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A SUSTAINABLE FUTURE

CAPPAKEEL SOLAR FARM 110KV SUBSTATION AND GRID CONNECTION

PLANNING AND ENVIRONMENTAL REPORT: Submitted with a Strategic Infrastructure Development (SID) to An Coimisiún Pleanála (ACP) under Section 182A of the Planning and Development Act 2000, (as amended).

Prepared for:

Perigus Energy Ireland Midco Limited

Perigus Energy

Date: **October 2026**

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REVISION CONTROL TABLE, CLIENT, KEYWORDS AND ABSTRACT

User is responsible for Checking the Revision Status of This Document

Rev. No.	Description of Changes	Prepared by:	Checked by:	Approved by:	Date:
1	Final	AR/KB	JH	JH	14/10/2026

Client: Perigus Energy Ireland Midco Limited

Keywords: Substation, Grid Connection, Solar, Planning Application, 182A SID Application.

Abstract: Fehily Timoney and Company is pleased to submit this Planning and Environmental Report which considers planning and environmental issues concerning the development of a 110kV Substation within the townland of Morett Co. Laois, and its grid connection to the national grid via a loop in/loop out connection to the Cushaling-Portlaoise 110kV Overhead line within the townland of Morett, and a tail fed connection to the Coolnabacky 110kV Substation within the townland of Coolnabacky, Co Laois. The Connection to the Coolnabacky 110kV substation will be via an underground tail fed connection traversing the townlands of Derrytrasna, Park Or Dunamase, Aghnahily, Dysart, Coolnacarrick, Heathlodge, Ballygormill North, Ballinlough, Killenny, Raheen, Money Upper, Lamberton Demesne, Greatheath, Cremorgan, Ballygormill South, Carrigeen, Greatheath, Hophall, Ballycarroll, Morett and Powelstown, Co. Laois.

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1. INTRODUCTION

1.1 Background

Perigus Energy Ireland Midco Limited (formerly known as Ørsted Onshore Ireland Midco Limited), has engaged Fehily Timoney and Company to prepare a Planning and Environmental Report for the purpose of a planning submission to An Coimisiún Pleanála (ACP) under Section 182A of the Planning and Development Act 2000, as amended (PDA), in respect of the development of a 110kV Substation within the townland of Morett Co. Laois, and its grid connection to the national grid via a loop in/loop out connection to the Cushaling-Portlaoise 110kV Overhead line within the townland of Morett, Co. Laois, and a tail fed connection to the Coolnabacky 110kV Substation within the townland of Coolnabacky, Co Laois. The Connection to the Coolnabacky 110kV substation will be via an underground tail fed connection traversing the townlands of Derrytrasna, Park Or Dunamase, Aghnahily, Dysart, Coolnacarrick, Heathlodge, Ballygormill North, Ballinlough, Killenny, Raheen, Money Upper, Lamberton Demesne, Greatheath, Cremorgan, Ballygormill South, Carrigeen, Greatheath, Hophall, Ballycarroll, Morett and Powelstown, Co. Laois, which will be primarily laid within the public road.

This proposed arrangement will provide a circuit between the Cushaling - Portlaoise 110kV line and the Coolnabacky 110kV Substation, so as to facilitate additional capacity in the electrical infrastructure in the region. The 110kV on-site substation and grid connection is to facilitate the connection to the national grid of an adjacent permitted ground mounted PV solar farm on c. 249ha. Consent for the solar farm was granted by Laois County Council on 18th September 2025, (Pl. Ref. 2560148), section 34 of the PDA, with consent for the solar farm granted by ACP on 17th February 2026 (Ref No.: PL-500061-LS).

The permitted Cappakeel Solar Farm is a separate development and does not form part of the Proposed Development. It is referred to in this report only where relevant to the need for the transmission infrastructure, its functional relationship with the proposed substation or the assessment of cumulative effects.

The overall development is comprised of two constituent parts with separate planning consenting procedures, which include:

1. The 110kV electrical substation and associated works within the townland of Morett Co. Laois, which will connect the permitted Cappakeel Solar Farm to the national grid via the adjacent Cushaling-Portlaoise 110kV overhead line within the site boundary, and connection to the Coolnabacky 110kV substation via an underground tail fed connection to provide a circuit between the Cushaling-Portlaoise 110kV line and the Coolnabacky 110kV Substation traversing the townlands of Derrytrasna, Park Or Dunamase, Aghnahily, Dysart, Coolnacarrick, Heathlodge, Ballygormill North, Ballinlough, Killenny, Raheen, Money Upper, Lamberton Demesne, Greatheath, Cremorgan, Ballygormill South, Carrigeen, Greatheath, Hophall, Ballycarroll, Morett and Powelstown, Co. Laois. Planning permission for this component is sought from An Coimisiún Pleanála under section 182A of the PDA.
2. The permitted energy generating part of the main Cappakeel Solar Farm which consists of solar panels and associated infrastructure, as noted earlier. This is identified as the ‘Solar Farm’. Included in the planning application is an underground Internal Network cable (Medium Voltage [MV], 33kV) between the West (A), Centre West (B), Centre (C), Centre East (D) and East (E) Parcel of the proposed solar farm to provide the electrical link between the solar farm and the proposed 110kV substation situated in the West Parcel. Consent for the solar farm was granted by Laois County Council on 18th September 2025, under Pl. Ref. 2560148, section 34 of the PDA, with consent for the solar farm granted by An Coimisiún Pleanála on 17th February 2026 (Ref No.: PL-500061-LS).

The permitted Cappakeel Solar Farm component of the overall development comprises 5 no. separate land parcels, with the proposed 110kV Substation and loop in/loop out connection to the Cushaling - Portlaoise 110kV Overhead line located within West Parcel (A) on the west of the permitted solar farm, within the townland of Morrett. The Cushaling - PortLaoise 110kV OH transmission line runs in a north/south axis c. 415m East of the proposed on-site 110kV substation.

This report relates to the 110kV substation and the 2 no. connections via the Over Head (OH) connection to the Cushaling-Portlaoise 110kV line, and the underground tail-fed connection to the Coolnabacky 110kV Substation within the public road. All component have been determined by ACP pursuant to consultations undertaken in accordance with Section 182A of the PDA to fall under the remit of ACP as Strategic Infrastructure Development (SID). Further information on this process is provided in this report at section 3.63, with a copy of ACP's SID Determination Letter's contained within Appendix 1: Direction *from ACP (ACP-323045-25)* of the accompanying Cover Letter.

This report sets out the key characteristics of the proposed overall project to include the solar farm and 110kV substation and grid connections, outlining the construction and operational stages of the permitted solar farm, before describing the potential impact of the development and mitigation measures where necessary. This copy of the Planning and Environmental report is submitted with the application for SID approval being made to ACP.

This report is broadly a replication of the P&E report submitted with the planning application to Laois County Council (under Pl. Ref. 2560148), for the solar farm component, which was granted approval by Laois County Council on 18th September 2025, under Pl. Ref. 2560148, and granted by ACP on 17th February 2026 (Ref No.: PL-500061-LS).

1.2 The Applicant

The applicant is Perigus Energy Ireland Midco Limited, company registration number 137889, hereafter referred to as "*Perigus Energy*". Perigus Energy Ireland Midco Limited was formerly named 'Ørsted Onshore Ireland Midco Limited'. Its name was changed to Perigus Energy Ireland Midco Limited on 14th May 2026, as confirmed by the *Certificate of Incorporation on Change* of Name, included within Appendix 2 of the accompanying Cover Letter.

This was a change of company name only. The legal entity and company registration number remain unchanged.

Perigus Energy is an independent renewable energy developer with a registered address at Lapp's Quay, Cork. The company's management has extensive experience throughout Ireland in responsible development of solar energy projects. Perigus Energy has an ambitious program for the development of solar PV in Ireland. Perigus Energy considers solar energy to be a viable renewable energy source that is complementary to other renewable energy sources and will contribute to achieving the national energy targets.

1.3 Site Location Details

The proposed development of a 110kV Substation and LI/LO connection is located within the townland of Morett Co. Laois. The proposed 110kV substation will provide a grid connection to the national grid for the permitted Cappakeel Solar Farm via a loop in/loop out connection to the Cushaling-Portlaoise 110kV Overhead line within the townland of Morett, and an underground tail fed connection, primarily laid within the public road, to the Coolnabacky 110kV Substation within the townland of Coolnabacky, Co Laois.

The tail-fed underground connection to the Coolnabacky 110kV substation will be primarily within the public road, and will connect via an underground connection traversing the townlands of Derrytrasna, Park Or Dunamase, Aghnahily, Dysart, Coolnacarrick, Heathlodge, Ballygormill North, Ballinlough, Killenny, Raheen, Money Upper, Lamberton Demesne, Greatheath, Cremorgan, Ballygormill South, Carrigeen, Greatheath, Hophall, Ballycarroll, Morett and Powelstown, Co. Laois.

This proposed arrangement will provide a circuit between the Cushaling-Portlaoise 110kV line and the Coolnabacky 110kV Substation, so as to facilitate additional capacity in the electrical infrastructure in the region. The 110kV on-site substation and grid connection is to facilitate the connection to the national grid of an adjacent permitted ground mounted PV solar farm on c. 249ha. Consent for the solar farm was granted by Laois County Council on 18th September 2025, (Pl. Ref. 2560148), section 34 of the PDA, with consent for the solar farm granted by ACP on 17th February 2026 (Ref No.: PL-500061-LS).

The permitted Cappakeel Solar Farm consists of 5 no. parcels, totalling c. 249 hectares. These land parcels are referred to as the West (A), Centre West (B), Centre (C), Centre East (D) and East Parcels (E). Consent for the solar farm was granted by Laois County Council on 18th September 2025, under Pl. Ref. 2560148, section 34 of the PDA. Consent for the solar farm is currently undergoing an appeal review with ACP (Ref No.: PL-500061-LS).

The permitted Solar Farm and proposed 110kV Substation site is located between the towns of Portlaoise to the south-west and the town of Monasterevin to the north, with the 'West' and 'Centre West' Parcel's being located within a linear kilometre of the M7 motorway (linking Limerick and Dublin) and R445 regional road (linking Portlaoise to Monasterevin).

The N80 national primary route connecting Portlaoise and Carlow is located c. 5.6km south of the 'West Parcel' (A) of the permitted solar farm, where the 110kV substation is to be located. Access to the 'West Parcel' (A) is available via an existing site entrance from the L7815 local road, which links with the R445 approximately 450m north-west of the existing access point and provides a proposed haul route. Alternative access points are available from the L78151 local road, which runs directly south of the site between Morett and Killone.

1.3.1 Land-Use and Typography

The proposed substation site comprises agricultural land in the townland of Morett. The surrounding area is rural and is predominantly occupied by pasture and arable land, dispersed dwellings and farmsteads. Mature hedgerows and treelines generally define the surrounding field boundaries and provide a degree of visual enclosure.

The substation site is generally level to gently sloping. Surface-water runoff generally drains towards the north-west and towards the Dunrally Stream, referred to as the Morett Stream in the project drainage information.

The existing Cushaling - Portlaoise 110kV overhead line passes approximately 415m east of the proposed substation. The proximity of this infrastructure and the availability of a connection to Coolnabacky 110kV Substation informed the location and design of the Proposed Development.

The underground connection will be installed principally within existing public roads. Land use adjoining the route is predominantly agricultural, with sections passing through or close to settlements, dispersed dwellings, demesne landscapes and the Zone of Archaeological Potential associated with the Rock of Dunamase.

1.3.2 Site Access

Permanent access to the proposed 110kV substation and LI/LO will be provided from the L-7815 by means of an existing access into the permitted solar farm via the proposed access road shown on the application drawings.

Access to the cable interface mast locations and their associated construction working areas will be provided from the proposed substation access road and the temporary construction access arrangements shown on the application drawings.

Construction access along the underground connection to Coolnabacky will generally be obtained from the existing public road network. Temporary traffic management measures and working areas will be required at joint bays, road crossings, the bridge, culverts and other constrained locations.

Access visibility and temporary traffic-management arrangements will be implemented in accordance with the application drawings and the requirements of Laois County Council.

All lands for the proposed 110kV substation and associated connections are contained within the functional area of Laois County Council. A site location plan is included below in Figure 1-1.

1.4 Operational Life

The Proposed Development comprises of permanent electricity infrastructure with no defined operational end date, and its continued operation is not tied to the operational lifetime of the separately permitted Cappakeel Solar Farm.

The infrastructure will be maintained, repaired, and, where necessary, have equipment replaced during its operational life, subject to the requirements of the relevant asset owners and electricity system operators.

No scheduled decommissioning is proposed under this application. Any future proposal for substantial alteration, removal or decommissioning would require consideration of the environmental effects of the specific works and the consents, approvals and environmental management measures applicable at that time.

Project Management Initials: Designer: GD Checked: AH Approved: GH

Map Series:
Discovery Series Mapping

Reference No.'s
2418-D & 2420-D

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LEGEND: -

- Proposed 110kV UGC Route
- Proposed Cappakeel 110kV Substation
- Area under the control of Applicant (Proposed Cappakeel Solar Farm Planning Ref Nr 2560148)
- Existing Coolnabacky 110kV Substation

*-DR-407
*-DR-406
*-DR-405
*-DR-404
*-DR-403
*-DR-402
*-DR-401

Proposed Cappakeel 110kV Substation

Existing Coolnabacky 110kV Substation

NOTES: -

- This drawing is to be used only for the purpose of the planning application and is subject to detailed design.
- All proposed routes shown are indicative only at this stage and are subject to further assessment.
- The property boundaries shown (while an accurate representation) are for information purposes only. Precise digital boundaries will be obtained from PRAI & mapped in advance of any formal Section 53 Wayleave or Deed A/Deed B being served on the landowner.

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PROJECT

Cappakeel Solar Farm 110kV UGC Grid Connection

CLIENT

Perigus Energy

CONSULTANTS

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P3	16.06.26	Issued for Planning
P2	20.03.26	Issued for Planning
P1	18.12.25	Issued for Planning

PROJECT NUMBER

300-100925

SHEET TITLE

Overall Site Location Map

SHEET NUMBER

300100925-DR-400

OVERALL SITE LOCATION MAP

Scale: 1:25000

ISO A1 594mm x 841mm

2. DESCRIPTION OF THE DEVELOPMENT

2.1 Development Description

The overall development is comprised of two constituent parts with separate planning consenting procedures, which include:

1. The 110kV electrical substation and associated works which will connect the solar farm to the national grid via the adjacent Cushaling-Portlaoise 110kV overhead line within the site boundary, and connection to the Coolnabacky 110kV substation via an underground tail fed connection to provide a circuit between the Cushaling-Portlaoise 110kV line and the Coolnabacky 110kV Substation. Planning permission for this component is sought from An Coimisiún Pleanála under section 182A of the PDA.
2. The permitted energy generating part of the main solar farm which consists of solar panels and associated infrastructure, as noted earlier. This is identified as the 'Solar Farm'. Included in the planning application is an underground Internal Network cable (Medium Voltage [MV], 33kV) between the West (A), Centre West (B), Centre (C), Centre East (D) and East (E) Parcel of the proposed solar farm to provide the electrical link between the solar farm and the proposed 110kV substation situated in the West Parcel. Consent for the solar farm was granted by Laois County Council on 18th September 2025, under Pl. Ref. 2560148, section 34 of the PDA, with consent for the solar farm granted by An Coimisiún Pleanála on 17th February 2026 (Ref No.: PL-500061-LS).

The permitted Cappakeel Solar Farm component of the overall development comprises 5 no. separate land parcels, with the proposed 110kV Substation and loop in/loop out connection to the Cushaling - Portlaoise 110kV Overhead line located within West Parcel (A), within the townland of Morrett. The Cushaling - PortLaoise 110kV OH transmission line runs in a north/south axis c. 415m east of the proposed on-site 110kV substation.

2.1.1 Planning Application Site Notice Description

The public notices for the Proposed Development state the following:

> *We, Perigus Energy Ireland Midco Limited, intend to apply for permission for development at this site in the townlands Derrytrasna, Park Or Dunamase, Aghnahily, Dysart, Coolnacarrick, Heathlodge, Ballygormill North, Ballinlough, Killenny, Raheen, Money Upper, Lamberton Demesne, Greatheath, Cremorgan, Ballygormill South, Carrigeen, Greatheath, Hophall, Ballycarroll, Morett and Powelstown, Co. Laois. The development will consist of a 110kV substation occupying 1.80 hectares, comprising; Transmission System Operator (TSO) compound with electrical equipment, transformer sub-compound, bus bars sub-compound, cable chairs and substation building of 437.5m² (25m x 18m), which will be enclosed by palisade fencing of 2.6m containing an area of 1.22 hectares; One 110kV transformer within the Independent Power Producer (IPP) compound, and the provision of an area for a second transformer if future connection is required; TSO expansion area enclosed by 2.6m high palisade fencing at 0.90 hectares; Operators compound (with switch room building, electrical equipment and rainwater collection system) enclosed by palisade fencing at 0.43 hectares. The proposed operators control building will have a gross floor area of 403.5m2; Perimeter protection area of post and rail fencing at approximately 1.40 hectares; 13 no. lightning masts to a height of 18m; 1 No. telecom pole to a height of 23m, Associated temporary construction compounds, laydown areas and crane hardstand areas, New entrance to the L-7815 local road from West Parcel (A) shared with the permitted solar farm, A minimum width of 4.5m and a maximum width of 10.9m access track corridor (1.183m long), Underground cable corridor of c. 348m in length and provision of 2 no. 21m high mast structures linking the proposed substation to the adjacent existing Cushaling-Portlaoise 110kV Overhead line, Associated construction works and drainage infrastructure, Underground Grid Connection (UGC) of a single 110kV circuit comprising: 6 no. ducts in an excavated trench to accommodate 3 no. power cables, 2 no. fibre communications cables and 1 no. earth continuity conductor (ECC), 20 no. joint bays, Cable to run predominantly within the public road for a distance of c. 13.7km along the L-7815, L-3813, L-7830, L-7832, R-426 public roads, comprising c. 12.5km within the public road, and c. 1.2km within an existing access road on private lands to Coolnabacky 110kV Substation. A ten-year planning permission is sought. This application is accompanied by a Natura Impact Statement (NIS). The proposed site boundary (red line) for the proposed 110kV substation and compound and underground tail fed connection, as indicated in the accompanying drawings, measures c. 22.70 hectares, and includes the elements shown above. The underground cable is intended to connect permitted Cappakeel Solar Farm, approved by Laois County Council (Ref No. 25/60148) and An Coimisiún Pleanála (Ref No. 500061), to the national grid via the adjacent Cushaling-Portlaoise 110kV overhead line within the site boundary, and connection to the Coolnabacky 110kV substation via an underground tail fed connection to provide a circuit between the Cushaling-Portlaoise 110kV line and the Coolnabacky 110kV Substation. Planning permission for this component is sought from An Coimisiún Pleanála under section 182A of the PDA.*

2.2 110kV Substation and Grid Connection

2.2.1 Strategic Infrastructure Development Description

In accordance with section 182A of the Planning and Development Act 2000 (as amended), Perigus Energy Ireland Midco Limited (Perigus Energy) gives notice of its intention to make an application to An Coimisiún Pleanála for a 10-year permission in relation to the following proposed development in respect of the development of a 110kV Substation within the townland of Morett Co. Laois, providing a grid connection to the national grid for the permitted Cappakeel Solar Farm via a loop in/loop out connection to the Cushaling-Portlaoise 110kV Overhead line within the townland of Morett, and a tail fed connection to the Coolnabacky 110kV Substation within the townland of Coolnabacky, Co Laois.

