where necessary, to fill any gaps in existing hedgerows. 10,254 square metres of native woodland will be planted throughout the site. Ecology on the site will be further fostered to deliver significant biodiversity gains to the receiving environment through the establishment of focused ecological biodiversity areas and species rich grasslands.

The solar farm will contribute directly to a carbon dioxide emission reduction of 27,952 tonnes per annum or the equivalent of approximately 1.18 million tonnes of CO₂ over the 40 year lifetime of the project.

Other Works

The solar farm and energy storage compound facility will connect to the transmission network via a 110 kV substation 'loop-in / loop-out' grid connection as detailed below. The grid connection for the solar farm will be the subject of a future planning consenting process. This is referenced within this solar farm and energy storage compound planning application for information purposes only, to ensure that a full, robust assessment can be made of the entire development.

110 kV substation and 'loop-in / loop-out' grid connection

The solar farm will connect to the Lanesboro / Mullingar 110kV overhead line by means of new 110kV substation. This includes an underground cable route of c. 292m. The substation will include a 'loop-in / loop-

⁴ Final colour will be subject to available electrical infrastructure. Prepared photomontages illustrate in grey.

⁵ The figure for hedgerow removal excludes that required for the future provision of the substation which will be the subject of a future SID application. 180 metres of additional hedgerow will be removed for the construction of the substation.

out' underground 110kV cable grid connection which will connect into the existing Lanesboro / Mullingar 110kV overhead lines via 2 no. new Interface Towers. This connection method will constitute a new node of the transmission network, connecting the proposed substation and associated solar farm generation to the National Grid. Please refer to the TLI Construction Methodology Statement for further detail.

The 110kV substation is based on EirGrid design specifications. The substation will consist of the EirGrid and Independent Power Producers (IPP) control room buildings and high voltage electrical equipment including a 110/33kV Transformer (TRAFO) with associated equipment.

All works will be undertaken to EirGrid / ESB specifications and in full compliance with environmental and other mitigation measures contained in the final Construction and Environmental Management Plan.

Longford County Council Request for Further Information

Longford County Council issued a Request for Further Information (RFI) on the 20/02/2025. At the expressed request of the Council's Roads Office, the proposed layout of the solar farm has been amended in a number of small areas. These design changes were detailed on the submitted revised site layout plans, and in summary, comprised the following:

- Relocation of entrance on L1132 to provide for increased sightlines;
- Provision of identified improvement works on the L1135 and L1139 comprising the setting back of existing boundaries at 3 no. locations in support of improved forward visibility. Removed hedgerow to be reinstated behind revised boundaries.
- Consequent minor revision to solar panel layout in the identified areas, providing for a small reduction in overall panels;
- Provision has also been made for temporary construction phase passing bays on the L1132, as identified in the Site Access Report;
- The proposed landscaping figures have been altered as a result of the design revisions. A total of c. 332 linear metres of hedgerow will be permanently removed throughout the site to facilitate site entrance, access tracks and underground cabling. This will be offset by 2,621 linear metres of new hedgerow planting (Type 2), as well as the bolstering of an additional 16,613 linear metres where necessary, to fill any gaps in existing hedgerows. To facilitate improved forward visibility on the local road network, c.285 linear metres of hedgerow will be removed and reinstated fully behind the relocated boundary.

An Coimisiún Pleanála Request for Further Information

An Coimisiún Pleanála issued a Request for Further Information dated 27th February 2026 related to 2 no. items, namely:

1. Consideration of firewater requirements and associated management for the energy storage component of the project, reflecting the relatively new nature of such technology in Ireland.
2. The need for additional archaeological investigations.

The completed work packages referenced above have resulted in some small design changes to the layout of the proposed development, as follows:

- Provision of archaeological buffers to 10 no. areas providing for a reduction in panelled area of the proposed solar farm of c.404 sqm. Minor localised relocation of tracks / supporting infrastructure in some cases.
- Alterations to the Energy Storage compound layout for firewater provision and management comprising localised reorganisation of plant, addition of water storage tank and hydrants, compound

drainage network, including water attenuation pond, and rainwater discharge soakaway. The revised compound layout includes 32 no. energy storage modules, 8 no. transformers, 2 no. auxiliary transformers, 1 no. medium voltage control / switching substation, 2 no. spare parts containers, and 1 no. office container.

3.1 Existing Environment

Multi-disciplinary ecology walkover surveys were undertaken on 29th August 2023 and 23rd February 2024 by ecologist Ms. Karen Banks, MCIEEM.

The proposed site is dominated by agriculturally improved grassland fields (GA1) and wet grassland (GS4) bound by a network of hedgerows (WL1) and treelines (WL2), some with associated drainage ditches (FW4). The Kilcommock Glebe stream (FW2) bounds the south of Parcel 1 and an unnamed stream bounds the east of Parcel 3 and Parcel 4. The Donacurry stream bounds the west of Parcel 4. These streams all flow to the east/ south-east to the Inny River. The Ledwithstown stream flows through the centre of Parcel 6 and flows in a south-westerly direction to the Bilberry River. The Royal Canal is located to the south of Parcel 3 and is crossed by the proposed underground interconnecting cables. Waterbodies are further described in Section 3.1.1 of this report.

No invasive species were recorded within the proposed site and its immediate environs.

No Annex I habitats were recorded at the proposed site.

Otter

An otter survey of the extent of the watercourses within and accessible areas adjoining the proposed site boundary was conducted on 29th August 2023 and 23rd February 2024.

No evidence of otter was recorded at the site and adjoining lands.

Avifauna

Wintering bird survey was undertaken within Parcel 4 in winter 2022/ 2023 by Michael Stinson. The target species for the survey was Whooper Swan, an SCI species for Lough Ree SPA. Vantage Point surveys were conducted within Parcel 4 due to the presence of potential Whooper Swan habitat within this parcel of the proposed site. The surveys were spread across six days with a maximum of six hours observation on each day. The results of the survey are enclosed in Appendix A.

Wintering bird transects were undertaken across the proposed site on 27th January 2024 and 23rd February 2024. The method utilised was based on the British Trust for Ornithology (BTO) Breeding Bird Survey (BBS or CBS; Bibby et al. 2000). The study area for this survey comprised transects through each solar farm land parcel. Birds were counted over two visits in January and February 2024. The surveyor recorded all birds seen or heard along the transect routes.

Bird species observed comprised species that are typical of the agricultural fields present at the proposed site and surrounding landscape. No wetland bird species were observed at the proposed site and its environs.

Full details of the existing habitats and species recorded at the proposed site are enclosed within the Ecological Impact Assessment accompanying the planning application (Greenleaf Ecology, 2024).

3.1.1 Surface and Ground Water

3.1.1.1 Water Bodies

The proposed Foigha Solar Farm is located within the Water Framework Directive (WFD) SubCatchments Inny[Shannon]_SC_080 and Bilberry_SC_010. Lands within the Inny[Shannon]_SC_080 drain in a generally south-easterly direction via the Kilcommock_Glebe stream at the north-east of the site, an unnamed stream bounding the east of Parcel 3 and Parcel 4 and the Donacurry stream bounding the west of Parcel 4 all drain into the Inny (Shannon) River. In turn, the Inny River flows into Lough Ree c.9.0km downstream of the proposed site boundary at its closest point.

The River Inny rises near Oldcastle in Co. Meath and has a catchment of over 1,128km². The Inny is a major tributary of the River Shannon, draining several large lakes in the Midlands and is the largest river that flows into Lough Ree, apart from the Shannon. An aqueduct carrying the Royal Canal crosses the Inny near Abbeyshrule in Co. Longford. The Inny is a noted brown trout fishery and also holds large stocks of coarse fish. During surveys completed for WFD surveys in 2008, nine fish species were recorded in the Inny River at Shrule Bridge, Co Longford. The most abundant species was brown trout, followed by minnow.⁶ Lamprey species have been recorded in the upper reaches of the River Inny at Oldcastle and Tully⁷

The Ledwithstown_26 stream drains the westernmost land parcel within the proposed solar farm. The Ledwithstown_26 flows into the Bilberry River c.0.4km downstream of the site, the Bilberry River in turn flows into Lough Ree c.2.0km downstream of the proposed site boundary.