The proposed site boundary for the SID application will constitute the proposed construction of a 110 kV Substation and 'Loop In-Loop Out' (LILO) connection to the existing Cushaling-Port Laoise 110kV Overhead line, and an underground tail fed connection within the public road to the Coolnabacky 110kV Substation and associated works, which will include the following:

- A 110kV substation occupying 1.80 hectares, comprising:
  - Transmission System Operator (TSO) compound with electrical equipment, transformer sub-compound, bus bars sub-compound, cable chairs and substation building of 437.5m² (25m x 18m), which will be enclosed by palisade fencing 2.6 m high containing an area of 1.22 hectares;
  - One 110kV transformer within the Independent Power Producer (IPP) compound, and the provision of an area for a second transformer if future connection is required;
  - TSO expansion area enclosed by palisade fencing 2.6m high at 0.90 hectares;
  - Operators compound (with switch room building, electrical equipment and rainwater collection system) enclosed by palisade fencing at 0.43 hectares. The proposed operators control building will have a gross floor area of 403.5m2;
  - Perimeter protection area of post and rail fencing at approximately 1.40 hectares;
  - 13 no. lightning mast to a height of 18m;
  - 1 no. telecom pole to a height of 23m;
  - Associated temporary construction compounds, laydown areas and crane hardstand areas.
- New entrance to the L-7815 local road from West Parcel (A) shared with the permitted solar farm.
- A minimum width of 4.5m and a maximum width of 10.9m access track corridor (1.183m long).
- Underground cable corridor of c. 348m in length and provision of 2 no. 21m high mast structures linking the proposed substation to the adjacent existing Cushaling-Portlaoise 110kV Overhead line.
- Associated construction works and drainage infrastructure.
- Underground Grid Connection (UGC) of a single 110kV circuit comprising:
  - 6 no. ducts in an excavated trench to accommodate 3 no. power cables, 2 no. fibre communications cables and 1 no. earth continuity conductor (ECC),
  - 20 no. joint bays,
  - Cable to run predominantly within the public road for a distance of c. 13.7km along the L-7815, L-3813, L-7830, L-7832, R-426 public roads, comprising c. 12.5km within the public road, and c. 1.2km within an existing access road on private lands to Coolnabacky 110kV Substation.

The proposed site boundary (red line) for the proposed 110kV substation and compound and underground tail fed connection, as indicated in the accompanying drawings, measures c. 22.70 hectares, and includes the elements shown above.

2.3 110kV Substation Details

The proposed 110kV substation and loop in/loop out (LI/LO) connection to the Cushaling-Portlaoise 110kV Overhead line is located within West Parcel (A) of the permitted solar farm, situated within the townland of Morett. Consent is now being sought through the submission of an SID application to ABP, under section 182A of the PDA for this part of the solar farm project.

The proposed 110kV substation will provide a LI/LO grid connection for the now permitted Cappakeel Solar Farm to the national grid via the existing Cushaling - PortLaoise 110kV OH transmission line, which runs in a north/south axis c. 415m east of the proposed 110kV substation. The proposed substation includes transmission and customer-side infrastructure. Ownership, operational responsibility and maintenance obligations for the respective assets will be established through the applicable connection and asset-transfer arrangements. These arrangements do not alter the development footprint or environmental commitments presented in this application. The infrastructure is intended to remain in long-term operational use, as described in Section 1.4.

As the proposed 110kV substation will form part of the national grid transmission network and may be used by Eirgrid to support additional transmission network infrastructure, the development consent being sought as Strategic Infrastructure Development (SID) through Section 182A of the Planning and Development Act 2000 (as amended), is for permanent provision of the substation and its associated development components, with a final electric design determined by Eirgrid requirements.

Below in Figure 2.1, we provide the EirGrid 110kV Station Design Standard which shows what elements need to be constructed for the solar farm and those which are for future (in red). As per Eirgrid requirements, all substation doors will be steel construction for safety and security purposes.

2.3.1 Security Fence

Palisade fencing will be erected around the TSO and Operators compounds for security/protection reasons. It will be c. 2.6m high standard metal palisade fence. The position of the security fence allows for an electrical insulation area around the substation equipment for safety. Separate security gate access is provided for access to the main TSO Compound and the Operators Compound. A low post and rail fence of is proposed outside the palisade fence to define the substation property and encloses the perimeter protection area. An area of landscaping is proposed outside the fenced areas.

2.3.2 Substation Access Track

Appropriate access, in accordance with Transport Infrastructure Ireland (TII) standards, can be provided for via a new site entrance to the 'West Parcel' (A) of the permitted Cappakeel Solar Farm via an existing site entrance from the L7815 local road. Further links are available within the permitted solar farm with the R445 approximately 450m north-west of the existing access point and provides a proposed haul route. Alternative access points are available from the L78151 local road, which runs directly south of the overall site between Morett and Killone.

Hedgerow maintenance may be required periodically to ensure the desired sightlines are maintained, however, public access is considered safe and suitable for the proposed traffic movement, and no public safety or obstruction to traffic flow is anticipated.

2.3.3 Mast Structures and Cable Corridor

End masts will be located on the existing Cushaling - PortLaoise 110kV OH transmission line in order to loop the proposed substation into the electricity transmission system.

2.4 Grid Connection Details

The underground cable connection primarily within the public roadway between the proposed substation at Morett and Coolnabacky 110kV Substation will extend to c. 13.7 km. The underground cable consists of c. 12.5km of the connection will be installed within the public road network, and the remaining c. 1.2 km will be located within private lands, existing access tracks or the Coolnabacky 110kV Substation access road.

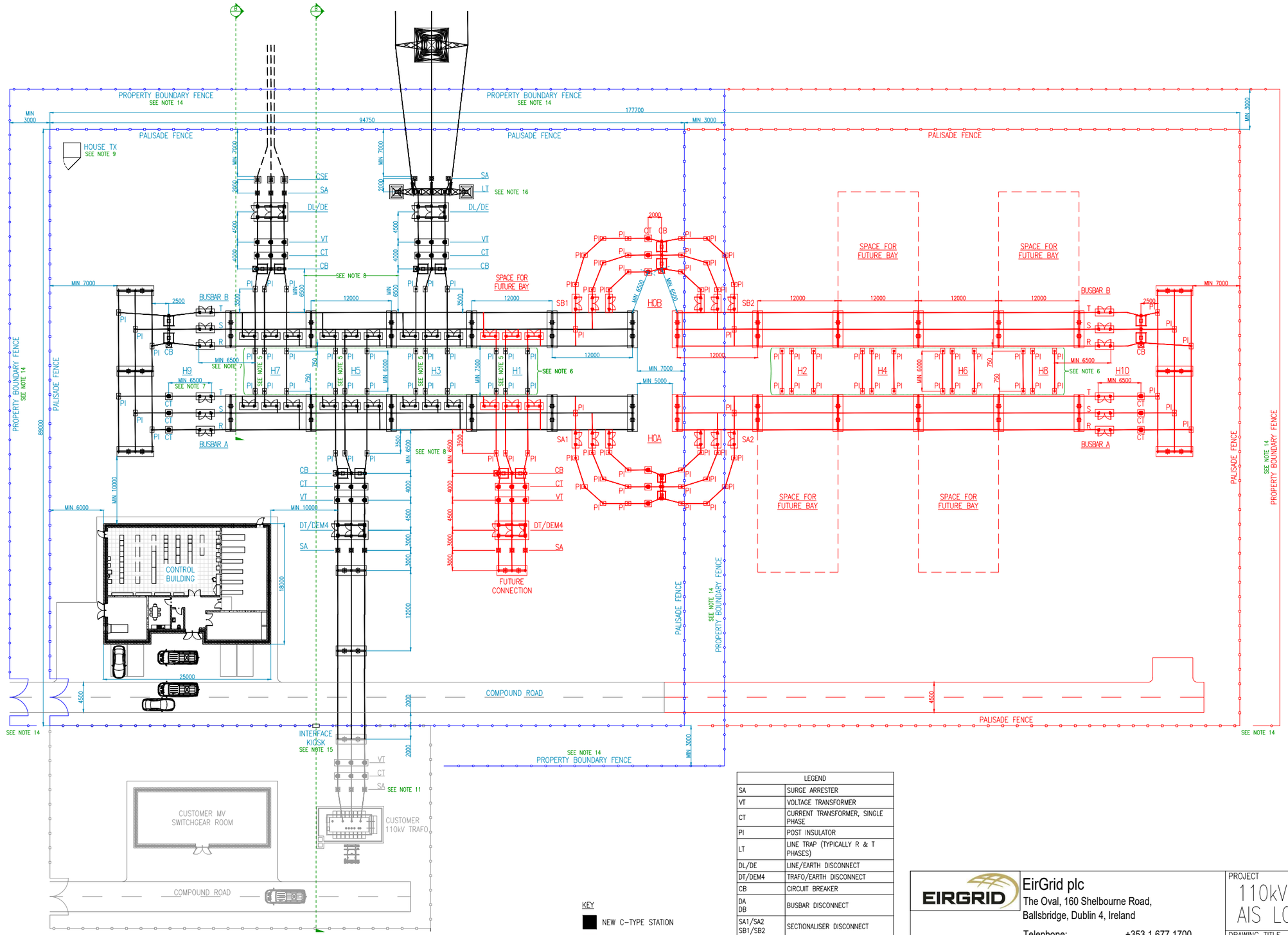
The route will extend from the proposed substation at Morett, along the private access track and sections of public road along the L-7815, L-3813, L-7830, L-6831, L-6772, L-7832, N80 and R-426 before entering the existing Coolnabacky 110kV Substation access road. The underground connection will traverse the townlands of Derrytrasna, Park Or Dunamase, Aghnahily, Dysart, Coolnacarrick, Heathlodge, Ballygormill North, Ballinlough, Killenny, Raheen, Money Upper, Lamberton Demesne, Greatheath, Cremorgan, Ballygormill South, Carrigeen, Greatheath, Hophall, Ballycarroll, Morett and Powelstown, Co. Laois, which will be primarily laid within the public road.

The standard cable trench will be c. 825mm wide and c. 1,315mm deep, subject to local variation at existing services, culverts, the bridge and other constraints. It will contain three 160mm power-cable ducts, two 125mm communications ducts and one 125mm earth-continuity-conductor duct. It will include 20 no. joint bays along the route, together with associated communications, with cable ducts to be installed between joint bays before the power and communications cables are pulled through the completed ducts.

The route affects two cattle grids, two culverts and one bridge. The crossing arrangements will be undertaken in accordance with the final coordinated Construction Methodology, CEMP, EcIA, NIS, Flood Risk Assessment and application drawings. Existing drainage features will be maintained where practicable and reinstated to their original profile and hydraulic capacity following construction.

Existing underground services will be identified and confirmed before excavation, with appropriate separation from water, gas, telecommunications and electricity infrastructure to be maintained in accordance with the requirements of the relevant utility providers.

Construction will progress in short sections, with open trench lengths limited to the minimum practicable extent. Excavated material suitable for reuse will be retained for reinstatement. Affected roads, verges, accesses, drainage features and agricultural lands will be reinstated in accordance with the submitted Construction Methodology and the requirements of Laois County Council.



NOTE 1:
THIS IS A CONCEPTUAL DESIGN FOR GUIDANCE ONLY. ALL DIMENSIONS AND REFERENCES GIVEN ARE INDICATIVE ONLY.
LAYOUT TO BE FURTHER OPTIMISED DURING DETAILED DESIGN PENDING SPECIFIC EQUIPMENT SUPPLIER AND SITE DETAILS.

NOTE 2:
RELOCATION OR ADDITIONAL POST INSULATORS MAY BE REQUIRED, SUBJECT TO DETAIL DESIGN. NOT SHOWN FOR CLARITY.

NOTE 3:
VEHICULAR ACCESS TO ALL HV PLANT SHALL BE PERMITTED WITHOUT THE NEED FOR UNNECESSARY PROXIMITY OUTAGES. CONSIDERATION OF LV CABLE TRENCH LAYOUTS AND TRAFFIC-BEARING TRENCH COVERS SHALL BE CONSIDERED DURING DETAILED DESIGN.

NOTE 4:
LIGHTNING MAST, LV TRENCH DUCT ROUTES, MARSHALLING/INTERFACE CABINETS AND LIGHTING FIXTURES SHALL BE CONSIDERED DURING DETAIL DESIGN.

NOTE 5 (AS ILLUSTRATED ON DRAWING):
TWO PHASES OF THE LOW LEVEL BAY CONDUCTORS ARE ARRANGED CLOSER TOGETHER TO AVOID UNNECESSARY PROXIMITY OUTAGES ON ADJACENT BAYS. TO BE REPEATED FOR ALL BAYS.

NOTE 6 (AS ILLUSTRATED ON DRAWING):
INDEPENDENT SUPPORTED SPAN ON LOW LEVEL BAY CONDUCTORS BETWEEN DA AND DB. CONNECTOR ON PI SHALL BE A "T" TYPE CONNECTOR RATHER THAN A PASS THROUGH CONNECTOR SUCH THAT IT SHALL BE CAPABLE OF CONNECTING TWO SECTIONS OF CONDUCTOR TOGETHER. PI AND SPAN TO BE INSTALLED ON ALL FUTURE BAYS IN THE C-TYPE (PHASE 1) STATION.

NOTE 7 (AS ILLUSTRATED ON DRAWING):
DISTANCE BETWEEN CT AND CB ON WING COUPLER TO BE A MINIMUM OF 6500mm FROM THE BUSBAR SIDE OF THE OPEN DISCONNECTOR. DISTANCE BETWEEN DISCONNECTOR AND ADJACENT LOW LEVEL BAY CONDUCTOR TO BE A MINIMUM OF 6500mm.

NOTE 8 (AS ILLUSTRATED ON DRAWING):
6500mm DISTANCE REQUIRED BETWEEN BUSBAR AND CB ON EACH BAY.

NOTE 9:
REFER TO THE AUXILIARY SUPPLY FUNCTIONAL SPECIFICATION XDS-GFS-008-001 FOR LV POWER SUPPLY REQUIREMENTS. THE SECONDARY MAINS LV SUPPLY IS TO BE PROVIDED FROM THE LOCAL MV DISTRIBUTION NETWORK. THIS CAN BE VIA A POLE MOUNTED TRANSFORMER LOCATED OUTSIDE THE PALISADE FENCE OR VIA A GROUND MOUNTED TRANSFORMER IN A KIOSK LOCATED INSIDE THE PALISADE FENCE. THE PRECISE LOCATION OF THE POLE MOUNTED TRANSFORMER AND THE GROUND MOUNTED TRANSFORMER, AS THE CASE MAY BE, ARE SITE SPECIFIC AND WILL BE BY AGREEMENT WITH EIRGRID.

NOTE 10:
THIS LAYOUT RELATES PRIMARILY TO NEW SUBSTATIONS AND SIGNIFICANT EXTENSIONS PROJECTS. OTHER DEVELOPMENT OF EXISTING SUBSTATIONS (BROWN-FIELD) SHALL MAKE ALL REASONABLE EFFORTS TO BRING THE ARRANGEMENT IN LINE WITH THIS STANDARD (INCREASED CLEARANCES, NEW WRAP-AROUND COUPLER, AND SECTIONALISER CONFIGURATION). THE DEVELOPMENT SHALL NOT WORSEN ANY EXISTING O&M CLEARANCES WHICH MAY NOT BE IN ACCORDANCE WITH THIS STANDARD LAYOUT.

NOTE 11:
REQUIREMENT & POSITION OF SA/CT/VT IN THE CUSTOMER COMPOUND IS TO BE DETERMINED BY THE CUSTOMER. IT IS THE RESPONSIBILITY OF THE CUSTOMER TO ENSURE THAT THEIR TRANSFORMER IS SUITABLY PROTECTED FROM OVER VOLTAGES.

NOTE 12:
MINIMUM ELECTRICAL CLEARANCES SHALL COMPLY AS OUTLINED IN EIRGRID GENERAL REQUIREMENTS SPECIFICATION XDS-GFS-00-001.

NOTE 13:
PHASE ROTATION ON INCOMING CIRCUITS IS INDICATIVE AND SHALL BE VERIFIED BASED ON PARTICULAR PROJECT REQUIREMENTS.

NOTE 14:
A DETAILED ARRANGEMENT SHALL CONSIDER PROXIMITY OF THE PROPERTY BOUNDARY FENCE TO THE PALISADE FENCE, ENSURING THAT IT CANNOT BE USED AS A CLIMBING AID TO SCALE THE PALISADE FENCE. ARRANGEMENT SHALL BE SITE SPECIFIC AND SHALL BE AGREED WITH EIRGRID DURING THE DETAILED DESIGN PHASE.

NOTE 15 (AS ILLUSTRATED ON DRAWING):
INTERFACE KIOSK LOCATION IS INDICATIVE. FINAL POSITION TO BE AGREED.

NOTE 16 (AS ILLUSTRATED ON DRAWING):
FOR OHL BAYS WHERE A LINE TRAP IS NOT REQUIRED, THE SA SHOULD BE LOCATED UNDER THE OHL GANTRY.

NOTE 17:
THE CUSTOMER SHOULD ALLOW SPACE FOR A FUTURE TRANSFORMER CONNECTION IN THE AREA ADJACENT TO THE CUSTOMER COMPOUND AND TRANSMISSION STATION.

KEY
- NEW C-TYPE STATION
- FUTURE RING STATION (SPACE ONLY)

LEGEND	
SA	SURGE ARRESTER
VT	VOLTAGE TRANSFORMER
CT	CURRENT TRANSFORMER, SINGLE PHASE
PI	POST INSULATOR
LT	LINE TRAP (TYPICALLY R & T PHASES)
DL/DE	LINE/EARTH DISCONNECT
DT/DEM4	TRAFO/EARTH DISCONNECT
CB	CIRCUIT BREAKER
DA DB	BUSBAR DISCONNECT
SA1/SA2 SB1/SB2	SECTIONALISER DISCONNECT
CSE	CABLE SEALING END

REV	DESC	DRAWN	CHECKED	APPROVED	DATE
08	CONTROL BUILDING RELOCATED CLOSE TO STATION ENTRANCE TO OPTIMISE SUB-STATION FOOTPRINT. WING COUPLER BAYS AMENDED TO INCLUDE SUPPLEMENTARY PIs NEXT TO THE CTs AND CBs. PIs ON FEEDER AND TRAFO BAYS REPOSITIONED CLOSER TO THE CB. SECTIONALISING BAY SA1 & SB1 NO LONGER REQUIRED IN PHASE 1 BUILD.	DA	AB	AG	04/02/2021
07	REQUIREMENT FOR INDEPENDENT SPAN (NOTE 6) UPDATED; INDICATIVE CABLE BAY ADDED; CUSTOMER BAY MODIFIED; ROAD ARRANGEMENT MODIFIED; BOUNDARY FENCE MODIFIED; CONTROL BUILDING UPDATED; SHEET 02 ADDED;	JD	KMcG	CF	22/08/2019

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PROJECT
110kV STATION DESIGN STANDARD AIS LOOP STATION

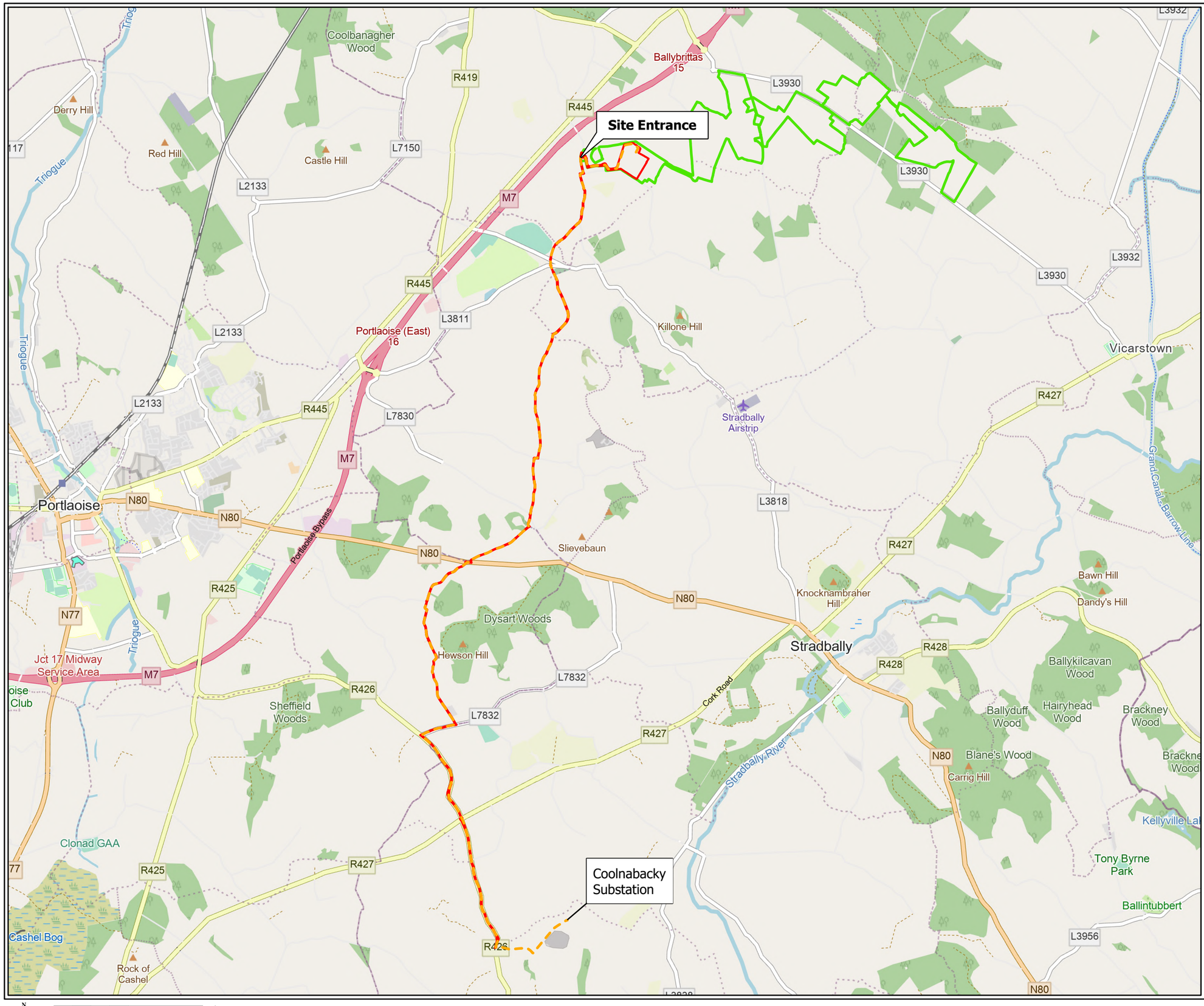
DRAWING TITLE
INITIAL C-TYPE 110kV STATION AND FUTURE ENHANCED RING STATION PLAN VIEW

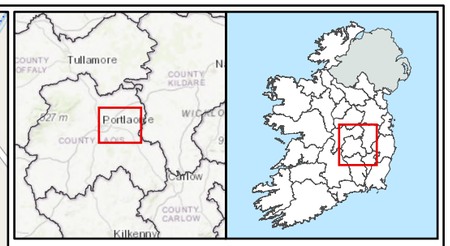
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DRAWING NUMBER	SHEET	REV
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Legend

- SID Boundary
- Permitted Solar Farm
- Portlaoise 110kV Substation
- Cushaling - PortLaoise 110kV OH line to the Portlaoise 110kV Substation
- Tail-Fed connection to the Coolnabacky 110kV Substation

TITLE:	Site Entrances		
PROJECT:	Cappakeel Solar Farm		
FIGURE NO:	2.2		
CLIENT:	Perigus Energy Ireland Midco Limited		
SCALE:	1:50,000	**REVISION:**	0
DATE:	10/07/2026	**PAGE SIZE:**	A3

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3. PLANNING POLICY

3.1 Introduction

This chapter considers the Proposed Development against the relevant European, national, regional and local planning and energy policies. The policy assessment relates principally to the proposed 110kV substation and LI/LO connection at Morett and the underground 110kV connection to Coolnabacky. These elements will provide permanent electricity transmission infrastructure and contribute to the capacity, security and resilience of the National Electricity Transmission Network.

The assessment considers the strategic need for electricity transmission infrastructure, the integration of renewable electricity generation, security of supply, climate and energy objectives, environmental protection and the proper planning and sustainable development of the area. The permitted Cappakeel Solar Farm is considered as it establishes part of the need for the transmission infrastructure, and is relevant to the cumulative assessment for the proposed development

Renewable energy development receives support from international, national, regional and local policy as well as from binding international agreements and European Community agreements. This is in an attempt to reduce reliance on fossil fuels, and to manage climate change on an international scale. From the Paris Agreement on an international scale, through to the Renewables Directive on a European scale, right down to the objectives of the Laois County Development Plan 2021-2027 (LCDP), it is evident that there is strong support at all policy levels for the development of renewable sources of energy. Renewable energy sources, such as solar energy will offer sustainable alternatives to our dependency on fossil fuels, thereby acting as a means of reducing harmful greenhouse emissions and enhancing opportunities to reduce our reliance on imported fuel sources. For these reasons, Irish and European policy supports the increased use of renewable energy.

Given the significant push to a low-carbon society by international, European and national strategies, Ireland enacted the '*Climate Action and Low Carbon Development Act 2015'*, which was superseded by the Climate Action and Low Carbon Development (Amendment) Act 2021. The Act created an Climate Change Advisory Council (CCAC) to prepare a national mitigation plan to help ensure compliance with existing obligations of the State under the law of the EU and international agreements, with the CCAC starting on December 12th 2024, that Ireland "*must phase out harmful fossil fuels by 2039*". The updated Act provides for the approval of plans by the government in relation to climate change.

The Renewable Energy Directive (RED III) has updated binding measures to accelerate renewable energy deployment across Ireland and the EU. These Regulations introduce accelerated timelines, a mandatory completeness check within 45 days, standardised checklists and updated public consultation requirements for renewable energy and related grid projects.

As confirmed by ACP through email confirmation on 7th April 2026, the Proposed Development of a 110kV Substation and Grid Connection is not a RED III compliant project.

This Chapter reviews the current planning policy and considers the need for the proposed development.

3.2 International Policy

3.2.1 Kyoto Protocol

The Kyoto Protocol was adopted at the third Conference of the Parties to the UNFCCC (COP 3) in Kyoto, Japan, on 11 December 1997. It entered into force on 16 February 2005, providing a framework for international action on climate change at a global level. Ireland committed to legally binding targets to reduce its greenhouse gas emissions. The protocol was extended until 2020 with the Doha Amendment in 2012.

3.2.2 Paris Agreement

The successor to the Kyoto Protocol, The Paris Agreement to the United Nations Framework Convention on Climate Change (UNFCCC), was adopted at the Conference of Parties (COP) 21 in 2015. It is a pivotal step in the global climate policy agreement. Parties to the Agreement collectively aim to:

- collectively hold the global average temperature increase to well below 2oC above pre-industrial levels while aiming to limit it to 1.5oC (the Paris Agreement Temperature Goal);
- increase the ability to adapt to the adverse impacts of climate change, foster climate resilience, and encourage the development of low greenhouse gas (GHG) emissions, all while not impacting on food production (the Global Goal on Adaptation);
- making finance flow consistent creating a pathway to lower GHG emission and climate-resilient development thus enabling transition and transformation to take place.

It aims to ensure that parties to the Agreement peak their GHG emissions as soon as possible and then, in the second half of the 21st century, find the balance between man-made emissions and removals of those emissions by carbon sinks. Carbon sinks are natural environments (forests, oceans, etc.) that have the ability to absorb and store carbon dioxide from the atmosphere.

The Paris Agreement entered into force in 2016, and currently, 195 parties have ratified it so far, with Ireland ratifying it in 2016.

Actions under the Paris Agreement are known as Nationally Determined Contributions (NDC's). These include commitments to reduce GHG emissions, enhance adaptation actions, finance and capacity building. Ireland's contribution comes under the European Union NDCs targets and is based on the European Union's 2030 emissions reduction targets and commits to at least 30% efforts to meet the target as government by the Emissions Trading System regulations, the Effort Sharing Regulation; and the Land Use, Land Use Change and Forestry Regulation.

3.3 European Policy

Climate change is an accepted fact, demonstrated by increasing temperature, changing weather patterns, glacial melting rates, and sea level rise. Monitoring has shown that the atmospheric concentration of greenhouse gases, including CO2, is affecting the Earth’s climate as a result of an enhanced greenhouse effect. Scientists internationally are of the view that the balance of evidence suggests there is a discernible human influence on the global climate as a result of the build-up of CO2 and other greenhouse gases in the atmosphere.

In response to international concerns, under the UN Framework Convention on Climate Change (UNFCCC), industrialised countries were to stabilise their greenhouse gas emissions at 1990 levels by the year 2000. The EU met this commitment. The Kyoto Protocol to the UNFCCC committed the 15 countries that were EU members at the time to reduce their collective emissions in the 2008-2012 period to 8% below 1990 levels.

The level of the EU 27's greenhouse gas emissions fell by 15 % from 5,590 Mt in 1990 to 4,720 Mt in 2010. The EU also offered to increase its emissions reduction to 30% by 2020, on condition that other major emitting countries in the developed and developing worlds commit to do their fair share under a future global climate agreement. Finally, in December 2015 at the Paris climate conference (COP21) the first ever universal legally binding global climate change deal was agreed. It is now globally recognised that the window for action on climate change is rapidly closing. Renewable energy sources will have to grow from 29% of global electricity in 2020 1 to 80% by 2050 if we are to limit global warming to below 2 degrees.

The European Commission's adoption of the 'Energy Roadmap 2050' looks beyond the 2020 targets and commits the EU to reducing greenhouse gas emissions to 80-95% below 1990 levels by 2050. This effectively means that Europe's energy production will have to be almost carbon-free by 2050. The document examines a number of scenarios that could reduce emissions while also ensuring member states retain their security of supply and competitiveness.

The 'high renewable energy sources decarbonisation scenario' would see renewable energy systems account for 75% of final energy consumption by 2050 and 97% of electricity consumption, indicative of the centrality of renewable energy to European energy policy going forward.

In the national context, the Environmental Protection Agency also highlights its concerns around climate change:

> *"What is distinctive about the current period of global warming, compared to previous cycles of climate change, is the extent and rate of change, which exceeds natural variation. The impacts of climate change present very serious global risks and threaten the basic components of life, including health, access to water, food production and the use of land. As the earth gets warmer the damage from climate change will accelerate."*

In its report on Climate Change, the EPA also indicates that:

> *"Whilst Ireland can be justifiably proud of our scientific and technological achievements, Ireland's greenhouse gas emissions per person are amongst the highest on the planet and the 2nd highest of the EU 27 countries. The reduction in greenhouse gas emissions in Ireland and other parts of the globe which is primarily due to the global financial crisis has shown that there is still a strong link between economic growth and emissions."*

The EPA foresees that Ireland will face a significant challenge in achieving its targets under the 2020 obligations should increases in agricultural and transport emissions occur.

At the time of the Paris Agreement, former Minister Kelly remarked that "As a nation, we must do everything in our power to curb our emissions" and enacted the aforementioned Climate Action & Low Carbon Development Act 2015. This Act establishes an Advisory Council that will advise on policy and seek to ensure that all national policies can contribute to lowering the nation's CO2 emissions.

[1] Renewables – Global Energy Review 2021 – Analysis - IEA

In June 2018, an agreement was made in Europe between negotiators for the Commission, the European Parliament and the Council with regard to increasing renewable energy use in Europe (Recast Renewable Energy Directive). This regulatory framework included a binding renewable energy target for the EU and an upward revision clause. In terms of renewable energy production, the agreement committed the EU to:

- A new, binding EU renewable energy target of 32% by 2030,
- A review clause by 2023 for an upward revision of the EU level target.
- Improved design and stability of renewable energy support schemes.

The revised Renewable Energy Directive 2023/2413/EU entered into force in October 2023. This Directive aims to raise the share of renewable energy in the EU's overall energy consumption to 42.5% by 2030 with an additional 2.5% indicative top-up to allow the target of 45% to be achieved. In addition, the EU is bringing into force a 'Fit for 55' package aimed at achieving a 55% reduction in greenhouse gas emissions by 2030, in line with Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality. Part of this package focuses on renewable energy and aims to increase the target of at least 32% of renewable energy sources in the overall energy mix to at least 40% by 2030.

In addition to this, the EU Commission published a Commission Recommendation imploring EU countries to speed up permit-granting procedures for renewable energy projects. The recommendation highlights the importance of renewables in reducing dependency on Russian gas, in light of the war in Ukraine. Projects involving the production of renewable energy are considered within the recommendation to be presumed as being in the overriding public interest and in the interest of public safety.

3.3.1 Planning and Development (Renewable Energy) Regulations 2025 (RED III – Irish Transposition (S.I. No. 402 of 2025))

The European Union (Planning and Development) (Renewable Energy) Regulations 2025, S.I. No. 274 of 2025, introduce procedural requirements for development falling within their scope. The Proposed Development is being submitted under section 182A pursuant to ACP determination reference ACP-323045-25. Its classification as strategic infrastructure does not, by itself, determine the applicability of the RED III procedural provisions.

Renewable Energy Directive (RED III) has updated binding measures to accelerate renewable energy deployment across Ireland and the EU. These Regulations introduce accelerated timelines, a mandatory completeness check within 45 days, standardised checklists and updated public consultation requirements for renewable energy and related grid projects.

The purpose of RED III is to ensure that renewable energy generation and associated infrastructure are delivered without undue delay, supporting the EU's legally binding climate and energy targets. Under the new framework, Strategic Infrastructure Development (SID) applications for electricity transmission projects, including substations at 110 kV, are prioritised and processed through streamlined consenting procedures.

As the development involves electricity transmission infrastructure, namely, a 110kV Substation and LI/LO grid connection, by determination letter dated 5th October 2026, under ACP Reference ACP-323045-25, ACP directed the application to be submitted directly to An Coimisiún Pleanala under section 182A(1) of the Act.

The Direction Letter from ACP is contained within Appendix 1 of the accompanying Cover Letter.

Accordingly, the application is being made directly to An Coimisiún Pleanála under section 182A of the Planning and Development Act 2000, as amended.

The proposed 110kV Substation and Grid Connection is designed to connect the permitted Cappakeel Solar Farm to the national grid, therefore, will function as enabling infrastructure to deliver renewable electricity into the national grid. However, as confirmed by ACP through email confirmation on 7th April 2026, the Proposed Development is not a RED III compliant project and is not subject to the Planning and Development (Renewable Energy) Regulations 2025.

3.3.2 RePower EU Plan

It is important to note the importance of the Cappakeel Solar Farm project for the rollout of renewable energy on the national grid. The REpowerEU Plan was published on 18th May 2022, the Plan sets out its response to the hardships and global energy market disruption caused by Russia's invasion of Ukraine and the need for the role of renewable energy to slow down climate change. To address this issue the REPowerEU Plan advocates the following key principles: 1. Energy savings, 2. Diversification of energy supplies, and 3. Accelerated roll-out of renewable energy to replace fossil fuels in homes, industry and power generation.

REPowerEU aims to bring online over 320 GW of solar photovoltaic newly installed by 2025, and almost 600 GW by 2030. These frontloaded additional capacities would displace the consumption of 9 bcm of natural gas annually by 2027.

REPowerEU specifically requires that Member States should speed up the green transition and spur massive investment in renewable energy.

3.3.3 The European Green Deal

Internationally, there is widespread acknowledgement of the imperative need for measures to alleviate the effects of climate change. The European Green Deal was launched in 2020 and represents a comprehensive array of policy initiatives to enable the EU to achieve climate neutrality by 2050. It introduces a revised goal of at least a 50% reduction in the EU's greenhouse gas emissions by 2030, potentially reaching 55% compared to 1990 levels, thereby superseding the current target of 40% reduction.