Lough Ree is classified as a mixed fishery with good stocks of trout, pike, and coarse fish present (ShRFB, 2010).⁸

The Royal Canal pNHA is located to the south of Parcel 3. The features of conservation importance for the Royal Canal are habitats, including hedgerow, tall herbs, calcareous grassland, reed fringe, open water, scrub and woodland and the presence of otter. The Royal Canal is also noted as an amenity area and for coarse fishing, with fish present including Roach, Bream, Tench, Rudd, Perch and Pike.

The proposed project overlies the Inny Ground Waterbody (GWB).

3.1.1.2 Surface Water Quality and Risk Characterisation

The EPA don't monitor the small streams draining the proposed solar farm development site. Table 3-1 shows recently available (2020-2023) river Q-value results from relevant, nearest downstream EPA stations on the River Inny. The River Inny is currently 'good' ecological status (Q4) based on monitoring at three stations at Ballymahon, Shrule and Red Bridge, downstream of the proposed solar farm development lands; a fourth station located 500m downstream of Ballymahon Bridge is currently 'moderate' ecological status (Q3-4) (last available sampling date is 1996).

The Inny 100, Inny 110 and Ledwithstown 010 waterbodies draining the proposed site are of 'moderate' status. Lough Ree is of 'Good' status. Current EPA assigned waterbody status (2016-2021) for relevant receiving waterbodies is listed in Table 3-1.

⁶ The Central and Regional Fisheries Board (2008) Sampling Fish for the Water Framework Directive- Rivers 2008: Shannon International River Basin District.

⁷ Inland Fisheries Ireland (2011) Sampling Fish for the Water Framework Directive- Rivers 2011: Shannon International River Basin District and SHIRBD (2022) Fish in Rivers Factsheet: Upper Inny River Catchment Factsheet 2022/02.

⁸ ShRFB (2010) <http://www.shannon-fishery-board.ie/guides/game/lough-ree.htm>

Table 3-1: EPA Waterbody Status, Risk and Pressures

EPA Waterbody name and code	EPA Watercourse/ Lake Name	EPA Waterbody assigned Status (2016-2021)	EPA Identified Risk / Issue / Pressures
Inny_100 (IE_SH_26I011350)	Kilcommock Glebe Inny (Shannon)	Moderate	At risk
Inny_110 (IE_SH_26I011400)	Unnamed streams	Moderate	Review
Ledwithstown_010 (IE_SH_26L840850)	Ledwithstown_26 Bilberry	Moderate	Review
Lough Ree (IE_SH_26_750a)	Lough Ree	Good	Not at risk

3.1.2 Flooding

The Site Specific Flood Risk Assessment (SSFRA) undertaken by IE consulting (2024) concluded that:

- A Site-Specific Flood Risk (SSFRA) assessment, appropriate to the type and scale of development proposed, and in accordance with 'The Planning System and Flood Risk Management Guidelines – DoEHLG-2009' has been undertaken.
- The proposed solar farm development site has been screened, scoped, and assessed for flood risk in accordance with the above guidelines.
- The proposed solar farm development site has been divided into six parcels, referred to as Parcel 1, Parcel 2, Parcel 3, Parcel 4, Parcel 5, and Parcel 6.
- The primary flood risk to the proposed solar farm development site can be attributed to a fluvial flood event in the Kiltaffrey Stream, Donacurry Stream and/or the Donacurry Stream.
- Small limited portions of the proposed solar farm development site may also be susceptible to pluvial flood risk. The site is not at risk of groundwater flooding.

Fluvial Flood Risk

- The OPW NIFM and PRFA mapping indicates that Parcel 1 within the proposed solar farm development site is entirely located in Flood Zone 'C'.
- The PRFA mapping indicates that the vast majority of Parcel 2 of the proposed solar farm development site is located in Flood Zone 'C'. The southern area of the proposed solar farm development site is potentially located in the 0.1% AEP (1 in 1000 Year – Flood Zone 'B') fluvial flood extent. However, no solar panels are proposed within this area of Parcel 2 of the proposed solar farm development site.
- The PRFA mapping indicates that the western portion of Parcel 3 of the proposed solar farm development site is located in Flood Zone 'C'. The eastern portion of Parcel 3 is located in the 0.1% AEP (1 in 1000 Year – Flood Zone 'B') fluvial flood extent.
- The NIFM mapping indicates that the majority of Parcel 4 of the proposed solar farm development site is located in Flood Zone 'C'. The eastern and southern boundary of Parcel 4 is located in the 0.1% AEP (1 in 1000 Year – Flood Zone 'B') fluvial flood extent.
- The NIFM mapping indicates that the vast majority of Parcel 5 of the proposed solar farm development site is located in Flood Zone 'C'. The eastern boundary of Parcel 5 is located in the 0.1% AEP (1 in 1000 Year – Flood Zone 'B') fluvial flood extent.

- The NIFM mapping indicates that the northern portion of Parcel 6 of the proposed solar farm development site is located in Flood Zone 'C'. The southern portion of Parcel 6 is located in the 0.1% AEP (1 in 1000 Year – Flood Zone 'B') fluvial flood extent.
- The solar panels are considered to be water compatible development. There are no standard solar panels proposed within the proposed solar farm development site where the estimated 0.1% AEP (1 in 1000 year – Flood Zone 'B') fluvial flood depths are greater than 0.8m. Locations where the flood depths are greater than 0.8m and intercept with the proposed solar panels will use elevated PV panels. The elevated PV panels are capable of raising the lowest edge of the panel up to a height of 1.6m. Panels located in these areas will be raised above the 0.1% AEP flood levels to ensure no PV panels are located within the 0.1% AEP (1 in 1000 Year – Flood Zone 'B') fluvial flood levels.
- There is no highly vulnerable development such as inverter/transformer stations proposed within areas of indicative fluvial flooding.
- There is no history of fluvial flooding recorded in the location of the proposed solar farm development site or the proposed substation and therefore the fluvial flood risk to the proposed development is considered to be LOW.

Pluvial Flood Risk

- Secondary flood risk to the proposed solar farm development site can be attributed to pluvial flooding from overland flow of surface water runoff.
- There are three small limited areas of indicative pluvial flooding mapped within the site. The pluvial flood located within Parcel 1 is located where there is a field drain and therefore surface water runoff will likely be captured by the field drain channel rather than resulting in ponding on the surface. The pluvial flooding within Parcel 2 and Parcel 3 are located where no PC Modules are proposed.
- Overall, the pluvial flood risk to the proposed solar farm development is considered to be low.

Flood Risk from the Development

- The proposed solar panel arrays are considered to be a water compatible development. The proposed arrays shall be supported by small ground driven steel piles a minimum of 0.8m above existing ground levels. The solar panel arrays shall therefore not impede surface water runoff that may occur within or in the vicinity of the site. The proposed inverters and transformers, which are considered to be highly vulnerable development, are located away from any areas of potential flood risk identified within the site.
- The proposed access tracks shall be constructed using permeable materials at or close to existing ground level throughout the site and therefore is not expected to have any impact on any floodwater volumes or overland flow paths.
- The solar farm will connection the transmission network. The proposed underground cables shall be laid a minimum of 0.75m below the existing ground surface and therefore will have no impact on overland flow paths or fluvial floodwater volumes or flow paths associated with any of the watercourses within the site. The cables and cable ducting shall be designed and installed to prevent ingress of water during their design life.
- The proposed construction and operational drainage strategy for the proposed solar farm development is based on utilising the existing topography, watercourses and field drains within the site.
- The existing ground beneath the solar panel arrays shall remain a permeable grassy surface and there will be no net increase in discharge rate or runoff volume from the site. Therefore, the proposed solar farm development will not result in an increased flood risk to adjacent lands or properties.