This signifies a significant escalation in ambition and will heavily rely on a fundamental transformation of the energy sector. Consequently, the EU must advocate for a substantial upsurge in the renewable energy sector in the upcoming decades. The Green Deal outlines specific objectives to curtail carbon emissions and improve practices related to forestry, agriculture, sustainable transportation, recycling, and renewable energy sources. Moreover, the action plan entails the potential implementation of carbon tariffs for nations that fail to restrain their greenhouse gas emissions.

3.3.4 European Policy Compliance

Projects like the proposed Cappakeel Solar Farm are not only indispensable for attaining renewable energy objectives and contributing to a reduction in the EU's greenhouse gas emissions but also for realising the broader objective of decarbonising the economy in Ireland.

The Renewable Energy Directive (RED III) has updated binding measures to accelerate renewable energy deployment across Ireland and the EU. These Regulations introduce accelerated timelines, a mandatory completeness check within 45 days, standardised checklists and updated public consultation requirements for renewable energy and related grid projects.

The Proposed Development will provide electricity infrastructure supporting the connection and transmission of renewable electricity. Its contribution to European energy and climate objectives is distinct from the determination of the procedural requirements applicable to this planning application. The application is being made under section 182A pursuant to ACP determination reference ACP-323045-25.

There have been two critical pieces of European legislation which have a significant impact on how the planning authority should have regard to National Climate and Energy Policy in the context of assessing this project pursuant to Section 34(2) of the Planning & Development Act 2000 (as amended).

Council Regulation 2022/2577[2] represents an obligation on EU Member States to accelerate renewable energy projects such as this one as a matter of urgency, the deployment of which is viewed as vitally important to the achievement of the EU's strategic objectives. As per Article 10 of the Regulations, the Regulation is "binding in its entirety and directly applicable in all Member States".

Significantly, the Regulation incorporates and makes clear that renewable energy projects enjoy a rebuttable presumption that they are of overriding public interest and serving public health and safety, in particular, for the purposes of the relevant Union environmental legislation, except where there is clear evidence that these projects have major adverse effects on the environment which cannot be mitigated or compensated for.

This Regulation is of critical importance to the planning authority's decision. It makes clear that the planning authority must take as its starting assumption that Cappakeel Solar Farm is of overriding public interest and contributes to public health and safety. Although the planning authority, retains discretion, the threshold for refusal of a grant of planning permission is, therefore extremely high.

Permission can only be refused if the planning authority is satisfied that there are significant counter-vailing factors that are sufficient to rebut the presumption.

The Fit for 55 package[3] included a Commission proposal to revise the Renewable Energy Directive (EU) 2018/2001. This proposal was further updated in May 2022 as Part of the REPower EU Plan, subsequently endorsed by EU ambassadors (COREPER) on September 27th, 2023[4], and came into force in November 2023.

RED II[5] set a binding overall Union target to reach a share of at least 32% of energy from renewable sources in the Union's gross final consumption of energy by 2030. The text that has been adopted by the European Parliament and endorsed by COREPER increases this target to 42.5 %. This target is now captured in RED III.

Additionally, the Directive obliges EU Member States to "collectively endeavour to increase the share of energy from renewable sources in the Union's gross final consumption of energy in 2030 to 45 %"[6]

> *The associated recital (Recital 5) included in the final agreed text provides useful context:*
> *"The REPowerEU Plan set out in the Commission communication of 18 May 2022 (the 'REPowerEU Plan') aims to make the Union independent from Russian fossil fuels well before 2030. That communication provides for the front-loading of wind and solar energy, increasing the average deployment rate of such energy as well as for additional renewable energy capacity by 2030 to accommodate the higher production of renewable fuels of non-biological origin….*

[2] https://eur-lex.europa.eu/eli/reg/2022/2577/oj
[3] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021PC0557
[4] https://www.europarl.europa.eu/doceo/document/TA-9-2023-0303_EN.html
[5] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018L2001
[6] Article 3, paragraph 1.

> *In that context, it is appropriate to increase the overall Union renewable energy target to 42,5% in order to significantly accelerate the current pace of deployment of renewable energy, thereby accelerating the phase-out of the Union's dependence on Russian fossil fuels by increasing the availability of affordable, secure and sustainable energy in the Union. Beyond that mandatory level, Member States should endeavour to collectively achieve an overall Union renewable energy target of 45 % in line with the REPowerEU Plan."*

This indicates a significant increase in the mandatory targets for renewable energy in the EU, aiming for a more sustainable and independent energy system, with signals of further increasing ambition through the 45% stretch target. This increased ambition for renewable energy at an EU level must be accommodated and addressed in member states Climate Action Plans.

The RED III directive also includes specific observations and measures related to the accelerated deployment of renewable energy, storage and grid infrastructure projects across EU member states these include:

- Specific areas, suitable for developing renewable energy projects should be designated as 'renewables acceleration areas.
- The process of designation of these renewables acceleration areas should be streamlined.
- Projects in renewables acceleration areas should benefit from streamlined administrative permit-granting procedures.
- The designation of renewables acceleration areas should not prevent the installation of renewable energy projects in all available areas.

The Directive came into force in November 2023 and Member States have a period of 18 months to implement it. While time for implementation has not expired, this chapter provides further clear policy support at European level, and it is appropriate the planning authority should apply and/or have regard to the same. The Directive is highly relevant for three reasons.

Firstly, it envisages and requires a step-change in terms of the immediacy and ambition for renewable energy development across the Member States, without which the Union's climate neutrality objective simply cannot be achieved.

Secondly, it identifies the social and environmental benefits of renewable energy development as noted in Recital 2:

> *"By reducing those greenhouse gas emissions, renewable energy can also contribute to tackling challenges related to the environment, such as the loss of biodiversity, and to reducing pollution" and which will help to achieve the aim to "protect, restore and improve the state of the environment by, inter alia, halting and reversing biodiversity loss" while bringing "broad socioeconomic benefits, creating new jobs and fostering local industries"*

Thirdly, and significantly the Directive identifies the imperative necessity for the designation of suitable sites by Member States for the development of renewable energy. While the Directive does not displace the County Development Plan, that imperative strongly supports the submission that the planning authority can and should grant permission if it is satisfied that the proposed Solar Farm accords with proper planning and sustainable development, notwithstanding the County Development Plan.

3.4 National Policy

Ireland is one of the most ''energy import-dependent'' countries in the European Union. For 2022, Ireland's import dependency was 81.6% (SEAI, 2023), and the SEAI estimates that the cost of all energy imports to Ireland was approximately €4.5 billion (in 2019). This makes Ireland particularly vulnerable to future energy crises and fluctuations given its location on the periphery of Europe. The international fossil fuel market is growing increasingly volatile and affected by international politics. Any steps to reduce dependence on imported fossil fuels will add to financial autonomy and stability in Ireland.

As described within Section 3.3.1 Planning and Development (Renewable Energy) Regulations 2025 (RED III – Irish Transposition (S.I. No. 402 of 2025)), the Renewable Energy Directive (RED III) has updated binding measures to accelerate renewable energy deployment across Ireland and the EU. These Regulations introduce accelerated timelines, a mandatory completeness check within 45 days, standardised checklists and updated public consultation requirements for renewable energy and related grid projects. The proposed development of a 110 kV Substation can be considered to be a RED III compliant project as it qualifies as SID for electricity transmission under the Planning and Development Act 2000, as amended.

However, as the development involves electricity transmission infrastructure, namely, a 110kV Substation and LI/LO grid connection, by determination letter dated 11th February 2026 under ACP Reference ACP-323045-25, ACP concluded that the Proposed Development falls within the scope of sections 37A(2)(a) and 37A(2)(b) and constitutes strategic infrastructure within the meaning of section 37A. Accordingly, the application is being made directly to An Coimisiún Pleanála under section 182A of the Planning and Development Act 2000, as amended.

3.4.1 Project Ireland 2040: The National Planning Framework

Project Ireland 2040: The National Planning Framework (NPF) published in February 2018, sets out the high-level, strategic planning and development for the country over the next 20+ years, in order to ensure that growth is economically, socially and environmentally sustainable in line with population growth. The Framework sets out to guide public and private investment, to create and promote opportunities for people, and to protect and enhance the environment, through a single shared set of goals (National Strategic Outcomes (NSOs)).

The NPF identifies the role of renewable energy sources in our transition to a low-carbon energy future throughout the document.

NSO 8, Transition to a Low-Carbon and Climate-Resilient Society, provides for regular Renewable Electricity Support Scheme (RESS) auctions to deliver competitive levels of onshore wind and solar electricity generation, which indicatively could be up to 2.5 GW of grid-scale solar and up to 8 GW of onshore wind by 2030. The RESS will also support the delivery of up to 5 GW of additional offshore renewable electricity generation by 2030.

In the context of the proposed solar development, the following National Policy Objectives are considered most relevant to the proposal:

Table 3-1: National Planning Framework: Notional Policy Objectives relevant to Cappakeel Solar farm

National Policy Objective 23	"Facilitate the development of the rural economy through supporting a sustainable and economically efficient agricultural and food sector, together with forestry, fishing and aquaculture, energy and extractive industries, the bioeconomy and diversification into alternative on-farm and off-farm activities, while at the same time noting the importance of maintaining and protecting the natural landscape and built heritage which are vital to rural tourism."
National Policy Objective 47	"In co-operation with relevant Departments in Northern Ireland, strengthen all-island energy infrastructure and interconnection capacity, including distribution and transmission networks to enhance security of electricity supply."
National Policy Objective 55	"Promote renewable energy use and generation at appropriate locations within the built and natural environment to meet national objectives towards achieving a low carbon economy by 2050."
National Policy Objective 64	"Improve air quality and help prevent people being exposed to unacceptable levels of pollution in our urban and rural areas through integrated land use and spatial planning that supports public transport, walking and cycling as more favourable modes of transport to the private car, the promotion of energy efficient buildings and homes, heating systems with zero local emissions, green infrastructure planning and innovative design solutions."

The NPF identifies that The National Climate Policy Position establishes the national objective of achieving a transition to a competitive, low carbon, climate resilient and environmentally sustainable economy by 2050. This objective will require investment in new energy systems and transmission grids to ensure a well-distributed energy system, harnessing both on-shore and off-shore potential from sources including wind, wave and solar.

The NPF further recognises the need for strengthened, more environmentally focussed planning at a local level:

> *"The future planning and development of our communities at local level will be refocused to tackle Ireland's higher than average carbon-intensity per capita2 and enable a national transition to a competitive low carbon, climate resilient and environmentally sustainable economy by 2050, through harnessing our country's prodigious renewable energy potential."*

Section 5.4, Planning and Investment to Support Rural Job Creation Energy Production, identifies the integral role of renewable energy in assisting to sustain rural employment and drive the national economy:

> *"Ireland's natural resources are some of our greatest assets and through the development of the agriculture, food, forestry, tourism and renewable energy sectors, this will not only sustain rural employment, but also contribute to driving the national economy."*

It is acknowledged within the NPF that:

> *"Rural areas have significantly contributed to the energy needs of the country and will continue to do so, having a strong role to play in securing a sustainable renewable energy supply. In planning Ireland's future energy landscape and in transitioning to a low carbon economy, the ability to diversify and adapt to new energy technologies is essential. Innovative and novel renewable solutions have been delivered in rural areas over the last number of years, particularly from solar, wind and biomass energy sources."*

The NPF also identifies those rural areas that will be the primary location for the majority of renewable energy developments:

> *"In meeting the challenge of transitioning to a low carbon economy, the location of future national renewable energy generation will, for the most part, need to be accommodated on large tracts of land that are located in a rural setting, while also continuing to protect the integrity of the environment and respecting the needs of people who live in rural areas."*

On the 20th of June 2023, the Government gave approval to commence the process of undertaking the First Revision of the NPF in accordance with Section 20C (5) of the Planning and Development Act, 2000 (as amended). An Expert Group comprising three independent experts with experience in spatial planning, economic and social development and environmental protection, was established in March 2023. The Expert Group submitted their findings to Minister O'Brien on 16th August 2023, and it will now inform the preparation of an 'Issues Paper' for stakeholder consultation.

On the 5th March 2024, the Government agreed to defer the approval of the revised NPF and has set out a revised timeline. The reason for the deferral is due to the delay in the publishing of Census data during Covid-19, Census input is crucial in relation to housing and demographics which informs the NPF. It is proposed that the revised timeline will involve the publication of the draft revised NPF and accompanying technical assessments for national public consultation in June 2024. This will be followed by an Amendment Stage in August 2024 for review and consideration of the submissions received and the application of any relevant amendments. The finalised document will be published, subject to approval, in September 2024. The draft revised NPF will be subject to engagement and scrutiny by the Joint Oireachtas Committee.

In conclusion, the NPF is the relevant policy document for Ireland, providing a context for which renewable energy developments should be considered and highlighting sustainable means of achieving the Plan's objectives. The proposed development at Cappakeel can be considered supportive of, and consistent with the aims of the NPF through the provision of necessary renewable energy resources in order to support the transition to a low-carbon economy.

3.4.2 Project Ireland 2040: National Development Plan 2021-2030

The National Development Plan 2021-2030 (NDP) published in October 2021, in tandem with the NPF, sets out the government's over-arching investment strategy and budget for the period 2021-2030. It is an ambitious plan that balances the demand for public investment across all sectors with a focus on improving the delivery of infrastructure projects. The NDP provides a platform from which investment can be provided and strategized in terms of economic growth, development and sustainability needs.

The NDP identifies how the anticipated level of investment will further the economy's growth potential and allow for the construction sector to provide the capacity and capability required to deliver infrastructural projects.

The key role of the NDP is to set out the updated configuration for public capital investment over the lifetime of the plan to achieve the National Strategic Outcomes as set out within the NPF.

The NDP outlines several key energy initiatives, that set out to diversify our energy resources, and to assist in the transition towards a decarbonised society, noting that:

> *"climate action is another major driver, given Ireland's goal of an average 7 percent reduction per annum in greenhouse gas emissions from 2021 to 2030 which will require major increases in investment in areas such as energy efficiency".*

If constructed, the proposed development will form part of the national grid infrastructure necessary to transition towards this decarbonised society.

3.4.3 Climate Action and Low Carbon Development (Amendment) Act 2021

In July 2021, The President of Ireland signed into law the Climate Action and Low Carbon Development (Amendment) Act 2021.

This put Ireland on a legally binding path to net-zero emissions no later than 2050 and to a 51% reduction in emissions by the end of this decade. The Act provides a framework for Ireland to meet its international and EU climate commitments.

In 2022, the government published the first 5-year carbon budget by the Climate Advisory Council providing sectoral ceilings for carbon emissions for different sectors of the economy. This included an increase in solar PV generation targets from 2.5 GW to 5.5 GW. In addition to increased solar targets, offshore wind was also increased from 5 GW to 7 GW in an effort to further accelerate the reduction of overall economy-wide emissions.

Section 17 of the Climate Action and Low Carbon Development Act (Amendment) 2021 amending section 15 of the 2015 Act requires that:

(1) A relevant body shall, in so far as practicable, perform its functions in a manner consistent with;

- the most recent approved climate action plan,
- the most recent approved national long term climate action strategy,
- the most recent approved national adaptation framework and approved sectoral adaptation plans,
- the furtherance of the national climate objective, and
- the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State.

This text amended section 15 of the 2015 Act which required:

15. (1) A relevant body shall, in the performance of its functions, have regard to…

The change from a requirement to "*have regard to*" various national objectives to a standard where relevant bodies must "perform their functions in a manner consistent with" the latest national climate action policies, represents a considerable raising of the legal bar. While the Superior Courts have not, to date, addressed the precise parameters of the obligation to act consistently in the context of the Climate Acts 2015-2021[7], it is absolutely clear that the local authority can only legally make decisions, insofar as is practicable, that are consistent with the Climate Action Plan and the obligation to further the national climate objective. The standard of have regard, and a requirement of consistency are very different standards as set out by Humphreys J in Cork County Council v Minister for Housing [2021] IEHC 683, in particular at para. 86 of the judgment.

This is a sea change from the "*have regard to*" obligation identified by Mr Justice Holland in Coyne and Another v An Bord Pleanála [2003] IEHC 412[8] as imposing an obligation only that the decision maker is aware of the relevant policy but no more – in other words, a "*have regard to*" obligation says nothing at all about the weight of any factor to which regard must be had and is agnostic as to the result to be achieved. An obligation to act consistently does bear on the result which has to be achieved and clearly, per Mr Justice Holland's decision at Section 19, is engaged by the planning authority in all of its functions.

Section 17(1) of the Climate Act 2021 outlines that bodies must perform their function in a manner consistent with but only "in so far as practicable". These words are not a relaxation on the requirement but impose on the planning authority a mandatory obligation to act consistently as far as is practicably possible. In the context of a planning application before the planning authority, there are no practicable difficulties or impediments in acting in a manner consistent with such matters in determining a planning application - so such words have no relevance to the planning authority in acting in its capacity in determining a planning application.

Where the planning authority is weighing up competing policy objectives and or considering this planning application in the context of Section 34(2)(a)(iv) of the Planning and Development Act 2000 (as amended), it must consider this overarching, legally binding, emissions reduction objective, and act in a manner that is consistent with the delivery of this target.

The inaugural Climate Action Plan (hereafter referred to as CAP with pertaining year of publishing) was published in June 2019, on the basis of the government declaring a climate and biodiversity emergency. CAP19 lays out a framework for how Ireland will achieve its legally binding 2030 targets for carbon emissions. CAP21 provided a detailed plan for taking decisive action to achieve a 51% reduction in overall greenhouse gas emissions by 2030 and setting out a path to reach net-zero emissions by no later than 2050, as committed in the Programme for Government and set out in the Climate Act 2021. CAP23 was the second update to CAP19 and was the first to be prepared under the Climate Action and Low Carbon Development (Amendment) Act 2021, introducing economy-wide carbon budgets and sectoral emissions ceilings. At the time of writing CAP24 is the third and most recent update to CAP.

3.4.4 Climate Action Plan 2019 (CAP19)

The government published the CAP19 in June 2019. CAP19 resulted from the government declaring a climate and biodiversity emergency on 9th May 2019. CAP19 identifies how Ireland will achieve its 2030 targets for carbon emissions throughout various sectors with a number of actions. A selection of these relevant to the proposed development is listed below.

CAP19 states that:

[7] See i.e. *Coyne v An Bord Pleanala* 2023 IEHC 412

[8] Coyne v An Bord Pleanala 2023 IEHC 412

"The analysis presented in this Plan shows that it is not only technically feasible to meet our 2030 EU target, but that it is also economically achievable. The majority of the required abatement to 2030 could be achieved by deploying measures that are, over their lifetime, either cost-neutral or result in net savings to society."