Overall, and in consideration of the type and form of development proposed, this Site Specific Flood Risk Assessment indicates that the proposed solar farm development is not expected to result in an adverse impact to the hydrological regime of the area or increase flood risk elsewhere and is therefore considered to be appropriate from a flood risk perspective.

3.1.3 Soil, Geology and Hydrogeology

The Geological Survey of Ireland (GSI) online database (www.gsi.ie) was consulted for available edaphic, geological and hydrological information of the site and its environs. The site is predominantly overlaid by deep, well drained mineral (mainly acidic) soils and peaty poorly drained mineral (Mainly acidic) soils, with areas of basin peats also present. In terms of bedrock geology, Waulsortian Limestones, composed of massive unbedded lime-mudstone underly the north-east of the site and the Lucan Formation, composed of dark limestone and shale underly the south-west of the site.

The bedrock units which underlie the site are mapped by the GSI as part of the same Locally Important Aquifer. Groundwater vulnerability is a term used to represent the intrinsic geological and hydrogeological characteristics that determine the ease at which groundwater may be contaminated. The study area is of 'Moderate' to 'High' groundwater vulnerability. There are no karst features located in the vicinity of the proposed works.

3.2 Description of European Sites

This stage of the screening for AA process describes European sites within the likely zone of influence of the works. The methodology for establishing the likely zone of influence is described in Section 2.3.2.

Connectivity between the proposed development and European sites has been reviewed. Connectivity is identified via the potential source-pathway-receptor model which identifies the potential impact pathways such as land, air, hydrological, hydrogeological pathways etc. which may support direct or indirect connectivity of the proposed development to European sites and/or their qualifying features.

In view of the location of the proposed development in relation to European sites (see Figure 3-2), the characteristics of the proposed development (no instream works, construction activity spread over 6 land parcels across 2 water sub-catchments, as detailed in Section 3) and the source, pathway and receptors of potential impacts, a 15km radius is considered an appropriate zone of influence to screen all likely significant effects that might impact upon the European sites. The establishment of the likely zone of influence is in line with 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*.

The European sites located within 15km of the proposed works are outlined in Table 3-3 and Figure 3-2. There are 8 European sites located within 15km of the proposed works:

1. Lough Ree SAC (000440);
2. Ballymore Fen SAC (002313);
3. Mount Jessop Bog SAC (002202);
4. Lough Forbes Complex SAC (001818);
5. Fortwilliam Turlough SAC (000448);
6. Brown Bog SAC (002346);
7. Lough Ree SPA (004064); and
8. Ballykenny-Fisherstown Bog SPA (004101).

Source – pathway – receptor dynamics were assessed for Ballymore Fen SAC, Mount Jessop Bog SAC, Lough Forbes Complex SAC, Fortwilliam Turlough SAC, Brown Bog SAC and Ballykenny-Fisherstown Bog SPA and it was determined that there is no connectivity (via surface water, groundwater, air or other environmental

vectors) between the proposed development and these European sites, therefore these sites will not be considered further within this report.

There is hydrological connectivity between the proposed site and Lough Ree SAC and Lough Ree SPA and the proposed site and these European sites are in relatively close proximity.

Figure 3-1: European Sites Located within 15km of the Proposed Development

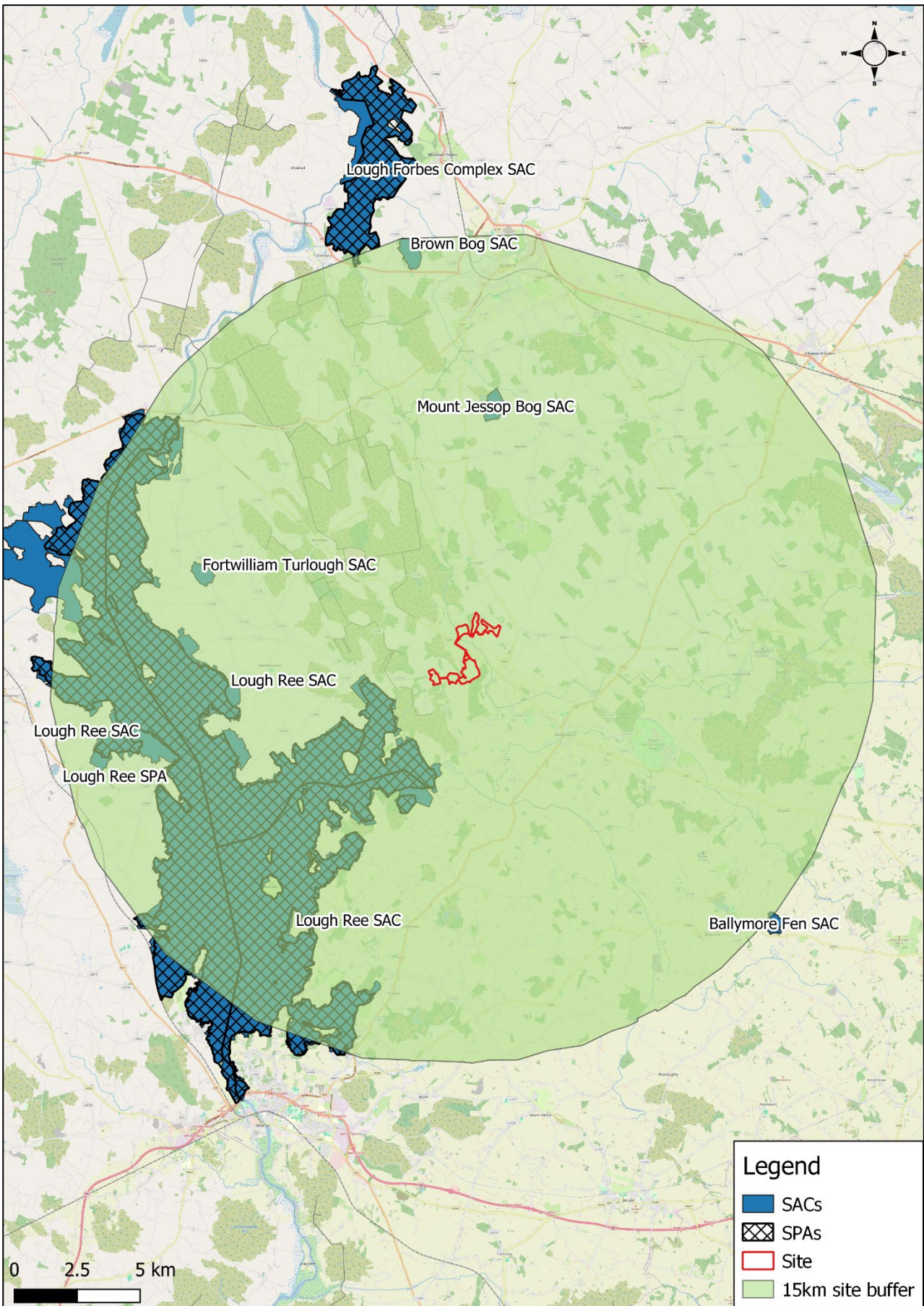


Table 3-2: European Sites within 15km of the Proposed Works

Site Name and Code	Qualifying Interests	Distance from Proposed Site (km) ⁹	Connectivity
Lough Ree SAC (000440)	Annex I Habitats Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Degraded raised bogs still capable of natural regeneration [7120] Alkaline fens [7230] Limestone pavements* [8240] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Bog woodland [91D0] Annex II Species <i>Lutra lutra</i> (Otter) [1355]	1.6km	There is hydrological connectivity via streams that drain the proposed site, which flow Lough Ree c.2.0km downstream of the site at its closest point. The proposed site and this SAC are in relatively close proximity.
Ballymore Fen SAC (002313)	Annex I Habitats Transition mires and quaking bogs [7140]	14.9km	There is no connectivity via surface water, groundwater, or any other pathway.
Mount Jessop Bog SAC (002202)	Annex I Habitats Degraded raised bogs still capable of natural regeneration [7120] Bog woodland [91D0]	7.6km	There is no connectivity via surface water, groundwater, or any other pathway.
Lough Forbes Complex SAC (001818)	Annex I Habitat Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150] Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the Rhynchosporion [7150] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) [91E0]	14.7km	There is no connectivity via surface water, groundwater, or any other pathway.
Fortwilliam Turlough SAC (000448)	Annex I Habitat Turloughs [3180]	9.3km	There is no connectivity via surface water, groundwater, or any other pathway.