Key actions identified for electricity include:

- Increase reliance on renewables from 30% to 70% adding 12GW of renewable energy capacity (with peat and coal plants closing).
- Put in place a coherent support scheme for micro-generation with a price for selling power to the grid.
- Open up opportunity for community participation in renewable generation as well as community gain arrangements.
- Streamline the consent system, the connection arrangements, and the funding supports for the new technologies on and offshore.

The most important recommendations of CAP19 are outlined in Table 3-2, below;

Table 3-2: CAP19: Key recommendations and actions

Action 2	Establishment of Climate Action Delivery Board.
Action 4	Publish the Climate Action (Amendment) Bill 2019.
Action 15	Implement National Planning Framework.
Action 17	Ensure that ESB Networks and EirGrid plan network and deliver on connecting renewable energy sources to meet the 2030 70% RES-E target.
Action 18	Facilitate additional hybrid connections (e.g., solar/wind/batteries) operating in the electricity market to increase RES-E penetration.
Action 19	Ensure that the next phase of renewable connection policy is fit for purpose to deliver on renewable energy targets and community projects, and report annually on the timeliness of grid connection.
Action 24	Facilitate very high penetration of variable renewable electricity by 2030 (both SNSP and average) through system services and market arrangements.
Action 28	Design and implement the Renewable Energy Support Scheme (RESS). Increase the volumes and frequencies of RESS auctions to deliver on the 70% renewable electricity target by 2030 ensuring an appropriate community/enterprise mix to achieve an efficient delivery of renewables.
Action 29	Ensure that 15% of electricity demand is met by renewable sources contracted under Corporate PPA's.

3.4.5 Climate Action Plan 2021 (CAP21)

Following the publication of CAP19, the Climate Action Plan 2021 (CAP21) was launched on November 4th, 2021.

CAP21 identifies how Ireland will achieve its targets for carbon emissions throughout various sectors with a number of actions. A key action highlighted in CAP21 which is relevant to the proposed development is the government's commitment to "increase the proportion of renewable electricity to up to 80% by 2030".

CAP21 identifies targets and timelines which each sector of the economy must meet to deliver the stated objectives of a reduction of greenhouse omissions of 51% by 2030. In relation to the electricity sector, CAP21 states:

> *"The proposed pathway includes a more rapid build-out of renewable generation capacity (wind and solar power generation technologies), increased storage, and the deployment of zero-emissions gas. The decarbonisation pathway for the electricity sector is challenging given the rapid growth in demand for power, as well as the need to ensure security of supply through the decarbonisation journey."*

Furthermore, CAP21 sets out targets as follows which rely heavily on both solar and wind energy technology:

- Reduce CO2 eq. emissions from the sector by 50–55% relative to 2030 NDP projections.
- Deliver an early and complete phase-out of coal- and peat-fired electricity generation.
- Increase electricity generated from renewable sources to 80%, indicatively comprised of:
    - At least 7 GW of offshore renewable energy.
    - Up to 2.5 GW of grid-scale solar energy.
    - Up to 8.2 GW total of increased onshore wind capacity.

Key features identified for electricity include:

- Increase reliance on renewables to 80% by 2030 to represent an emissions reduction from 10.6 Mt (Million tonnes) in 2018 to between ~ 2 to 4 Mt in 2030.
- Ensure continued security of electricity supply against a backdrop of increasing demand including increasing renewable energy generation to 15 GW additional generating capacity in onshore and offshore wind and scale ground based solar PV.
- Provide for Solar PV generation of 1.5-2.5 GW, up from 0.4 GW in CAP19.
- Enhancement of grid and connector infrastructure.
- Open up opportunity for community participation in renewable generation as well as community gain arrangements.
- Streamline the consent system, the connection arrangements, and the funding supports for the new technologies.

With regard to electricity generation and solar, the CAP21 commits to "Cut our dependence on imported fossil fuels, and power comes from our own indigenous renewable resources including wind and solar", and identified key targets which must be achieved, which include:

Table 3-3: CAP21: Key targets

Action 105	Conclude the review of the current planning exemptions relating to solar panels, to ensure that households, schools, and communities can be strong champions of climate action.
Action 106	Deliver a Solar and Small-Scale Generation Policy Framework.

While the CAP21 outlined a figure of up to 2.5 GW of grid-scale solar energy. In July 2022 the government announced a significant increase in its target for solar energy. The new target for solar energy now aims for up to 5.5 GW by 2030 as agreed on 'Sectoral Emissions Ceilings'9.

3.4.6 Climate Action Plan 2023 (CAP 2023)

The 2019 and 2021 Climate Action Plans saw a big step-up in the program of engagement with citizens and communities. The Climate Action Plan 2023 (CAP23) identified how Ireland will achieve its targets for carbon emissions throughout various sectors such as the energy system, building sector, transport system and food production with a number of actions.

CAP23 outlines these six vital high-impact sectors, of which one is "Powering Renewables" intending to have a 75% reduction in emissions by 2030. It shows how Ireland is putting climate solutions at the very heart of our social and economic development. Among the most important measures in the plan is to increase the proportion of renewable electricity to up to 80% by 2030 and a target of 9 GW from onshore wind, 8 GW from solar, and at least 5 GW of offshore wind energy by 2030.

3.4.7 Climate Action Plan 2025 (CAP25)

The Climate Action Plan 2025 (CAP25) builds upon CAP24 by refining and updating the measures and actions required to deliver the carbon budgets and sectoral emissions ceilings. CAP25 provides a roadmap for taking decisive action to halve Ireland's emissions by 2030 and reach net zero by no later than 2050, as committed to in the Climate Action and Low Carbon Development (Amendment) Act 2021.

CAP25 outlines five vital sectors, of which one is "Electricity" where it intends to issue a recommendations paper on market options to incentivise Long Duration Energy Storage. Key messages outlined in this sector include the following:

- Increasing renewable generation to supply 80% of demand by 2030 through the accelerated expansion of onshore wind and solar energy generation, developing offshore renewable generation, and delivering additional grid infrastructure.
- Transforming the flexibility of the electricity system by improving system services and increasing storage capacity.

[9] https://www.gov.ie/en/press-release/dab6d-government-announces-sectoral-emissions-ceilings-setting-ireland-on-a-pathway-to-turn-the-tide-on-climate-change/

Furthermore, CAP25 sets out a continued drive for solar energy, with an ambitious target of up to 5 GW by the end of 2025, and will support land-use diversification and enable farmers and communities to participate in the energy transition. Maximising the self-consumption of renewable electricity will reduce costs and selling surplus electricity to the grid will allow for the diversification of income. CAP25 outlined the following three measures which it intends to impose to meet the new ambitious targets in Accelerating Renewable Electricity Generation:

- Accelerate and increase the deployment of renewable energy to replace fossil fuels;
- Deliver a flexible system to support renewables and demand.
- Manage demand.

Further measures are as follows:

- Accelerate the delivery of utility-scale onshore wind, offshore wind, and solar projects through a competitive framework.
- Target 6 GW of onshore wind and up to 5 GW of solar by 2025.
- Target 9 GW of onshore wind, 8 GW of solar, and at least 5 GW of offshore wind by 2030.
- All new or repowered renewable electricity generation projects shall implement a Community Benefit Fund equivalent to the RESS requirements of €2/MW.
- Most fundamentally, significant investment is needed in the transmission and distribution systems to maximise the usage of renewable electricity and to reduce constraints and congestion on the system. System Operators and the CRU must ensure the timely investment in, and delivery of, the required electricity network infrastructure, including key priorities such as the North South Interconnector, to meet the targets set out in this, and subsequent, Climate Action Plans.
- Deliver a streamlined electricity generation grid connection policy and process, and remove barriers, where possible, for the installation of renewables and flexible technologies reducing the need to build new grid, including hybrid (wind/solar/storage) connections.
- The overarching objective of managing electricity demand growth is to ensure, through a combination of energy efficiency and flexible electricity demand, that economic growth can be supported by low-carbon or no-carbon energy demand growth.
- Ensure that 15-20% of the electricity system demand is flexible by 2025, increasing to 20-30% by 2030, to reduce the peak demand and shift the demand to times of high renewable output.

The proposed development seeks to contribute to the ambitious renewable energy targets as set out in CAP25, and help Ireland on our path to net-zero emissions by 2050.

3.5 Regional Planning Policy

3.5.1 Eastern and Midland Regional Assembly - Regional Spatial and Economic Strategy

The Eastern and Midland Regional Assembly published its Regional Spatial and Economic Strategy in June 2019. This document now supersedes the previous Regional Planning Guidelines for the Border Region. The principal statutory purpose of the RSES as set out in the strategy is to support the implementation of the National Planning Framework – Ireland 2040, and the economic policies and objectives of the Government by providing a long-term strategic planning and economic framework for the development of the region.

The RSES is required under the Planning and Development Act 2000 (as amended) to address Employment, Retail, Housing, Transport, Water services, Energy and communications, Waste management, Education, Health, Sports and Community Facilities, Environment and Heritage, Landscape, Sustainable Development and Climate Change.

The RSES supports sustainable renewable energy generation and the implementation for the National Renewable Energy Action Plan. The strategy supports the sustainable development, maintenance, and upgrade of electricity network grid infrastructure to integrate renewable energy sources and ensure that the national and regional energy system remains safe, secure and ready to meet increased demand as the regional economy grows. As well as providing policy support for renewable energy, the RSES supports resource efficiency while maintaining sustainability and minimizing impacts on the environment.

In this regard, the Cappakeel Solar Farm is in line with the policy objectives of the RSES in producing renewable energy in an efficient and sustainable manor, while minimising impacts on the receiving environment. Chapter 7 of the RSES focuses on environment and climate within the region while Chapter 10 focus on Infrastructure. The following policy objectives are set out within the RSES which are in support of the development of renewable energy projects in the region.

Table 3-4: Eastern & Midland Regional Spatial & Economic Strategy Policy Objectives

Policy Objective	Description
RPO 4.84	***Rural Areas*** Support the rural economy and initiatives in relation to diversification, Agri business, rural tourism and renewable energy so as to sustain the employment opportunities in rural areas. In keeping with the NPF, the Eastern and Midland Regional Assembly will support the longer-term strategic planning for industrial peatland areas. This may include support, where appropriate, for a Transition Team in place and preparation of a comprehensive after use framework plan for the peatlands and related infrastructure, which addresses environmental, economic and social issues, including employment and replacement enterprise reflecting the current transition from employment based around peat extraction.
RPO 7.35	***Decarbonising the Energy Sector*** EMRA shall, in conjunction with local authorities in the Region, identify Strategic Energy Zones as areas suitable for larger energy generating projects, the role of community and micro energy production in urban and rural settings and the potential for renewable energy within industrial areas. The Strategic Energy Zones for the Region will ensure all environmental constraints are addressed in the analysis. A regional landscape strategy could be developed to support delivery of projects within the Strategic Energy Zones.

Policy Objective	Description
RPO 7.36	***Decarbonising the Energy Sector*** Planning policy at local authority level shall reflect and adhere to the principles and planning guidance set out in Department of Housing, Planning and Local Government publications relating to 'Wind Energy Development' and the DCCAE Code of Practice for Wind Energy Development in Ireland on Guidelines for Community Engagement and any other relevant guidance which may be issued in relation to sustainable energy provisions.
RPO 10.19	***Energy Infrastructure*** Support roll-out of the Smart Grids and Smart Cities Action Plan enabling new connections, grid balancing, energy management and micro grid development.

Policy Objective	Description
RPO 10.20	***Energy Infrastructure*** Support and facilitate the development of enhanced electricity and gas supplies, and associated networks, to serve the existing and future needs of the Region and facilitate new transmission infrastructure projects that might be brought forward in the lifetime of this Strategy. Including the delivery of the necessary integration of transmission network requirements to facilitate linkages of renewable energy proposals to the electricity and gas transmission grid in a sustainable and timely manner subject to appropriate environmental assessment and the planning process.
RPO 10.21	***Energy Infrastructure*** Support an Integrated Single Electricity Market (I-SEM) as a key priority for Ireland.
RPO 10.22	***Energy Infrastructure*** Support the reinforcement and strengthening of the electricity transmission and distribution network to facilitate planned growth and transmission/ distribution of a renewable energy focused generation across the major demand centres to support an island population of 8 million people, including: Facilitating interconnection to Europe, particularly the 'Celtic Interconnector' to France and further interconnection to Europe/the UK in the longer term Facilitating interconnection to Northern Ireland, particularly the 'North-South Interconnector and further co-operation with relevant departments in Northern Ireland to enhance interconnection across the island in the longer term

Policy Objective	Description
	Facilitating transboundary networks into and through the Region and between all adjacent Regions to ensure the RSES can be delivered in a sustainable and timely manner and that capacity is available at local, regional and national scale to meet future needs Facilitate the delivery of the necessary integration of transmission network requirements to allow linkages of renewable energy proposals to the electricity transmission grid in a sustainable and timely manner Support the safeguarding of strategic energy corridors from encroachment by other developments that could compromise the delivery of energy networks.
RPO 10.23	***Energy Infrastructure*** Support EirGrid's Implementation Plan 2017 – 2022 and Transmission Development Plan (TDP) 2016 and any subsequent plans prepared during the lifetime of the RSES that facilitate the timely delivery of major investment projects subject to appropriate environmental assessment and the outcome of the planning process, in particular: Support reinforcement of the Greater Dublin Area between Dunstown and Woodland 400 kV substations to increase the capacity of the often congested and highly loaded Dublin transmission network to enable the transmission system to safely accommodate more diverse power flows and also facilitate future load growth in the area Support the installation of additional transformer capacity and increased circuit capacity to meet Dublin demand growth to strengthen the network for all electricity users and improve the security and quality of supply.

3.6 Development Plan Policy

3.6.1 Laois County Development Plan 2021-2027 (LCDP)

The Laois County Development Plan 2021-2027 was adopted on 25th January 2022 and came into effect 8th March 2022.

It is a specific planning policy requirement under Sections 10(2) 28 of the Planning & Development Act 2000 (as amended) that in making development plans, a planning authority has regard to national policy on renewable energy. A County Development Plan is required to indicate how the implementation of the development plan will contribute to realising overall national targets on renewable energy and climate change mitigation.

The principle of solar development is supported consistently throughout the current Laois County Development Plan 2021-2027 (LCDP) which was adopted in January of 2022, which contains a number of policies and objectives further supporting renewable energy for Laois County.

The policies and objectives relating to renewable energy and solar farm development are set out in Chapter 3 'Climate Action & Energy', and Chapter 10 'Infrastructure of the County Development Plan.

LCDP is supportive of renewable energy subject to proper planning and sustainable development. The relevant planning policies relating to solar energy are described as follows:

Table 3-5: Solar Energy Policies extracted from the Laois County Development Plan 2021-2027

Policy/ Objective	Description
CM RE 2	Promote and encourage the development of energy from renewable sources such as hydro, bio-energy, wind, solar, geothermal and landfill gas subject to compliance with normal planning and environmental criteria in co-operation with statutory and other energy providers.
CM RE 3	Promote County Laois as a low carbon county as a means of attracting inward investment and to facilitate the development of energy sources which will achieve low carbon outputs.
CM RE 4	Protect areas of recognised landscape importance and significant landscape views from construction of large scale visually intrusive energy transmission infrastructure, alternative routing or transmission methods shall be used in this instance Ensure that the assessment of energy development proposals will have regard to the impacts on public rights of way and walking routes.
CM RE 8	Promote solar energy projects at appropriate locations.
CM RE 17	Promote the use of efficient energy storage systems and infrastructure that supports energy efficiency and reusable energy system optimization, in accordance with proper planning and sustainable development.

Section 3.5.3 of the LCDP addresses solar energy specifically. The LCDP acknowledges that solar energy technologies have become more effective and in return have become more viable including solar panels/ tubes on roof spaces and commercial development of solar farms through storage facilities.

It has been noted within the LCDP that:

> *'As they are relatively new, solar farms are not specifically identified in the classes of Environmental Impact Assessment (EIA) development listed either in the EIA Directive or in Schedule 5 to the Planning and Development Regulations 2001 as amended.'*

The LCDP notes the granting of 137.7MW of solar energy within the Counties jurisdiction to date of the LCDP ratification and outlines the development management standards for solar farm developments in section 3.5.9.

Large solar farms have potential to be built on agricultural land and leave room for a hybrid land use by allowing farming practices to co-locate with the ground mounted solar panels.

The LCDP explains that the Council will assess the appropriateness of individual applications received having regard to all other statutory requirements and guidelines, environmental sensitivity factors (if any) of the application-site, similar development guidance internationally, and the overall proper planning and sustainable development of the area.

3.6.2 Laois Landscape Assessment and Landscape Character Areas

Appendix 6 of the LCDP sets out the policies and objectives in the Landscape Character Assessment (LCA) which was updated by the Local Authority in January 2021 in light of the LCDP 2021-2027. The LCA focused on characterisation i.e., the discernment of the character of the landscape based on its land cover and landform, but also on its values, such as historical, cultural, religious and other understandings of the landscape. It concentrates on the distinctiveness of different landscapes and on the sensitivity of that landscape to development. The Landscape Character Types have been set out in Map 11-7 of Volume 1 of the LCDP.

Based on the findings of the LCA a landscape sensitivity rating was developed for each of the Landscape Character Type. Landscape sensitivity is a measure of the ability of the landscape to accommodate change or intervention without suffering unacceptable effects to its character and values. It is determined using the following factors: slope, ridgeline, water bodies, land use and prior development. The LCA have been mapped according to their landscape sensitivity. This is outlined in Table 11-6 of the LCA within the LCDP.

The proposed solar farm development lies within the 'Lowland Agricultural Area' Landscape Character Type (LCT), as defined by the Appendix 6 of the LCDP. The landscape is identified as of Low sensitivity with capacity to generally accommodate a wide range of uses without significant adverse effects on the appearance or character of the area. The Lowland LCT covers the largest proportion of County Laois. In terms of landuse, it is comprised primarily of pastoral and tillage agriculture. It is generally a flat open landscape with long range views towards the upland areas. Field patterns tend to be of large scale and are generally bounded by deciduous hedgerows containing mature trees. Farm sizes are larger than average. There is an abundance of demesnes with extensive areas of mixed woodland and parkland bounded by original stonewalls.

Given the low landscape sensitivity of the proposal site, due consideration and careful design has been implemented to ensure that the proposal does not impact on the sensitivity of the receiving environment. Further information is included in the Landscape and Visual Impact Assessment as prepared by Macro Works for the proposed solar farm.

The landscape policy for the County is set out in Chapter 11 Biodiversity and Natural Heritage of the LCDP. The proposed site is identified as being within the ‘Landscape Character Type’ of ‘Lowland Agricultural Areas’. This landscape character type is found largely in the north and southeast of County Laois and is considered to possess low landscape value and low landscape sensitivity.