⁹ Distance measured "as the crow flies"

Brown Bog SAC (002346)	Annex I Habitat Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the Rhynchosporion [7150]	13.8km	There is no connectivity via surface water, groundwater, or any other pathway.
Lough Ree SPA (004064)	Bird Species Little Grebe (<i>Tachybaptus ruficollis</i>) [A004] Whooper Swan (<i>Cygnus cygnus</i>) [A038] Wigeon (<i>Anas penelope</i>) [A050] Teal (<i>Anas crecca</i>) [A052] Mallard (<i>Anas platyrhynchos</i>) [A053] Shoveler (<i>Anas clypeata</i>) [A056] Tufted Duck (<i>Aythya fuligula</i>) [A061] Common Scoter (<i>Melanitta nigra</i>) [A065] Goldeneye (<i>Bucephala clangula</i>) [A067] Coot (<i>Fulica atra</i>) [A125] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Lapwing (<i>Vanellus vanellus</i>) [A142] Common Tern (<i>Sterna hirundo</i>) [A193] Wetland and Waterbirds [A999]	1.7km	There is hydrological connectivity via streams that drain the proposed site, which flow Lough Ree c.2.0km downstream of the site at its closest point. The proposed site and this SPA are in relatively close proximity.
Ballykenny-Fisherstown Bog SPA (004101)	Bird Species Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]	14.6km	There is no connectivity via surface water, groundwater, or any other pathway.

3.2.1 Conservation Objectives

The integrity of a European site (referred to in Article 6.3 of the EU Habitats Directive) involves its ecological functions. The decision as to whether it is adversely affected therefore focuses on, and is limited to, conservation objectives set for a particular site (EC, 2018).

The overarching aim of the Natura 2000 network is to achieve Favourable Conservation Status of conservation worthy habitats listed in Annex I and the habitats of species listed in Annex II of the Habitats Directive and/or of regularly occurring migratory bird species as well as those species defined in Annex I of the Birds Directive. It should be noted that in some situations that there is overlap in extent between certain SACs and SPAs and indeed SAC and SAC. In that regard, the Conservation Objectives (CO's) should be jointly used as appropriate.

The qualifying features for each site have been obtained through a review of the CO's available from the NPWS: <http://www.npws.ie/protected-sites>. Site specific conservation objectives are available for all the European sites within 15km of the proposed development; these were accessed in October 2024. For brevity, the site specific CO's are summarised as follows:

- *To maintain or restore the favourable conservation condition of Annex I habitats and/or the Annex II species for which the SAC has been selected.*
- *To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.*

4 Screening Assessment Criteria

4.1 Management of European Sites

Appropriate Assessment is not required where the proposed development is connected with, or necessary to, the management of any European site. In this case, the proposed development is not directly connected with, or necessary to, the management of any European site(s).

4.2 Likely Direct, Indirect or Secondary Impacts of the Project on European Sites

The proposed development is located outside the boundary of any European site; therefore, no direct effects will occur through land take or fragmentation of habitats.

Lough Ree SAC

The proposed site predominantly comprises agricultural grassland bound by hedgerows, treelines and small streams. No Annex I habitat was recorded within the site; the proposed site does not provide support to QI habitats of Lough Ree SAC.

The proposed site supports hydrological connectivity to Lough Ree SAC via 5 no. EPA mapped streams. Parcels 1, 2, 3, 4 and 5 of the solar farm development lands drain via 4 no. EPA mapped streams which flow into the Inny River c.4.2km downstream of the site. The Inny River flows into Lough Ree SAC 9.0km downstream of the site at its closest point.

Parcel 6 is drained by the Ledwithstown stream, which flows into the Bilberry River c.0.4km downstream. The Bilberry River flows into Lough Ree SAC a further 1.63km downstream of the proposed site (i.e. a total of 2.0km downstream).

Impacts resulting from civil engineering works near watercourses are primarily related to three aspects of potential water borne pollutant loss: suspended sediment, concrete and hydrocarbons.

Suspended Sediment

The principal source of potentially negative impact on aquatic receptors arises from the escape of excessive amounts of suspended sediment during the construction phase. Sediment export could occur as a result of earthworks and erosion of soil stockpiles and excavated areas relating to, e.g., access tracks, hardstand areas, trenching (ducting, cabling). Installation of any temporary or permanent drainage features (swales, check dams, stilling ponds as referenced in the CEMP) can also be sediment sources until they settle and revegetate. Sediment release may also be associated with machinery traversing lands during PV panel piling, mounting and installation, although this will be minimal if well managed.

Escaped solids can settle in watercourses, smothering plants and macroinvertebrates and causing fish to abandon the area at least in the short-term. At worst, such sedimentation could occur within watercourses at the proposed site and be transported to salmonid (trout) spawning beds of the Inny River, which could result in reduced recruitment of young fish from affected reaches as a result of egg and fry mortalities. Elevated concentrations of suspended solids and resulting turbidity within the water column can also potentially damage the gills, physiology and behaviour of fish (e.g., respiration, migration) and/or benthic macroinvertebrates (e.g., respiration, drift responses). Similar to salmonids, lampreys also depend on clean gravels for spawning. Lamprey nursery areas are less likely to be significantly adversely affected by small amounts of instream sedimentation, since juveniles (ammocoetes) inhabit areas of silt deposition during their nursery stage.

Both the streams within the proposed site and the Inny River and Bilberry River downstream are at risk if sediment loss was not controlled during the proposed development construction phase.

Potential Suspended Sediment Loss

The solar farm soil stripping involves linear construction within green fields predominantly located on relatively flat to gently rolling land which is easier to manage in terms of run-off controls (check dams, silt fencing) than, for example, broad-scale excavations or field ploughing. Drainage features (swales, check dams) will be installed as part of the track construction to manage run-off as set out in the CEMP. Redistributed spoil can be managed at spreading areas or in berm creation in a focused way and quickly tamped / rolled and reseeded.

Parcels 1, 2, 3, 4 and 5 of the solar farm development lands drain via 4 no. EPA mapped streams which flow into the Inny River c.4.2km downstream of the site. This means that any escaped sediment could be transported into salmonid (trout) habitat of the Inny River downstream of the site. Parcel 6 is drained by the Ledwithstown stream, which flows into the Bilberry River c.0.4km downstream. Given the level of management proposed for the solar farm site and energy storage compound works and the future substation development, the risk of uncontrolled sediment loss is considered low. However, if appropriate construction strategy and environmental controls were not employed, there is potential for locally significant negative impacts (in the absence of mitigation) on salmonid (trout) habitat within the Inny River and Bilberry River. Applying the precautionary principle, it is assumed that there is also potential for the transport of sediment further downstream within Lough Ree SAC.

Cement

Relatively small amounts of liquid cement usage will be required during the solar farm construction phase, e.g., transformer plinths and battery energy storage system. Owing to its highly alkaline and corrosive nature, cement is potentially toxic to instream fauna and can cause fish and invertebrate kills downstream. Any concrete spills that did enter the watercourses in proximity to the solar farm development could result in locally moderate mortality of trout and lamprey species as well as aquatic invertebrates. Less likely potential sources of high alkalinity run-off are from uncured or recently cured concrete. There will be no on-site batching of concrete and no-washing out of concrete batch delivery trucks on-site. Adverse impact on the watercourses within the site and Inny River and Bilberry River during the solar farm construction phase as a result of concrete loss is considered very unlikely but if it did occur could result (in the absence of mitigation) in temporary, moderate negative impact on trout and lamprey habitat. All of these possibilities can and will be avoided using the best practice in construction site layout and construction management, with such measures incorporated into the construction methods set out in the CEMP. However, in the absence of mitigation, and applying the precautionary principle, it is assumed that there is potential for the transport of deleterious substances further downstream within Lough Ree SAC and SPA.

Hydrocarbons and Other Potentially Toxic Substances

Hydrocarbon spills and leakages can result in oil slicks and tainting of fish, or (if large enough) fish and invertebrate kills. They can be very detrimental to salmonid eggs and young fry in spawning areas. Hydrocarbons can reach drains and watercourses as a result of spills and leakage from poorly secured or non-bunded fuel storage areas; spills during re-fuelling; leaks from on-site vehicles, plant and equipment. Loss of hydrocarbons during the construction phase can be avoided and prevented by best practice in terms of site layout including fuel storage and best practice construction management. These issues have been addressed in the CEMP, including the necessary environmental control measures. In the absence of mitigation, there is also potential for contamination of surface water and groundwater in the event of a fire/thermal runaway event as a result of firewater run-off and firefighting substances at the Energy Storage Compound during the operational phase. Adverse impact on the streams draining the proposed site and the Inny River and Bilberry River downstream during the solar farm construction and operation phase as a result of hydrocarbon/toxic substance loss is considered unlikely. However, in the absence of mitigation, and applying the precautionary principle, it is assumed that there is potential for the transport of deleterious substances to the receiving watercourses and further downstream within Lough Ree SAC and SPA.

Watercourse Crossing Construction

Four stream crossings are required to facilitate access tracks and underground cabling. These watercourses will be crossed with a clear span bridge, which will also accommodate the proposed 33kV underground cables within the deck of the bridge. A precast reinforced concrete slab deck will be lifted into position onto new foundations constructed either side of the stream. No instream works are required, as such, potential impacts would be limited to minor adverse effects locally as a result of sedimentation and release of toxic substances (cement and hydrocarbons).

Underground Cabling

Underground cabling ducts will be laid across the site for the purposes of connecting the solar arrays, inverter / transformers and on-site medium voltage substation. The cabling will be trenched and contained within the footprint of the internal access tracks where possible. solar farm field parcels which do not directly adjoin each other will be connected by means of 33kV underground interconnector cabling in identified public roads (c.1,311 metres of cabling). The underground cabling route along public roads does not have any direct run-off routes to watercourses. Trenching, however, can give rise to potential for sediment export into road-side drains, which may eventually outfall to nearby streams. Only short lengths of trench will be open at any one time, with backfill and reinstatement occurring immediately. The limited source areas at any one time, separation distances involved and the mainly gently sloping topography are such that the potential for water-borne sediment to reach the Inny River and Bilberry River downstream of the site as a result of in-road cable trenching is low, with potential effects on aquatic receptors considered unlikely and not significant.

Review of the Conservation Objectives mapping for Lough Ree SAC indicates that there is no connectivity between the proposed site and the terrestrial QI habitats for this SAC, namely Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210], Active raised bogs [7110], Degraded raised bogs still capable of natural regeneration [7120], Limestone pavements [8240], Bog woodland [91D0] and Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, *Alnus incanae*, *Salix albae*) [91E0]. As such, no potential for likely significant effects on these QI habitats has been identified.

In summary, in the absence of mitigation measures and applying the precautionary principle, there is potential for likely significant effects on the following QI aquatic and semi-aquatic habitats and species for Lough Ree SAC:

- Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150]
- Alkaline fens [7230]
- *Lutra lutra* (Otter) [1355]

Lough Ree SPA

Lough Ree SPA is of special conservation interest for wintering wildfowl. The habitats present within the proposed site (agricultural grassland bound by hedgerows, treelines and small streams) are not suitable to provide sustained support for the water dependant SCI for this SPA (see Table 3-3). However, suitable field feeding habitat for Whooper Swan, and potentially Lapwing and Golden Plover is present within Parcel 4. No Whooper Swan, Lapwing or Golden Plover were observed within Parcel 4 and its environs (i.e. within 500m) during the surveys conducted in winter 2022/ 2023. No flights were recorded over Parcel 4 or within 500m of the site. No other species of conservation significance were observed in Parcel 4 or in fields within 500m.

Avifaunal species recorded at the proposed site during the wintering bird surveys undertaken on 27th January 2024 and 23rd February 2024 reflected the habitats present. The fields of agriculturally improved pasture supported relatively low levels of avifaunal diversity, with species recorded during the site walkover restricted to corvids and a small group of field feeding Great Black-backed Gulls; flocks of Redwing were also recorded in Parcels 1, 3, 4 and 6.

The treeline and hedgerow habitats at the field boundaries supported a higher diversity of bird species. Passerines such as Robin, Wren, Great Tit, Blue Tit Long-tailed Tit and House Sparrow were recorded, in addition to Song Thrush, Mistle Thrush and several Blackbird. Of the bird species recorded at the proposed development site, Redwing is on the Red List (High Conservation Concern); Goldcrest and House Sparrow are on the Amber List (Moderate Conservation Concern); the remaining species are on the Green List (Least Conservation Concern). No wetland bird species or SCI species for Lough Ree SPA were recorded within the proposed site.

In consideration of these factors, it is considered that the proposed site does not provide a supporting role for SCI species for Lough Ree SPA. Any disturbance/ displacement or ex-situ effects on the SCI of Lough Ree SPA as a result of the proposed development are extremely unlikely.

As noted above, the proposed site supports hydrological connectivity to Lough Ree via 5 no. EPA mapped streams. Lough Ree SPA is a total is c.9.0km downstream of the proposed site via streams draining Parcel numbers 1-5 and is c.2.0km downstream of Parcel 6. As detailed above, in the absence of mitigation, and applying the precautionary principle, there is potential for transport of deleterious substances including sediment, concrete and hydrocarbons from the proposed site to Lough Ree during the construction phase. The potential for likely significant effects on SCI species as a result of degradation of water quality and, in turn, the availability of prey species cannot be excluded.

No potential for significant effects on European sites as a result of degradation of water quality during the operational phase has been identified.

4.2.1 In-combination Impacts with Other Plans and Projects in the Area

As part of the screening for AA, in addition to the proposed works, other relevant projects and plans in the region must also be considered at this stage and assessed in the context of potential for in-combination effects. These plans and projects are outlined and assessed in Table 4-1 below.