As described in table 11.6 of the LCDP, Landscapes within this LCT are generally areas with the capacity to generally accommodate a wide range of uses without significant adverse effects on the appearance or character of the area.

3.7 Planning Policy Conclusion

European and national energy policy and planning policies relating to renewable energy development has established a need for the proposed development at Cappakeel, of which such European and national policy has subsequently been transposed into regional and local planning policy, where policies relating to solar PV is inextricably linked to the national targets for enhanced electricity generation, from sustainable, renewable sources. From this, it is clear that the proposed development of a 110kV Substation and Grid Connection infrastructure which facilitates the connection of the permitted Cappakeel Solar Farm to the national grid will contribute positively to achieving the LCDP policies and objectives, and it will assist in fulfilling national energy targets.

Solar development has gained significant traction in Ireland due to the advancements in solar technology, which now provide a competitive renewable technology for the Irish market. This advancement is demonstrated in national and local strategies, plans and guidelines which are widely supportive of solar energy development where aspects of a solar farm development such as the ecological, residential amenity, cultural heritage and archaeological assets are appropriately considered and addressed in accordance with the proper planning and sustainable development of the area.

In setting out the development proposal, due consideration of the policies and objectives of the national planning policy framework and LCDP have been considered in regard to the location, design and layout of the proposed project to include the permitted solar farm, 110kV Substation and associated infrastructure which includes the overall scale of development.

A detailed appraisal of the potential impacts associated with the construction, operation and decommissioning phases of the proposed 110kV Substation and associated grid connection infrastructure has been carried out, and appropriate interventions have been included to eliminate, reduce or mitigate potential adverse impacts, which are set out in this planning and environmental report and accompanying documentation and reports.

In summary, Fehily Timoney and Company consider that the proposed development of a 110kV Substation and associated grid connections to facilitate the connection of the permitted Cappakeel Solar Farm to the national grid is supported by European and national policy that promotes the decarbonisation of the electricity system, increased renewable electricity generation and the timely provision of electricity-transmission infrastructure.

The Proposed Development will provide electricity infrastructure supporting renewable electricity integration and the operation of the transmission network. Its policy contribution arises from the proposed substation, loop-in/loop-out works and underground connection to Coolnabacky 110kV Substation, rather than from electricity generation within the application site. The policy assessment must be read alongside the project-specific environmental assessments and identified mitigation measures. The separately permitted Cappakeel Solar Farm is considered where relevant to project need, functional relationship and cumulative effects.

4. CONSULTATION

4.1.1 Public Consultation - 110kV Substation and Grid Connection

Dedicated project Community Liaison Officer's (CLO's) were appointed to the Cappakeel Solar Farm project at an early stage. The CLO's were available to discuss the project with members of the public throughout the pre-planning process. On 11th February 2026, the project CLO and member of Perigus Energy Ireland Midco Limited project (formerly known as Ørsted Onshore Ireland Midco Limited) design team conducted a door knock and newsletter distribution to all houses within 1.5km of the proposed 110kV Substation site. The door knock provided an opportunity for the residents to discuss the project with the CLO and Perigus Energy Ireland Midco Limited representative, however, if there was no answer, or no one home at the time of the visit, a copy of the *Public Consultation Brochure* was dropped through the letter box which contains contact details of the CLO and Perigus Energy Ireland Midco Limited representative, and information on the Proposed Development. A copy of the *Public Consultation Information* is included in Appendix 1 of this P&E report. Following the door knock, follow up phone calls and emails were received and call backs and visits to individual houses were organised as a result. Maps were prepared and shared with members of the public where requested and environmental information regarding the project site was shared where available.

A project website was set up to share the relevant information to the public of the overall project related to the solar farm and SID application which include, project updates, newsletters and contact information. This is located on the following website: https://orsted.ie/cappakeelsolar.

A SID specific website was also set up in relation to the Proposed Development of the 110kV Substation and Grid Connection application to ACP. This is located at www.cappakeelsid.ie.

Feedback from the public helped to shape elements of the project at all stages of the design process. Examples where feedback was directly implemented into the project design included greater setback from dwellings to the substation location, additional native tree and planting to provide visual screening and avoidance of works on the public road where possible.

4.1.2 ACP Consultation (SID) - 110kV Substation and Grid Connection

The prospective applicant that undertook the pre-application consultation process was identified as Ørsted Onshore Ireland Midco Limited. On 14th May 2026, Ørsted onshore Ireland Midco Limited changed its name to Perigus Energy Ireland Midco Limited. The company's legal identity and registration number remain unchanged, with a copy of the *'Certificate of Incorporation on Change of Name'* contained within Appendix 2 of the accompanying Cover Letter. Accordingly, Perigus Energy Ireland Midco Limited is the same legal entity that undertook the pre-application consultation process.

Perigus Energy Ireland Midco Limited (formerly known as Ørsted Onshore Ireland Midco Limited), requested a consultation with ACP under section 182E of the Planning and Development Act 2000 (as amended) in order to determine whether the proposed 110kV substation and Grid Connection should be considered as Strategic Infrastructure Development (SID), in accordance with section 182E of the Act.

The request was considered under An Coimisiún Pleanála's case number: **ACP-323045-25**

A single consultation meeting was undertaken with ACP on 1st October 2025 following the request. Attendees of the meeting included Una Cross (Assistant Director of Planning - Chair), Enda Duignan (Senior Planning Inspector), Stephen Rhys Thomas (Assistant Director of Planning) and Sinead White (Executive Officer)on behalf of An Coimisiún Pleanála. Jack O'Donovan, Perigus Energy Ireland Midco Limited (formerly known as Ørsted Onshore Ireland Midco Limited), (the applicant), as well as Jim Hughes and Anthony Fehily Timoney and Company (Applicants agents).

This application has been prepared having regard to the written record of the pre-application consultation meeting held with ACP on 1st October 2025 (ACP-323045-25). The prospective applicant acknowledges that ACP may seek further information, consult with prescribed bodies and form a preliminary view on the strategic infrastructure status of the proposed development. The applicant has elected to proceed to formal application without seeking a further pre-application consultation meeting.

Pre-application consultations were undertaken with An Coimisiún Pleanála under section 37B of the Planning and Development Act 2000, as amended, under case reference ACP-323045-25. As the development involves electricity transmission infrastructure, namely, a 110kV Substation and LI/LO grid connection, by determination letter dated 5th October 2026, under ACP Reference ACP-323045-25, ACP directed the application to be submitted directly to An Coimisiún Pleanala under section 182A(1) of the Act.

The Direction Letter from ACP is contained within Appendix 1 of the accompanying Cover Letter.

Accordingly, the application is being made directly to An Coimisiún Pleanála under section 182A of the Planning and Development Act 2000, as amended.

4.1.3 Further consultation with Laois County Council Roads Department

Consultations were held on 24th April 2026 with representatives of the following regarding the TLI Fen crossing methodology and aspects of the grid connection between the permitted Cappakeel Solar Farm and 110kV Coolnabacky 110kV Substation. Attendees of this consultation included: Brian Seale (Laois County Council Roads Department), Philip McDowell (Fehily Timoney and Company), Jack O'Donovan (Perigus Energy Ireland Midco Limited (formerly known as Ørsted Onshore Ireland Midco Limited)) and Tomas O'Callaghan, Kevin Casey and Ger Donnellan (TLI Group).

All items discussed and requested have been adhered to and are reflected within the plans and particulars submitted as part of this application.

5. KEY CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

This section outlines key aspects of the Construction, Operation, Decommissioning phases.

5.1 Key Characteristics

The key characteristics of the Proposed Development include:

- A 110kV loop-in connection to the existing Cushaling - Portlaoise 110kV overhead line through the installation of two steel line cable interface masts;
- A new 110 kV loop-in and tail-fed substation;
- A single c. 13.7 km underground cable (UGC) connection between the proposed Cappakeel 110kV Substation and the Coolnabacky 110kV Substation, installed predominantly within the public road network;
- Associated joint bays, ducts, cable infrastructure, watercourse crossings, access arrangements and ancillary construction works.

The following sections of this P&E report provide additional detail on the three phases in respect to Drainage, Ecology, Roads and Site Access, Noise, Archaeology and Cultural Heritage, Landscape and Visual Impact.

Supplementary information is also provided in the accompanying Construction Methodology and Construction and Environmental Management Plan (CEMP).

5.2 Construction Phase

The following activities will take place as part of the installation and construction:

- Preliminary site investigations;
- Establishment of temporary access routes and work areas;
- Traffic management and road opening works;
- Construction of the two steel line cable interface masts;
- Construction of the proposed 110 kV loop-in and tail-fed substation;
- Underground cable trench excavation;
- Installation of ducts, earth continuity conductor (ECC), fibre communication cables and 110 kV power cables;
- Construction of joint bays and associated chambers;
- Cable pulling and jointing;
- Installation of marker posts;
- Watercourse, bridge and culvert crossings where required;
- Reinstatement of public roads, private lands and watercourses following completion of works.

Construction will be undertaken in accordance with the Construction Methodology and the Construction and Environmental Management Plan (CEMP) accompanying this application. An indicative construction programme estimates an overall construction period of c. 18 months, with several construction activities being undertaken concurrently.

5.2.1 Environmental Management

Environmental management measures will be implemented throughout construction in accordance with the Outline Construction Methodology and the CEMP, and these include:

- Protection of surface water and watercourses during construction;
- Environmental controls at bridge, culvert and watercourse crossings;
- Management of excavated material and temporary storage of plant and machinery;
- Reinstatement of public roads, private lands and watercourses;
- Preparation and implementation of an Emergency Response Plan;
- Preparation and implementation of an Invasive Species Action Plan;
- Preparation and implementation of a Waste Management Plan;
- Appropriate archaeological mitigation measures where required.

5.3 Traffic Management

Traffic management measures will be implemented throughout the construction period to facilitate the safe delivery of the Proposed Development, and minimise disruption to road users. These measures include temporary traffic management, road opening works, management of construction traffic and reinstatement of affected roads. Road opening licences will be obtained where required, and traffic management arrangements will be implemented in accordance with the acompanying Construction Methodology and the CEMP.

Construction working hours will also be controlled during the construction phase. Some items in this plan can only be finalised with appropriate input from the contractor who will be appointed to carry out and schedule the works. Furthermore, it is appropriate that the Project Supervisor Construction Stage (PSCS), when appointed, should have an active role in the preparation/review of the Traffic Management Plan.

The contractor is required to prepare the necessary Site-Specific Traffic Management Plans prior to the construction works commencing in accordance with Chapter 8 of the Traffic Signs Manual 2019 and subject to load permits.

The contractor will be responsible for the implementation of all agreements between the developer, Laois County Council and local residents with the objective that the transportation needs for the Proposed Development will have a minimal impact on the road network and local communities.

As with any construction development project, the transport of materials onto the site will give rise to increased traffic and associated impacts. However, due to the very nature of construction these impacts will be temporary.

Construction traffic will require regular access to the site at varying times throughout the construction phase. The aim of this TMP is to put in place procedures to manage traffic effectively on site and in the immediate vicinity of the proposed project, to ensure the continued movement of traffic on the public roads and to minimise disturbance during transportation of materials particularly large loads. The correct implementation of this TMP will ensure that appropriate procedures are in place to minimise any effects on the safety and movement of the general public.

Prior to the commencement of construction, the TMP will be reviewed by the main contractor (and any sub-contractors) and will be updated as necessary.

The contractor will be responsible for the implementation of all agreements between the developer and Laois County Council with the objective that the transportation needs for the proposed development will have a minimal impact on the road network and local communities. All vehicles hauling materials to and from the site shall only use agreed transport routes.

5.4 Operational Phase

Following the completion of the construction phase, the Proposed Development will operate as electrical transmission infrastructure comprising the 110kV loop-in connection, the proposed 110kV substation and the underground cable connection between the Cappakeel 110kV Substation and the Coolnabacky 110kV Substation. Routine inspection, testing and maintenance activities will be undertaken to ensure the safe and reliable operation of the infrastructure.

5.5 Decommissioning Phase

No scheduled decommissioning of the Proposed Development is proposed, as described in Section 1.4. Decommissioning of the separately permitted Cappakeel Solar Farm would not, of itself, require removal of the substation or grid connections.

Temporary construction areas and disturbed road surfaces will be reinstated following construction. This reinstatement is distinct from decommissioning of the permanent infrastructure.

Any future proposal for substantial removal or decommissioning would require assessment of the specific works, including their environmental effects, waste-management requirements and appropriate mitigation.

6. EIA SCREENING

6.1 Introduction

The following chapter of the Planning and Environmental report reviews the proposed development against the EIA Directive and its requirements as transposed into Irish law. The review determines whether the proposed development is likely to have significant environmental effects, thereby requiring that an Environmental Impact Assessment is carried out.

The proposed development of the 110kV Substation and associated cable connection has been considered together with the solar farm component, and has been undertaken in accordance with Schedule 7 of the Planning and Development Regulations 2001 (as amended), having regard to relevant European and national concerning EIA thresholds, project splitting and cumulative effects. The Screening concludes that the proposed development is not likely to give rise to significant effects on the environment.

6.2 EIA Project Types

The European Union Directive 2014/52/EU on the assessment of the effects of certain public and private projects on the environment, requires member states to ensure that a competent authority carries out an assessment of the environmental impacts of certain types of projects, as listed in the Directive, prior to development consent being given for the project.

The EIA Directive requires that:

> *"in order to ensure a high level of protection of the environment and human health, screening procedures and EIA assessments should take account of the impact of the whole project in question, including where relevant, its subsurface and underground, during the construction, operational and, where relevant demolition phases".*

The Requirements for the EIA of various types of development are transposed into Irish legislation under the Planning and Development Act, 2000 (as amended), and the Planning and Development Regulations, 2001 (as amended).

Schedule 5, Part 1 of the Planning Regulations includes a list of projects which are subject to EIA based on their type. Part 2 of the same schedule includes a list of projects which by reason of scale also fall into the EIA category for example, wind farms with more than 5 no. turbines or having a total output greater than 5 megawatts or waste handling facilities that handle in excess of 25,000 tonne of waste per annum all fall into Part 2. Schedule 5 also includes a section on extensions or changes to developments for example, any change or extension to existing projects which would result in the development being of a class listed in Schedule 5 or result in an increase in size greater than 25% or 50% of the appropriate thresholds would fall into Schedule 5 and thus require an EIA.

The EIA criteria are quite clear and prescriptive, however in addition to the above, 'sub-threshold' (discretionary) EIA may arise in the event that a development of a type set out in Schedule 5, Part 2, which does not equal or exceed the quantity, area or limit specified, is determined to warrant environmental impact assessment. This is where any project listed in Schedule 5 Part 2 which does not exceed its specified limits in respect of the relevant class of development (e.g., waste facility handling 20,000 tonnes per year or two turbines having an output less than 5 megawatts) should be subject to EIA where the project would be likely to have significant effects on the environment, having regard to the criteria set out in Schedule 7 of the Regulations.

On January 31st, 2020, in Sweetman v An Bord Pleanála (now An Coimisiún Pleanála) and Others [2020] IEHC 39 it was confirmed that Solar PV projects are not a project type listed in the EIA Directive as the applicant contended that solar PV projects fell under Class 3(a). According to Mr. Justice McDonald:
"it is clear that, when Class 3 (a) is read in conjunction with Class 3 (h) and 3 (i), it does not extend to the generation of electricity unless the project in question also generates heat and steam."

Furthermore, S.I. No. 235/2008 – Planning and Development Regulations, 2008 amends the classes of development to which Schedule 5 of S.I. 6000 of 2001 to include:

"(dd) All private roads which would exceed 2000 metres in length."

We note that recent decisions by ACP (ACP reference: PL26.247217) which confirm that access tracks installed for the purpose of solar PV development do not fall within the definition of a road under the Roads Act 1993 and therefore do not qualify as subthreshold development:

"The purpose of the site track is primarily for the construction and maintenance of the development. Its purpose is not for the conveyance of people and vehicles per se except as necessary in connection with the maintenance and construction of the development."

A recent High Court decision (Kavanagh v ABP [2020] IEHC 259) found that:

'the 2014 Directive does not require an EIA to be carried out in respect of planning applications for the construction and operation of solar farms. It follows that, in as much as the State has not made such a requirement part of Irish law, there is no failure on the part of the State to give effect to the provisions of the 2014 Directive'.

The Department of Housing, Local Government and Heritage, issued a circular relating to the new regulation entitled 'Planning and Development (Amendment) (No.2) Regulations 2023'.

These Regulations amend Part 2 of Schedule 5 of the Planning and Development Regulations 2001 (as amended), which incorporates a new category of development that should be subject to Environmental Impact Assessment (EIA) by the insertion of projects for the restructuring of rural land holdings.

Reviewing the new category of development 'Restructuring of rural land holdings" the threshold is set out as follows:

"(a) Projects for the restructuring of rural land holdings, undertaken as part of a wider proposed development, and not as an agricultural activity that must comply with the European Communities (Environmental Impact Assessment)(Agriculture) Regulations 2011, where the length of field boundary to be removed is above 4 kilometres, or where re-contouring is above 5 hectares, or where the area of lands to be restructured by removal of field boundaries is above 50 hectares."

The consented solar farm (Planning Ref No.: PL-500061-LS) includes for the removal of 75m of hedgerows (in 15 sections within the solar farm site, each five metres long) for access purposes. The proposed substation site is located within the boundary of the consented solar farm project, and will utilise the consented access. As such, no additional hedgerow removal beyond what is already consented will be required, of which 10m (two 5m sections) is located within the proposed substation boundary. The extent of such hedgerow removal is not of a scale that would cause a change to the field or land parcel shape and/or boundaries and will not alter habitat availability, connectivity or continuity for mammals and birds.

The Proposed Development does not result in the amalgamation or enlargement of existing fields, and therefore, below the EIA threshold of 4km as outlined under Planning and Development Regulations, 2001 (as amended). The development would, however, constitute sub-threshold development for rural restructuring (Class 1(a), Part 2 of Schedule 5).

It is therefore concluded, if one were to screen the proposed development against the criteria set out in 'Planning and Development (Amendment) (No.2) Regulations 2023', the project is well below the thresholds identified below and therefore does not require mandatory EIA.

Schedule 5: Part 2 of the P&D Regulations also includes however a section relating to 'sub threshold' (discretionary) EIA:

> *"15. Any project listed in this Part which does not exceed a quantity, area or other limit specified in this Part in respect of the relevant class of development, but which would be likely to have significant effects on the environment, having regard to the criteria set out in Schedule 7."*

6.3 Annex III Selection Criteria Referred to in Article 4(3)

The following criteria are laid down in Schedule 7 of the Planning and Development Regulations 2001 (as amended) for the purposes of assessing if a proposed development would or would not be likely to have significant effects on the environment.