Table 4-1: Other Projects and Plans that could result in potential cumulative impacts

Plan / Programme/Policy	Key Objectives/Policies/Proposals	Potential for In-combination Effects and Mitigation
Longford County Development Plan 2021-2027	CPO 5.157: Promote the development of solar energy infrastructure in the county, in particular for on-site energy use, including solar PV, solar thermal and seasonal storage technologies. Such projects will be considered subject to environmental safeguards and the protection of natural or built heritage features, biodiversity, views and prospects, and other relevant planning considerations. CPO 12.1: Protect, conserve and enhance to the County's natural heritage and biodiversity. This includes wildlife (flora and fauna), habitats, landscapes and/or landscape features of importance to wildlife, or which play a key role in the conservation and management of natural resources. CPO 12.5: Protect and conserve the conservation value of Special Areas of Conservation, candidate Special Areas of Conservation, Special Protection Areas, Natural Heritage Areas and proposed Natural Heritage Areas and any other sites that may be	Policies and objectives of the Longford County Development Plan 2021-2027 ensure that local planning applications comply with proper planning and sustainability and with the requirements of relevant EU Directives and environmental considerations, there is no potential for adverse in-combination effects on European Sites.

	proposed for designation during the lifetime of this Plan. CPO 12.6: Ensure that no plans, programmes, etc. or projects giving rise to significant cumulative, direct, indirect or secondary impacts on European Sites arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall be permitted on the basis of this Plan (either individually or in combination with other plans, programmes, etc. or projects). Except as provided for in Article 6(4) of the Habitats Directive; in so far as there must be – (a) no alternative solution available, (b) imperative reasons of an overriding public interest for the project to proceed; and (c) Adequate compensatory measures in place. CPO 12.7: Ensure that any plan or project that could have a significant adverse impact (either by themselves or in combination with other plans and projects) upon the conservation objectives of any Natura 2000 Site or would result in the deterioration of any habitat or any species reliant on that habitat will not be permitted. Except as provided for in Article 6(4) of the Habitats Directive; in so far as there must be – (a) no alternative solution available (b) imperative reasons of an overriding public interest for the project to proceed; and (c) Adequate compensatory measures in place. CPO 12.9: Ensure an Appropriate Assessment is carried out in respect of any plan or project not directly connected with or necessary for the management of the site but likely to have a significant effect on the integrity of a European Site(s), either individually or in-combination with other plans or projects, in view of the site's conservation objectives to comply with the Habitats Directive.	
Water Management Action Plan 2024	The Water Action Plan includes targeted measures for all water bodies, with the objective of either protecting water bodies at good or high status or restoring water bodies to at least good status. Where further specific measures are needed in addition to those set in this plan, integrated catchment planning approaches will be used to identify and decide on further specific measures for each water body. This will be reported in 46 Catchment Management Work Plans. These will be used to locate measures within each catchment.	The implementation and compliance with key environmental policies, issues and objectives of this management plan will result in positive in-combination effects to European sites. The implementation of this plan will have a positive impact for the biodiversity. It will not contribute to in-combination effects with the proposed development.

	The list of water bodies and their associated status, significant pressures/issues and targeted measures, which are to be included in the Catchment Management Work Plans, will include targets for the third-cycle, along with Key Performance Indicators to monitor progress and outcomes.	
WWTP discharges	Ballymahon.	Discharges from municipal WWTPs are required to meet water quality standards. Irish Water Capital Investment Plan 2020-2024 proposes to upgrade water treatment services countrywide. The long-term cumulative impact is predicted to be negligible.
IPPC Programme	Kepak Longford Unlimited Company (P1084), located c.4.2km south-east of the proposed site.	Discharges from these facilities are governed by strict limits to ensure compliance with quality standards. The long-term in-combination impact is predicted to be negligible.
Holiday Lodge Site (LCC Planning Ref: 24/5).	The proposed construction of a holiday lodge site consisting of 9 no. 3 bed lodges, 4 no. 2 bed lodges, a manager's office, plant room and laundry, site entrance, internal road & footpaths, lighting, play area, boundary fence, wastewater treatment system, percolation area & all ancillary site works.	The AA screening completed for the development concluded that no impacts were identified. There will be no discharge from the proposed development site directly, indirectly or cumulatively to the lake environment of Lough Ree. The proposed development will not cause additional nutrient enrichment of the lake water of Lough Ree. No potential for significant adverse in combination effects on European Sites has been identified.
Showroom Building (ABP Ref: 317761).		The planners report for the development notes that <i>"Having regard to the nature and scale of the proposed development, I am satisfied that no appropriate assessment issues arise and it is not considered that the proposed development would be likely to have a significant effect individually or in combination with other plans or projects on a European site"</i> . No potential for significant adverse in combination effects on European Sites has been identified.
Industrial Commercial Warehouse Unit (LCC Planning Ref: 23/60195).	The proposed construction of an industrial/commercial/warehousing unit which was previously granted full planning permission under planning reference number PL04/1253 to the rear of	The AA screening completed for the development concluded that: <i>"Having regard to the proximity of the nearest Natura 2000 site and given the nature of the proposed</i>

	existing car showroom & garage, connection to existing services and all ancillary site works.	<i>development, it is not envisaged that there will be a significant impact on the Natura 2000 network”.</i> No potential for significant adverse in combination effects on European Sites has been identified.
Lodges (ABP Ref: 314886)		The Natura Impact Statement identified the potential for impacts on Lough Ree SAC and SPA as a result of degradation of water quality. Mitigation measures are set out in the NIS. With the application of the proposed measures, it was concluded that the proposed development, individually or in combination with other plans or projects would not adversely affect the integrity of the European site No, 000440 Lough Ree SAC or European site No 004064 Lough Ree SPA or any other European site, in view of the sites’ Conservation Objectives. No potential for significant adverse in combination effects on European Sites has been identified.
Integrated Constructed Wetland Planning (LCC Ref: 22/225)	An integrated constructed wetland (ICW) over a total area of 5.58 ha located within the existing LRP ADF site, including formation of wetland cells, associated works and access roads using onsite soils. The development will include landscaping both within the wetland cells and surrounding area. The purpose of the ICW is for the management and treatment of leachate arising from the ADF, which is planned as part of their closure, restoration and aftercare management plan. Any discharge waters following treatment through the ICW will flow to two open water cells for containment. LRP station and the ADF are licenced by the Environmental Protection Agency under an Industrial Emissions (IE) licence (Ref. P0610-03). A Natura impact statement (NIS) has been prepared for the purposes of this project.	The AA screening report for the development found that there is potential for significant adverse effects on otter, a QI species for Lough Ree SAC as a result of a reduction in food availability. Mitigation measures are set out in the NIS. With the application of the proposed measures, it was concluded that the proposed construction of an ICW will not, either alone or in combination with other plans or projects, adversely impact the integrity of the Natura 2000 network. No potential for significant adverse in combination effects on European Sites has been identified.
Agricultural infill of Quarry (LCC Ref: 20/303)	The filling of lands with clean, inert soil and stone for the purposes of the restoration of a 10.4 hectare quarry to agricultural use; and all associated ancillary facilities at Tennalough, Carrickboy, Co Longford. This development also requires a Waste Facility Permit and an application will be made to Longford County Council for a Waste Facility Permit.	The AA screening completed for the development concluded that: “Having regard to the location, nature and scale of the proposed development, it is considered that there is no potential for significant effects either from the proposed development on its own or on combination with other plans and projects.

		No potential for significant adverse in combination effects on European Sites has been identified.
Construction of 37 dwelling houses (ABP Ref: 307880)		No potential for significant effects on European sites was identified. No potential for significant adverse in combination effects on European Sites has been identified.
ABP Ref: 322485	22 no. Wind Turbines & 1 no. 110kV Electrical Substation & All Associated Works.	The AA screening identified potential for likely significant effects on Lough Ree SAC and Lough Ree SPA as a result of contaminants, dust and habitat degradation during construction. The NIS concluded that, following a thorough examination of the predicted effects, the implementation of mitigation, and with regard to the site-specific conservation objectives, it is concluded that the proposed development will not result in adverse effects on the integrity of any European site, either alone or in combination with other plans or projects.. No potential for significant adverse in combination effects on European Sites has been identified.
ABP Ref: 322204	Application under s.177E of the Planning and Development Act 2000 (as amended) for Substitute Consent relating to peat extraction on lands within Derrayadd, Derryaroge, and Bannow Bogs, Co. Longford.	The AA screening report found that, after a thorough examination, evaluation, and analysis, conducted in accordance with the best scientific knowledge and the conservation objectives of the European Sites, it has been determined, based on objective information, that the peat extraction activities and all associated works at the Application Site during the Extraction Phase have not adversely affect the integrity of any European Site. This conclusion holds true both in isolation and in combination with other plans or projects. No potential for significant adverse in combination effects on European Sites has been identified.
ABP Ref: 302597	Permission for the development at this site, the existing Cloon to Lanesboro 110 kV Overhead Line which is approximately 65 kilometres long.	The Inspectors Report found that having regard to the nature of the receiving environment, the type of