These criteria have been updated in accordance with Annex III of the 2014 Directive 2014/52/EU:

3. Characteristics of proposed development

   The characteristics of the proposed development, in particular:

   - the size and design of the whole of the proposed development,
   - cumulation with other existing development and/or development the subject of a consent for proposed development for the purposes of section 172(1A)(b) of the Act and/or development the subject of any development consent for the purposes of the Environmental Impact Assessment Directive by or under any other enactment,
   - the nature of any associated demolition works,
   - the use of natural resources, in particular land, soil, water and biodiversity,
   - the production of waste,
   - pollution and nuisances,
   - the risk of major accidents, and/or disasters which are relevant to the project concerned, including those caused by climate change, in accordance with scientific knowledge, and
   - the risks to human health (for example, due to water contamination or air pollution).

2. Location of projects

- The environmental sensitivity of geographical areas likely to be affected by the proposed development, with particular regard to:
- the existing and approved land use,
- the relative abundance, availability, quality and regenerative capacity of natural resources (including soil, land, water and biodiversity) in the area and its underground,
- the absorption capacity of the natural environment, paying particular attention to the following areas:
- wetlands, riparian areas, river mouths;
- coastal zones and the marine environment;
- mountain and forest areas;
- nature reserves and parks;
- areas classified or protected under legislation, including Natura 2000 areas designated pursuant to the Habitats Directive and the Birds Directive and;
- areas in which there has already been a failure to meet the environmental quality standards laid down in legislation of the European Union and relevant to the project, or in which it is considered that there is such a failure;
- densely populated areas;
- landscapes and sites of historical, cultural or archaeological significance.

3. Type and characteristics of the potential impact

The likely significant effects on the environment of proposed development in relation to criteria set out under paragraphs 1 and 2, with regard to the impact of the project on the factors specified in paragraph (b)(i)(I) to (V) of the definition of 'environmental impact assessment report' in section 171A of the Act, taking into account:

- the magnitude and spatial extent of the impact (for example geographical area and size of the affected population likely to be affected);
- the nature of the impact;
- the transboundary nature of the impact;
- the intensity and complexity of the impact;
- the probability of the impact;
- the expected onset, duration, frequency and reversibility of the impact;
- the cumulation of the impact with the impact of other existing and/or development the subject of a consent for proposed development for the purposes of section 172(1A)(b) of the Act and/or development the subject of any development consent for the purposes of the Environmental Impact Assessment Directive by or under any other enactment, and;
- the possibility of effectively reducing the impact.

6.3.1 Characteristics of the Proposed Development

The Proposed Development will involve earthworks, installation of buildings and electrical equipment, access-road construction, cable trenching, joint-bay construction and reinstatement. These activities will require construction materials and will generate excavated material and construction waste

Excavated material will be assessed for suitability before reuse. Material unsuitable for reuse and other wastes will be managed in accordance with the CEMP and applicable waste-management requirements.

Potential construction effects include noise, vibration, dust, traffic disruption, sediment mobilisation and accidental pollution. Operational effects include permanent land-use change, equipment noise, landscape and visual effects, and risks associated with maintenance and drainage performance. These effects are addressed in the relevant chapters of this report. The separately permitted Cappakeel Solar Farm does not form part of the Proposed Development but is considered where relevant to cumulative effects.

6.3.2 Location of the Proposed Development

The location of the project is considered in the context of the EIA screening to establish whether there are environmental sensitivities that require consideration in relation to the nature of the project.

The existing land use in the area is agricultural. The absorption capacity of the natural environment is considered to be the measure of the ability of the proposed development to 'fit in' with the locality. As per the requirements of Schedule 7(2), the accompanying Ecological Impact Assessment explores the individual areas to be assessed in more detail.

Having regard to the characteristics of the Proposed Development, and the limited impacts of the development, it is unlikely that significant adverse impacts will be caused to the site or the surrounding area as a result of the proposed development as confirmed in the following sections of this report and accompanying documents and reports.

6.3.3 Characteristics of potential Impacts

For criteria 3 'Types and Characteristics of Potential Impact' the Regulations require that the likely significant effects on the environment of the proposed scheme (in relation to criteria set out under 'Characteristics of the Proposed Development' and 'Location of the Proposed Development') are assessed for the environmental topics set out in section 171A of the Planning and Development Act (i.e. population and human health, biodiversity, land, soil, water, air and climate, material assets, cultural heritage and the landscape) taking into account the following:

a) the magnitude and spatial extent of the impact (for example, geographical area and size of the population likely to be affected),
b) the nature of the impact,
c) the transboundary nature of the impact,
d) the intensity and complexity of the impact,
e) the probability of the impact,
f) the expected onset, duration, frequency and reversibility of the impact,
g) the cumulation of the impact with the impact of other existing and/or development the subject of a consent for proposed development for the purposes of section 172(1A)(b) of the Act and/or development the subject of any development consent for the purposes of the Environmental Impact Assessment Directive by or under any other enactment, and

h) the possibility of effectively reducing the impact.

This assessment is carried out in Table 6-1, below, and should be read in conjunction with the planning and environmental assessment chapters of this Planning and Environmental Report, as well as submitted as part of this Planning Application.

Table 6-1: Types and Characteristics of Potential Impact

Criterion	If relevant, briefly describe the characteristics of the potential impacts under the headings below. (including where relevant the magnitude and spatial extent of the impact (e.g. geographical areas and size of population likely to be affected), nature of impact, intensity and complexity of impact, probability of impact, and duration, frequency and reversibility of the impact):	If relevant, briefly describe any mitigation measures proposed to avoid or prevent a significant effect.	Is this likely to result in significant effects on the environment?
Population & Human Health	Construction phase impacts associated with the Proposed Development of Cappakeel 110 Substation and underground cable connection to Coolnabacky 110kV substation may include short-term and localised noise, vibration, dust and traffic disturbance arising from construction of the 110kV substation, LI/LO infrastructure and installation of the underground 110kV grid connection. Potential effects on nearby residents and road users will be temporary and will occur principally during the construction phase. Traffic and Transportation impacts are considered in Section 9 of this Report and Noise and Vibration impacts are considered in Section 11. Construction air-quality effects arise primarily from dust-generating activities, construction traffic and plant emissions and are temporary in nature. Operational effects on population and human health are limited, with the principal potential effects relating to operational noise from the electrical equipment and the permanent presence of the substation infrastructure. The Proposed Development comprises permanent electricity transmission infrastructure and no scheduled decommissioning is proposed. Temporary construction areas and disturbed road surfaces will be reinstated following construction. Any future substantial removal or decommissioning would require assessment of the specific works and associated environmental effects.	Construction will be undertaken in accordance with the CEMP and relevant construction management measures. Dust suppression, good site management, maintenance of construction plant and appropriate working hours will be implemented. Traffic management measures will be implemented to minimise disturbance to road users and local communities. Noise mitigation will include appropriate siting of equipment, use of low-noise plant where practicable, maintenance of silencers and equipment, and restrictions on construction working hours.	No. Temporary construction effects may occur, but these are localised, short-term and capable of mitigation. Operational effects are not predicted to be significant.

Criterion	If relevant, briefly describe the characteristics of the potential impacts under the headings below. (including where relevant the magnitude and spatial extent of the impact (e.g. geographical areas and size of population likely to be affected), nature of impact, intensity and complexity of impact, probability of impact, and duration, frequency and reversibility of the impact):	If relevant, briefly describe any mitigation measures proposed to avoid or prevent a significant effect.	Is this likely to result in significant effects on the environment?
Biodiversity & Ecology	Potential construction effects include temporary disturbance to habitats and fauna, soil disturbance, noise, lighting, construction activity and potential indirect effects associated with sediment or pollutants entering drainage features and watercourses. The Proposed Development includes the substation and LI/LO infrastructure at Morett and an underground connection predominantly within the existing road network. The consented solar farm (Planning Ref No.: PL-500061-LS) includes for the removal of 75m of hedgerows (in 15 sections within the solar farm site, each five metres long) for access purposes. The proposed substation site is located within the boundary of the consented solar farm project, and will utilise the consented access. As such, no additional hedgerow removal beyond what is already consented will be required, of which 10m (two 5m sections) is located within the proposed substation boundary. The extent of such hedgerow removal is not of a scale that would cause a change to the field or land parcel shape and/or boundaries and will not alter habitat availability, connectivity or continuity for mammals and birds. The P&E concludes that, subject to mitigation, no significant residual ecological effects are anticipated.	Mitigation includes avoidance and design measures, ecological supervision, water-quality protection measures and species-specific measures for avifauna, terrestrial mammals, bats and aquatic and other taxa. Construction activities will be controlled through the CEMP. Existing habitats and ecological features will be protected where practicable, with additional ecological enhancement measures incorporated into the project.	No. Subject to implementation of the prescribed mitigation, significant effects on biodiversity, including European sites and protected species, are not anticipated.

Criterion	If relevant, briefly describe the characteristics of the potential impacts under the headings below. (including where relevant the magnitude and spatial extent of the impact (e.g. geographical areas and size of population likely to be affected), nature of impact, intensity and complexity of impact, probability of impact, and duration, frequency and reversibility of the impact):	If relevant, briefly describe any mitigation measures proposed to avoid or prevent a significant effect.	Is this likely to result in significant effects on the environment?
Land, Soil & Water	The principal permanent land-use change will occur at the proposed substation, compounds and cable-interface mast locations. The underground connection will be installed predominantly within the existing public road network and will be reinstated following construction. Potential construction impacts include excavation, soil disturbance, temporary stockpiling, sediment mobilisation, accidental release of fuels or other pollutants and interaction with existing drainage infrastructure. The proposed substation will introduce permanent buildings, electrical compounds and hardstanding requiring a dedicated surface-water drainage system. The LI/LO infrastructure and underground connection principally give rise to temporary construction-stage drainage and water-quality risks. The development includes one bridge overcrossing and two culvert undercrossings along the UGC route. The Flood Risk Assessment identifies the proposed substation in Flood Zone C, with a low probability of flooding. The underground connection is also predominantly outside mapped flood extents. The P&E concludes that residual impacts on hydrology and water quality will not be significant.	The proposed surface-water drainage system, settlement ponds and controlled discharge arrangements will manage runoff from the substation. Construction-phase pollution prevention measures will include appropriate management of fuels, concrete, excavated material, sediment and surface water. Watercourse and culvert crossings will be undertaken in accordance with the submitted construction methodology. Existing drainage infrastructure will be protected and reinstated as required. Construction and operational drainage measures are set out in the CEMP and the drainage and water-quality chapter.	No. Potential impacts are principally temporary and construction-related. With the proposed drainage design and mitigation measures, residual effects on hydrology, groundwater and surface-water quality are not expected to be significant.

Criterion	If relevant, briefly describe the characteristics of the potential impacts under the headings below. (including where relevant the magnitude and spatial extent of the impact (e.g. geographical areas and size of population likely to be affected), nature of impact, intensity and complexity of impact, probability of impact, and duration, frequency and reversibility of the impact):	If relevant, briefly describe any mitigation measures proposed to avoid or prevent a significant effect.	Is this likely to result in significant effects on the environment?
Air and Climate	Construction activities may give rise to localised and temporary dust and exhaust emissions from construction plant, excavation, material handling and construction traffic. These effects will occur during the construction phase and will be confined to the vicinity of the relevant works. The underground cable works will progress along the route rather than occurring simultaneously over its full length. Operational emissions from the Proposed Development will be negligible, as the infrastructure does not involve a continuous combustion process or significant source of air emissions.	Dust will be controlled through good construction practice, including appropriate dust suppression, management of exposed surfaces and materials, vehicle and plant maintenance and appropriate site management. Construction machinery will be maintained in good working order and unnecessary idling will be avoided.	No. Temporary localised construction effects may occur, but these are not expected to result in significant effects on air quality or climate.

Criterion	If relevant, briefly describe the characteristics of the potential impacts under the headings below. (including where relevant the magnitude and spatial extent of the impact (e.g. geographical areas and size of population likely to be affected), nature of impact, intensity and complexity of impact, probability of impact, and duration, frequency and reversibility of the impact):	If relevant, briefly describe any mitigation measures proposed to avoid or prevent a significant effect.	Is this likely to result in significant effects on the environment?
Material Assets	The Proposed Development consists of permanent electricity transmission infrastructure comprising the 110kV substation, LI/LO connection, underground 110kV connection, access infrastructure, electrical compounds and associated works. Approximately 12.56km of the underground grid connection is located within the public road network, with approximately 1.2km on private lands/access track. Construction will require interaction with the existing road network and existing utilities. Existing services along the route include electricity, water and gas infrastructure at certain locations. Temporary disruption may arise during trenching and joint-bay construction, particularly where works are required within public roads. Road surfaces and affected private lands will be reinstated following installation.	Pre-construction service identification and coordination with relevant utility providers will be undertaken. Traffic management and road-opening requirements will be agreed with Laois County Council. Construction will be phased and road sections reinstated progressively. Existing services will be protected, crossed or relocated where necessary in accordance with relevant technical and safety requirements. Excavated material will be reused where suitable and surplus material appropriately managed.	No. Temporary and localised impacts may arise during construction, but significant effects on material assets are not anticipated.

Criterion	If relevant, briefly describe the characteristics of the potential impacts under the headings below. (including where relevant the magnitude and spatial extent of the impact (e.g. geographical areas and size of population likely to be affected), nature of impact, intensity and complexity of impact, probability of impact, and duration, frequency and reversibility of the impact):	If relevant, briefly describe any mitigation measures proposed to avoid or prevent a significant effect.	Is this likely to result in significant effects on the environment?
Archaeology, Cultural Heritage and Landscape Visual Impact Assessment	The proposed grid connection passes through the Zone of Archaeological Potential associated with the Rock of Dunamase, a National Monument in State Ownership. Three recorded monuments are located within 100m of the proposed substation at Morett, including two enclosures and a water mill. Holy Trinity Church, a Protected Structure, lies approximately 20m east of the proposed grid connection. Potential archaeological effects arise principally from excavation and ground disturbance associated with the substation, mast foundations, trenching and joint bays. The archaeological assessment concludes that, following mitigation, there will be no significant negative impacts upon the archaeological resource, and no direct or indirect impacts have been identified in relation to architectural heritage. The landscape assessment identifies the substation as being located within a productive and modified rural landscape influenced by transport and electricity infrastructure. The proposed substation is relatively discreetly located and benefits from intervening vegetation. Operational landscape effects are assessed as no greater than Moderate-slight and visual effects range from Slight to Imperceptible. The LVIA concludes that the Cappakeel SID substation and grid connection will not give rise to significant residual landscape or visual effects.	Archaeological mitigation includes appropriate pre-construction archaeological assessment and investigation, monitoring and measures to avoid or protect known archaeological features where required. Works within archaeologically sensitive areas will be undertaken in accordance with the recommendations of the archaeological assessment. Landscape mitigation includes retention and protection of existing vegetation where practicable and proposed planting and screening measures around the substation.	No. Following mitigation, significant effects on archaeological, architectural, landscape or visual receptors are not anticipated.

Criterion	If relevant, briefly describe the characteristics of the potential impacts under the headings below. (including where relevant the magnitude and spatial extent of the impact (e.g. geographical areas and size of population likely to be affected), nature of impact, intensity and complexity of impact, probability of impact, and duration, frequency and reversibility of the impact):	If relevant, briefly describe any mitigation measures proposed to avoid or prevent a significant effect.	Is this likely to result in significant effects on the environment?
Cumulative Effects	Cumulative effects have been considered throughout the relevant chapters of the P&E. The separately permitted Cappakeel Solar Farm does not form part of the SID Proposed Development but has been considered where relevant because of its proximity and functional relationship with the transmission infrastructure. Other permitted and proposed developments within the relevant study areas have also been considered. Potential cumulative construction effects include traffic, noise, soil disturbance, water-quality risk and landscape and visual effects where construction programmes overlap. The P&E concludes that significant cumulative effects are not anticipated.	The construction and environmental management measures identified for the Proposed Development will be implemented. Where construction activities overlap with other development, coordination, traffic management, pollution prevention and other topic-specific mitigation measures will reduce the potential for cumulative effects.	No. No significant cumulative effects are predicted.
Transboundary Effects	The Proposed Development is located wholly within County Laois.	No specific transboundary mitigation measures are required.	No. No transboundary effects are envisaged.

6.4 Conclusion on EIA Requirement

Having regard to the above, the proposed development assessed comprises the proposed 110 kV substation and associated LI/LO infrastructure at Morett and the underground 110 kV connection to Coolnabacky.

The principal permanent land-use change will occur at the substation and cable-interface mast locations. The underground connection will be installed predominantly within the existing road network and will be reinstated following construction.

The main potential construction effects include temporary traffic disruption, noise, vibration, dust, excavation, surface-water management, disturbance of habitats and species, interaction with existing services and potential effects on archaeological remains. Operational effects will arise principally from the permanent substation and LI/LO structures, substation drainage and noise from electrical equipment.

The permitted Cappakeel Solar Farm does not form part of the Proposed Development and has been considered only where relevant to cumulative effects. Subject to implementation of the proposed mitigation, monitoring and environmental-management measures, the Proposed Development is not expected to give rise to significant adverse environmental effects.

7. DRAINAGE AND WATER QUALITY

7.1 Introduction

This chapter has been prepared to describe the existing hydrology and water quality of the local environment in the study area and to examine the aspects of the hydrology and water quality of the local environment that could be affected by the activities associated with the Proposed Development.

As described in Chapter 1 - Introduction of this report, the overall development is comprised of 2 constituent parts. The part for which planning consent is now being sought is the 110kV Air Insulated Switchgear (AIS) substation, located within the townland of Morett, County Laois. The solar farm component is referred to as the 'Solar Farm'. Consent for the solar farm was granted by Laois County Council on 18th September 2025, under Pl. Ref. 2560148, section 34 of the PDA, with consent for the solar farm granted by An Coimisiún Pleanála on 17th February 2026 (Ref No.: PL-500061-LS).

This assessment, considers drainage, surface water, groundwater and flood risk associated with the proposed substation and LI/LO infrastructure at Morett and the underground connection to Coolnabacky.

The proposed substation will introduce permanent buildings, electrical compounds and hardstanding requiring a dedicated surface-water drainage system. The LI/LO infrastructure and underground connection will give rise principally to temporary construction-stage drainage and water-quality risks.

The assessment considers surface-water runoff, groundwater conditions, construction water, accidental pollution, bridge and culvert crossings, drainage blockage, flood risk and the protection and reinstatement of existing drainage infrastructure.