		works proposed, their highly localised nature and the measures proposed to manage the works, the proposed development either alone, or, in combination with other plans or projects would not be likely to have significant impacts on any European site in view of the sites conservation objectives. Stage 2 Appropriate Assessment with respect to these two sites is not required. No potential for significant adverse in combination effects on European Sites has been identified.
Solar Farm (LCC Ref: 501476)	10 year permission for a solar farm and energy storage compound with a total area of circa 111.1ha. This development is covered by the provisions of the Renewable Energy Directive III (directive(EU) 2023/2024). A Natura Impact Statement (NIS) has been submitted to the Planning Authority with the application.	The AA screening report identified potential for likely significant effects on Lough Ree SAC and Lough Ree SPA, primarily as a result of degradation of water quality. The NIS concluded that Where the potential for any adverse effect on any Natura 2000 site has been identified, the pathway by which any such effect may occur has been robustly mitigated, through the use of avoidance, appropriate design and mitigation measures as set out within this report and its appendices. The measures ensure that the construction, operation and decommissioning of the Proposed Development will not adversely affect the integrity of Natura 2000 sites. Therefore, it can be objectively concluded that the Proposed Development, individually or in combination with other plans or projects, will not adversely affect the integrity of any Natura 2000 site. No potential for significant adverse in combination effects on European Sites has been identified.
Foigha Solar Farm Sub-station and Grid Connection	The solar farm and energy storage compound facility will connect to the transmission network via a 110 kV substation 'loop-in / loop-out' grid connection as detailed below. The grid connection for the solar farm will be the subject of a future planning consenting process. The solar farm will connect to the Lanesboro / Mullingar 110kV overhead line by means of new 110kV substation. This includes an underground cable route of c. 292m. The substation will include a	The grid connection route will not cross any watercourses. However, in the absence of mitigation, there is potential for sediment laden surface water to enter the stream on the eastern boundary of Parcel 4 via overland flow during construction. Applying the precautionary principle, there is potential for in-combination impacts between the future substation development and the

	‘loop-in / loop-out’ underground 110kV cable grid connection which will connect into the existing Lanesboro / Mullingar 110kV overhead lines via 2 no. new Interface Towers. This connection method will constitute a new node of the transmission network, connecting the proposed substation and associated solar farm generation to the National Grid.	proposed Foigha Solar Farm on water quality within the unnamed stream on the eastern boundary of Parcel 4 and, potentially Lough Ree SAC and SPA further downstream. There is no potential for significant adverse cumulative or in-combination impacts with the proposed development.
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4.2.1.1 In-combination Impact Assessment Conclusion

An unnamed stream on the eastern boundary of Parcel 4 is located downgradient of the proposed future substation development; Lough Ree SAC is located c.9.3km downstream of this stream at its location in the vicinity of the proposed substation. The proposed Foigha Solar Farm also supports hydrological connectivity to Lough Ree SAC and Lough Ree SPA. In the absence of mitigation, and applying the precautionary principle, the potential for likely significant in-combination effects on aquatic and semi-aquatic QI species and habitats for Lough Ree SAC and the SCI species for Lough Ree SPA as a result of degradation in water quality during the construction phase cannot be excluded.

4.3 Screening Assessment

Table 4-2 identifies the potential direct, indirect and secondary impacts of the proposed project on European Sites within a 15 km radius.

Table 4-2: Potential Significant Effects on European Sites from the Proposed Solar Farm Development

Site Name and Code	Direct Impacts	Indirect / Secondary Impacts	Resource Requirements	Emissions (Disposal to land, Water or Air)	Excavation Requirements
Lough Ree SAC (000440)	No impact on QI	Potential water quality degradation during the construction phase, which may have a significant effect on aquatic/semi aquatic QI of Lough Ree SAC.	No impact on QI	Potential water quality degradation during the construction phase.	No impact on QI
Ballymore Fen SAC (002313)	No impact on QI	No impact on QI	No impact on QI	No impact on QI	No impact on QI
Mount Jessop Bog SAC (002202)	No impact on QI	No impact on QI	No impact on QI	No impact on QI	No impact on QI
Lough Forbes Complex SAC (001818)	No impact on QI	No impact on QI	No impact on QI	No impact on QI	No impact on QI
Fortwilliam Turlough SAC (000448)	No impact on QI	No impact on QI	No impact on QI	No impact on QI	No impact on QI

Brown Bog SAC (002346)	No impact on QI	No impact on QI	No impact on QI	No impact on QI	No impact on QI
Lough Ree SPA (004064)	No impact on QI	Potential water quality degradation during the construction phase, which may in turn have a significant effect on foraging resources for SCI of Lough Ree SPA.	No impact on QI	Potential water quality degradation during the construction phase.	No impact on QI
Ballykenny-Fisherstown Bog SPA (004101)	No impact on QI	No impact on QI	No impact on QI	No impact on QI	No impact on QI

4.4 Likely Changes to the European Site(s)

The likely changes that could arise from the proposed Foigha Solar Farm, Co. Longford have been examined in the context of a number of factors that could have a significant effect on the relevant European Sites (Table 4-3)

Table 4-3: Likely Changes to European Sites

Site Name and Code	Reduction of Habitat Area	Disturbance to Key Species	Habitat or Species fragmentation	Reduction in Species Density	Changes in Key Indicators of Conservation Value (Water Quality, etc.)	Climate Change
Lough Ree SAC (000440)	None	None	None	None	Potential reduction in water quality	None
Ballymore Fen SAC (002313)	None	None	None	None	None	None
Mount Jessop Bog SAC (002202)	None	None	None	None	None	None
Lough Forbes Complex SAC (001818)	None	None	None	None	None	None
Fortwilliam Turlough SAC (000448)	None	None	None	None	None	None
Brown Bog SAC (002346)	None	None	None	None	None	None
Lough Ree SPA (004064)	None	None	None	None	Potential reduction in water quality	None

Ballykenny-Fisherstown Bog SPA (004101)	None	None	None	None	None	None
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4.4.1 Elements of the Project where the Impacts are Likely to be Significant

There is potential for the proposed development to result in a reduction in water quality within Lough Ree. The potential for likely significant effects on the aquatic QI habitats *Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation* [3150] and *Alkaline fens* [7230] and the semi-aquatic QI species *Lutra lutra (Otter)* [1355] for the Lower River Shannon SAC cannot be ruled out. Applying the precautionary principle, there is also potential for degradation of water quality within Lough Ree to result in likely significant effects on SCI species for Lough Ree SPA as a result of a reduction in available prey species.

5 Conclusion

This AA screening report has been prepared to assess whether the proposed development, individually or in-combination with other plans or projects, and in view of best scientific knowledge, is likely to have a significant effect on any European site(s).

The screening exercise was completed in compliance with the relevant European Commission guidance, national guidance and case law. The potential impacts of the proposed development have been considered in the context of the European sites potentially affected, their qualifying interests or special conservation interests, and their conservation objectives.

Through an assessment of the source-pathway-receptor model, which considered the ZoI of effects from the proposed development and the potential in-combination effects with other plans or projects, the following findings were reported:

- In the absence of mitigation measures to control surface water pollution during construction of the proposed development, the potential for likely significant effects to the QI of Lough Ree SAC and Lough Ree SPA cannot be excluded.

In the absence of mitigation, and applying the precautionary principle, the potential for likely significant effects on the QI habitats and species *Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation* [3150], *Alkaline fens* [7230] and *Lutra lutra (Otter)* [1355] for Lough Ree SAC and SCI species for Lough Ree SPA as a result of degradation of water quality cannot be excluded. Therefore, a Stage 2 Appropriate Assessment is considered necessary for Lough Ree SAC and Lough Ree SPA.

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Appendix A Whooper Swan Survey

Appendix A Whooper Swan Survey

Whooper Swan Survey

Foigha

Winter 2022-23

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1. Introduction

1.1 Overview

- 1.1.1 The author previously carried out an Ecological Constraints Assessment (Stinson 2023) for the site of a possible solar farm, near Foigha, Co. Longford. That assessment identified the potential for wintering Whooper Swans in one of the fields on the site (field identified as LD18855F in the site plan).
- 1.1.2 Two nearby designated sites are directly relevant to the development. The first is Lough Ree, 2.2km to the east of the site. Lough Ree is a Special Protection Area (site code 004064), for species including the Whooper Swan. Of particular relevance is Whooper Swan, and fields at the site are potentially suitable for the species. Other wildfowl species designated at the SPA could potentially occur at the Royal Canal which is close to the site.
- 1.1.3 Lough Ree is also designated for Lapwing *Vanellus vanellus* and Golden Plover *Pluvialis apricaria*, which could use the target fields in the winter.
- 1.1.4 The Royal Canal is designated as a Proposed Natural Heritage Area. Proposed NHAs (pNHAs), were published on a non-statutory basis in 1995, but have not since been statutorily proposed or designated. These sites are recognised as of significance for wildlife and habitats. Designation will proceed on a phased basis over the coming years. Prior to statutory designation, pNHAs are subject to limited protection through recognition of the ecological value of pNHAs by Planning and Licencing Authorities. Under the Wildlife Amendment Act (2000) NHAs are legally protected from damage from the date they are formally proposed for designation.
- 1.1.5 The author was commissioned in November 2022, to carry out a wintering Whooper Swan survey at the target field (field LD18855F).

1.2 Scope

- 1.2.1 This document reports on the results of the survey at Foigha.

1.3 Statement of Authority

- 1.3.1 This report was prepared by Michael Stinson of Erne Environmental. Michael Stinson is an experienced ecological surveyor from Co. Fermanagh. Michael is a fully trained Bat Surveyor and has undertaken training with recognised national experts Echoes Ecology. He has carried out many ecology surveys for development such as Preliminary Bat Roost Assessments, bat roost surveys, breeding and wintering bird surveys, Badger Surveys, Preliminary Ecological Appraisals and NI

Biodiversity Checklists, at sites across Ireland. He has experience of undertaking vantage point surveys for single turbines and wind farms in across Ireland and Scotland.

2. Relevant policies, legislation and guidance

2.1 Policies and guidance

2.1.1 This document has been prepared with reference to the following policies and guidance, further references are given at the end of the report:

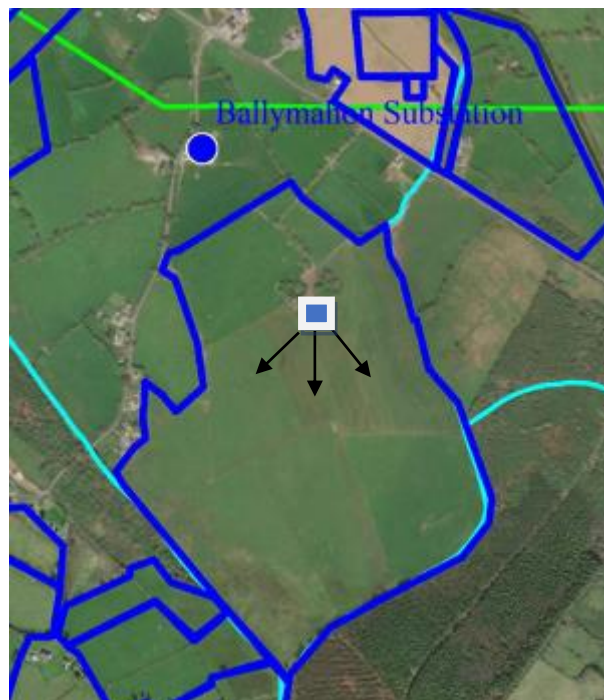
- EU Directive on the conservation of wild birds (79/409/EC) - Birds Directive.
- EU Directive on the Conservation of natural habitats and of wild fauna and flora (92/43/EEC - The Habitats Directive).
- List of Birds of Conservation Concern in Ireland 3, 2020-2026 (BOCCI).
- European Communities (Birds and Natural Habitats Regulations) 2011
- Planning, Heritage and Broadcasting (amendment) Act 2021 (No. 11 of 2021)
- Wildlife Act, 1976
- Wildlife (Amendment) Act, 2000

3. Methods

3.1 Field survey

- 3.1.1 The key purpose was to monitor Whooper Swan activity within the target field, and surrounds.
- 3.1.2 A vantage point position was used, approximate position 53.586915, -7.818260.
- 3.1.3 A total of 36 hours observation was undertaken between November 2022 and April 2023, spread across six days with a maximum of six hours observation on each day.
- 3.1.4 Surveys were undertaken at a variety of times during the day.
- 3.1.5 On each VP survey two watches were divided into periods of 3 hours (maximum), separated by at least 30 minutes between sessions.
- 3.1.6 The VP scanned an arc of up to 180 degrees (SNH, 2017) (larger arcs are difficult to scan efficiently).
- 3.1.7 Weather conditions were recorded for all the VP survey dates.
- 3.1.8 The main target species, and reason for survey, was foraging Whooper Swan.
- 3.1.9 The number of Whooper Swans encountered was recorded.
- 3.1.10 Any relevant wildfowl secondary target species were recorded.

Figure 1 Survey area and vantage point position, marked: 



4. The receiving environment – field survey results

4.1 Overview

4.1.1 This section details the results of the surveys. here were 36 hours of watches undertaken over the winter (2160 minutes, 129,600 seconds).

4.1.2 Details of the visits are given in Table 1.

Table 1 Visit details

Date	Start	End	Cloud (Octas)	Wind (Beaufort)	Precipitation	Visibility (Km)
22/11/22	0801	1101	8	W3	Showers	5+
22/11/22	1135	145	7	W3	Showers	5+
18/12/22	0910	1210	4	SW2	Nil	10+
18/12/22	1250	1550	8	S2	Nil	10+
15/01/23	0759	1059	7	SW2	Showers	10+
15/01/23	1137	1437	8	W2	Nil	10+
19/02/23	1005	1305	2	N2	Nil	10+
19/02/23	1354	1654	7	N1	Nil	10+
05/03/23	1017	1317	8	W2	Showers	5+
05/03/23	1407	1707	8	W3	Nil	10+
02/04/23	0715	1015	2	SW2	Nil	10+
02/04/23	1046	1146	3	Sw3	Nil	10+

4.2 Whooper Swan – activity on the site

4.2.1 Over the survey period there were no Whooper Swans observed in the target field.

4.2.2 Over the survey period there were no Whooper Swans observed in other fields within 500m.

4.2.3 Over the survey period there were no flights observed within 500m.

4.3 Whooper Swan – flights

4.3.1 Over the survey period there were no Whooper Swans observed in the target field.

4.3.2 Over the survey period there were no Whooper Swans observed in other fields within 500m.

5. Conclusions

5.1 Whooper Swan

- 5.1.1 Whooper Swan is a BOCCI Amber listed species (Gilbert *et al.* 2021). The site is 2.2km from Lough Ree Special Protection Area which is designated for ecological features which including the population of Whooper Swans.
- 5.1.2 No Whooper Swans were observed during the vantage point survey.
- 5.1.3 No impact is predicted for Whooper Swan, based on the results of this survey.

5.2 Other species

- 5.2.1 No other species of conservation significance were observed in the field or in fields within 500m.

6. References

Stinson M. 2023. Ecological Constraints Assessment: Foigha, Co. Longford.