7.1.1 Study Area

The proposed development site is a mosaic of arable lands located in the electoral district of Cappakeel, Co. Laois. The proposed 110 kV substation and loop in connection elements of the Proposed Development are located in the westernmost of the five parcels associated with the consented Cappakeel Solar Farm. The M7 Monasterevin Bypass is located to the northwest and several local roads border or intersect the site. Commercial forests are to the north and the Barrow Navigation canal is located to the west. The site is approximately 4.8km from the Co. Kildare border.

The study area regarding hydrology and water quality comprises of catchments, sub-catchments, sub-basins and associated hydrological features therein relevant to the proposed project. A detailed description of the existing environment of the study area is contained in Section 7.4.

A detailed description of the Proposed Development is provided in Chapter 2 of this report.

7.2 Methodology

The following sources of information were considered in this assessment:

- Legislation and guidance as described in Section 7.3.
- A desk-based assessment of the surface water hydrology and water quality in the catchments relevant to the development, including an assessment of the watercourses which will be intercepted and those which will receive surface water runoff from the proposed development.

- A field assessment of the existing hydrological environment, to both verify desk-based assessment and record all significant hydrological features.
- Laois County Development Plan 2021-2027.

7.3 Relevant Legislation and Guidance

7.3.1 Relevant EU Directives and Legislation

7.3.1.1 Water Framework Directive (WFD)

The WFD established a new system for the protection and improvement of water quality and water dependent ecosystems. It has influenced the management of water resources and has affected conservation, fisheries, flood defence, planning and development. It has endeavoured to ensure that all impacts on water resources – physical modification, diffuse and point source pollution, abstraction or otherwise – are controlled.

The overriding purpose of the WFD is to achieve at least 'good status' in all European waters and to ensure that no further deterioration occurs in these waters. European waters are classified as ground waters, rivers, lakes, transitional and coastal waters. The WFD has been implemented in Ireland by dividing the island of Ireland into eight river basin districts. These districts are natural geographical areas that occur in the landscape. River Basin Management Plan 2018-2021 has been prepared by Department of Housing, Planning and Local Government. The plan sets out the actions that Ireland will take to improve water quality and achieve 'good' ecological status in water bodies (rivers, lakes, estuaries and coastal waters) by 2027.

- The WFD has been transposed into Irish law following:
- European Communities (Water Policy) Regulations, 2003 (S.I. No. 722 of 2003)[10]
- European Union (Water Policy) Regulations 2014 (S.I. No. 350 of 2014)[11]
- European Communities Environmental Objectives (Surface Waters) Regulations, 2009 (S.I. No. 272 of 2009)[12]
- European Communities Environmental Objectives (Groundwater) Regulations, 2012 (S.I. No. 9 of 2012)[13]

[10] Department of Environment, Heritage and Local Government, 2009. European Communities Environmental Objectives (Surface Waters) Regulations, 2009 (S.I. No. 272 of 2009) Amended in 2012 (S.I. No. 327/2012) and 2015 (S.I. No. 386/2015), 2019 (S.I. No. 77/2019), 2022 (S.I. No. 288/2022). Available online here: S.I. No. 722/2003 - European Communities (Water Policy) Regulations 2003 (irishstatutebook.ie). Accessed April 2023.

[11] Department of Environment, Heritage and Local Government, 2009. European Communities Environmental Objectives (Surface Waters) Regulations, 2009 (S.I. No. 272 of 2009) Amended in 2012 (S.I. No. 327/2012) and 2015 (S.I. No. 386/2015), 2019 (S.I. No. 77/2019), 2022 (S.I. No. 288/2022). Available online here: S.I. No. 722/2003 - European Communities (Water Policy) Regulations 2003 (irishstatutebook.ie). Accessed April 2023.

[12] Department of Environment, Community and Local Government, 2014. European Union (Water Policy) Regulations 2014 (S.I. No. 350 of 2014). Available online here: S.I. No. 350/2014 - European Union (Water Policy) Regulations 2014. (irishstatutebook.ie) Accessed April 2023.

[13] Department of Environment, Heritage and Local Government, 2009. European Communities Environmental Objectives (Surface Waters) Regulations, 2009 (S.I. No. 272 of 2009) Amended in 2012 (S.I. No. 327/2012) and 2015 (S.I. No. 386/2015), 2019 (S.I. No. 77/2019), 2022 (S.I. No. 288/2022). Available online here: S.I. No. 272/2009 - European Communities Environmental Objectives (Surface Waters) Regulations 2009 (irishstatutebook.ie). Accessed April 2023.

- European Communities (Good Agricultural Practice for Protection of Waters) Regulations 2010 (S.I. No. 610 of 2010)[14]
- European Communities (Technical Specifications for the Chemical Analysis and Monitoring of Water Status) Regulations, 2011 (S.I. No. 489 of 2011).

7.3.1.2 Water Framework Directive Waterbody Status

The European Communities Environmental Objectives (Surface Water) Regulations 2009 (S.I. No. 272 of 2009)[15] (the Surface Water Regulations), give effect to the criteria and standards used for classifying surface waters in accordance with the WFD. There are five categories of surface water status: 'High', 'Good', 'Moderate', 'Poor' and 'Bad'.

A surface waterbody must achieve both good ecological status and good chemical status before it can be considered to be of good status. The chemical status of a waterbody is assessed based on certain chemical pollutants. The ecological status is assessed based on Biotic Indices or Quality (Q) Values. The EPA Biological Quality Rating System for Rivers (Q Rating System) and its relationship with the WFD Status is shown in Table 6-1.

Table 7-1: EPA Q Rating System and WFD Status

Q-Value	Water Quality	WFD Status
Q5	Pristine	High
Q4-5	Very good	
Q4	Good	Good
Q3-4	Slightly Polluted	Moderate
Q3	Moderately Polluted	Poor
Q2-3	Moderate to Poor	
Q2	Poor	Bad
Q1-2	Poor to bad	
Q1	Bad	

[14] Department of Environment, Heritage and Local Government, 2010. European Communities Environmental Objectives (Groundwater) Regulations, 2010 (S.I. No. 9 of 2010). Amended in 2011 (S.I. No 389/2011), 2012 (S.I. No 149/2012) and 2016 (S.I. No 366/2016). Available online here: https://www.irishstatutebook.ie/eli/2010/si/9/made/en/print. Accessed April 2023.)

[15] Amended in 2012 (S.I. No. 327 of 2012) and 2015 (S.I. No. 386 of 2015)

In accordance with the Surface Water Regulations, water classified as 'High' or 'Good' must not be allowed to deteriorate. Water classified as less than good must be restored. The Surface Water Regulations also state that, for the purpose of classification, a status of less than good is assigned in the case of a waterbody where the environmental objectives are not met.

7.3.1.3 Water Framework Directive Risk Assessments

A baseline risk assessment was completed of the water bodies within each River Basin District in 2005. This assessment involved using information on water pollution indicators, point and diffuse pollution sources, water abstraction and existing commercial activities.

7.3.1.4 Relevant Guidance

The following guidelines and literature were considered in the development of this chapter to identify relevant objectives relating to hydrology and surface water quality:

- Guidelines on the information to be contained in Environmental Impact Assessment Reports - Environmental Protection Agency (EPA), May 2022

In addition to considering the relevant documents above the methodology for the baseline assessment has been devised with due consideration of the following guidelines:

- Greater Dublin Strategic Drainage Study (GDSDS): New Development Policy, - Dublin Drainage, March 2005
- The Planning System and Flood Risk Management - Guidelines for Planning Authorities - Department of Environment, Heritage and Local Government (DoEHLG) and the Office of Public Works (OPW), November 2009
- Environmental good practice on site guide (fourth edition) (C741)- Construction Industry Research and Information Association (CIRIA), January 2015)
- Best Practice Guide BPGCS005 Oil Storage Guidelines (Enterprise Ireland)
- Control of water pollution from linear construction projects (C648) - Construction Industry Research and Information Association (CIRIA), December 2001
- Control of water pollution from construction sites. Guidance for Consultants and Contractors (C532) - Construction Industry Research and Information Association (CIRIA), December 2001
- The SuDS Manual C753 - Construction Industry Research and Information Association (CIRIA), 2015
- Guidelines for the Crossing of Watercourses During the Construction of National Road Schemes (National Roads Authority, 2005)
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (Inland Fisheries Ireland, 2016)
- GE-INT-01003- Introduction to the NRA Design Manual for Roads and Bridges (Transport Infrastructure Ireland, December 2013)
- River Basin Management Plan 2018-2021 (Department of Housing, Planning and Local Government).

7.3.2 Relevant Irish Plans

The WFD has been implemented in Ireland by creating a 'River Basin Management Plan' (RBMP) to manage water quality on the island of Ireland, with each RBMP running for a six year cycle.

The RBMP's divide the island of Ireland into river basin districts. The first RBMP divided the island into eight districts by natural geographical areas that occur in the landscape.

The first RBMP ran from 2009 to 2015. In the 2nd cycle this was reduced to one River Basin District for the republic and one international river basin district along the border with Northern Ireland. River Basin Management Plan 2018-2021 has been prepared by Department of Housing, Planning and Local Government. The plan sets out the actions that Ireland will take to improve water quality and achieve 'good' ecological status in water bodies (rivers, lakes, estuaries and coastal waters) by 2027. The third Cycle River Basin Management Plan outlines the following key objectives:

- Water Quality Improvement: The plan aims to improve the quality of water bodies to meet the environmental objectives set by the Water Framework Directive. This involves addressing issues such as pollution, nutrient enrichment, and other water quality problems.
- Ecological and Environmental Protection: It seeks to protect and enhance the ecological status and potential of water bodies, ensuring they support a healthy and diverse range of aquatic and terrestrial species.
- Sustainable Water Resource Management: The plan emphasizes the sustainable use of water resources, taking into account the needs of the environment, society, and the economy.
- Public and Stakeholder Engagement: It encourages public participation and engagement with stakeholders to ensure that decisions regarding water management are inclusive and consider various interests.
- Monitoring and Assessment: The plan involves monitoring the status of water bodies, assessing their ecological and chemical quality, and using this information to guide management decisions.
- River Basin Districts: Ireland is divided into different River Basin Districts, and the plan addresses the unique challenges and issues faced by each district, tailoring management actions accordingly.
- Measures and Programmes: The plan outlines specific measures and programs that will be implemented to achieve the set objectives, including actions to reduce pollution, restore habitats, and promote sustainable water use.
- Compliance with EU Directives: Ireland is obligated to comply with EU directives, including the Water Framework Directive, and the plan helps the country fulfil its legal obligations in this regard.
- Long-Term Sustainability: The plan considers the long-term sustainability of water resources, aiming to ensure that future generations can also benefit from clean and healthy water bodies.

7.3.3 Desk Study

The desk study involved an examination of the hydrological aspects and water quality aspects of the following sources of information:

- Current and historic Ordnance Survey Ireland mapping, and ortho-photography.
- Science and stories about Integrated Catchment Management (https://www.catchments.ie/).
- OPW Indicative Flood Maps and historic flooding (https://www.floodinfo.ie/map/floodplans/).

- Review of the WFD online mapping and data (http://www.wfdireland.ie/maps.html).
- Geological Survey Ireland (www.gsi.ie).
- Review of the EPA online mapping (https://gis.epa.ie/EPAMaps/).
- Rainfall data (https://www.met.ie).

7.3.4 Field Assessment

A site walkover survey was carried out in July 2024 to establish the pattern of existing drainage and to record existing hydrology features of the proposed development. During the site visit the GPS coordinates, descriptions, and photographs of the hydrological features were recorded. The site walkover involved an initial review of available information gathered in the desk study phase followed by a site visit.

No significant constraints were noted in terms of hydrology and water quality during the site visits.

7.3.5 Evaluation Criteria

The sensitivity of receptors, the quality of impacts the magnitude of impacts, the probability and duration of the impacts are assessed for the proposed development to determine significance of the impacts.

Thresholds for assessing the sensitivity of environment and magnitude of impacts are outlined in the Noise, Population and Human Health section.

Quality of effect of an impact is either 'Positive, 'Neutral' or 'Negative' and may have influence in the 'Momentary', 'Short', 'Medium' or 'Long-term'. Impacts may also be either 'Temporary' or 'Permanent'. The probability of impact can be either 'Likely' or 'Unlikely'.

7.3.6 Sensitivity of Receptors

The sensitivity of a hydrological receptor or attribute is based on its ability to absorb development without perceptible change. Due to the sites topography Surface runoff currently drains to the west.

The hydrological environment is considered to be of 'Medium' sensitivity as there is one WFD mapped stream, the Dunrally (Stream) which flows west to east along the boundaries of each land parcel within the proposed solar farm development. The surface runoff volumes are considered to be low due to the small catchment area of the site.

7.3.7 Assessment of Significance of Hydrology Impact

The assessment of the magnitude of an impact incorporates the timing, scale, size, duration and probability of the impact in accordance with the EPA Guidelines. The significance criteria for hydrological impacts are defined as set out in Table 6-2.

Table 7-2: Impact Significance Criteria 16

Impact Significance	Criteria
Imperceptible	An impact capable of measurement but without noticeable consequences
Not significant	An impact which causes noticeable changes in the character of environment but without significant consequences
Slight impacts	An impact which causes noticeable changes in the character of the environment without affecting its sensitivities
Moderate impacts	An impact that alters the character of the environment in a manner that is consistent with existing and emerging trends
Significant impacts	An impact which, by its character, magnitude, duration or intensity significantly alters a sensitive aspect of the environment
Very Significant	An impact which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment
Profound impacts	An impact which obliterates sensitive characteristics

The diagram below, Figure 7-1, shows how comparison of the character of the predicted impact to the sensitivity of the receiving environment can determine the significance of the impact. Sensitivity of the receiving environment can be 'high', 'medium', 'low', 'negligible'. Description of impact is defined by its character, magnitude, duration, probability and consequences. The magnitude of impact can be 'high', 'medium', 'low' or 'negligible'.

[16] Guidelines on the information to be contained in environmental impact assessment report Draft August 2017

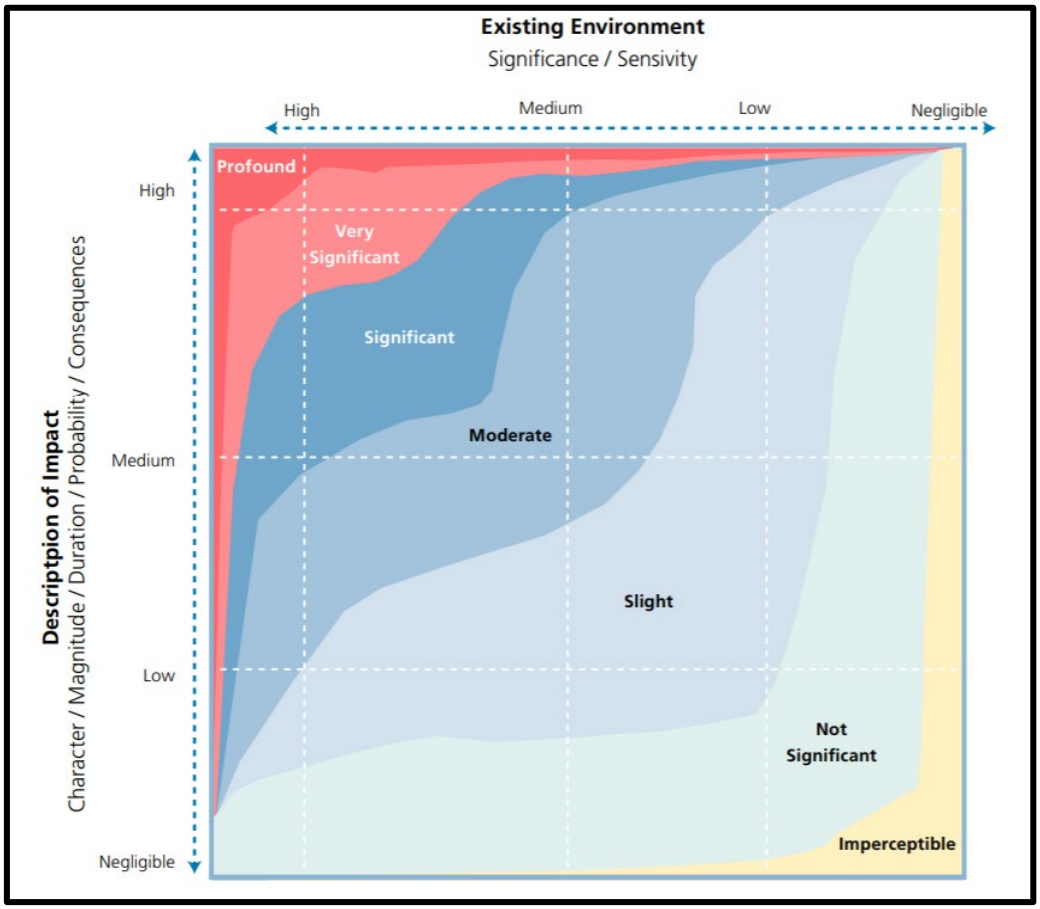


Figure 7-1: Classifications of the Significance of Impacts

7.4 Existing Environment

This section describes the receiving environment and sets out summary of historical flooding and water quality of rivers within study area.

7.4.1 General Description of the Catchments

The Proposed Development comprising of the proposed 110kV substation and underground grid connection to Coolnabacky is located within Hydrometric Area no. 14, Barrow of the Irish River Network System.

Catchment areas are broken down into sub-catchments, and sub-catchments into sub-basins (water bodies). Regarding the proposed development, it is situated within the Barrow_SC_050 sub-catchment. The proposed development is situated within the Dunrally Stream_010 and Dunrally Stream_020 sub-basins as shown on Figure 7-2.

The site is within the Barrow catchment. The Dunrally Stream is the main hydrological feature in the site which becomes the Glasha River further west. The Tonafarna Stream also runs through the site. Much of the area is part of the OPW Drainage District Scheme. Several drainage channels are located within or adjacent to the development site.

Based on the available topography data procured and site inspection of the proposed 110kV AIS Substation and LI/LO connection site, surface water runoff within the site boundary mostly drains towards the north-western part of the site. The existing site drainage is detailed in Section 7.4.6.

7.4.2 Historical Flooding

The submitted FRA reviewed OPW historic flood records and predictive flood mapping relevant to the Proposed Development. The closest recorded flood events to the proposed substation and LI/LO connection site comprise recurring flooding at Tonafarna, where a tributary of the Glasha River can overflow following heavy rainfall, with no records identifying flooding of the proposed substation site or on the underground grid connection route to Coolnabacky.

The proposed 110kV substation at Morett is located in Flood Zone C and has a low probability of fluvial flooding.

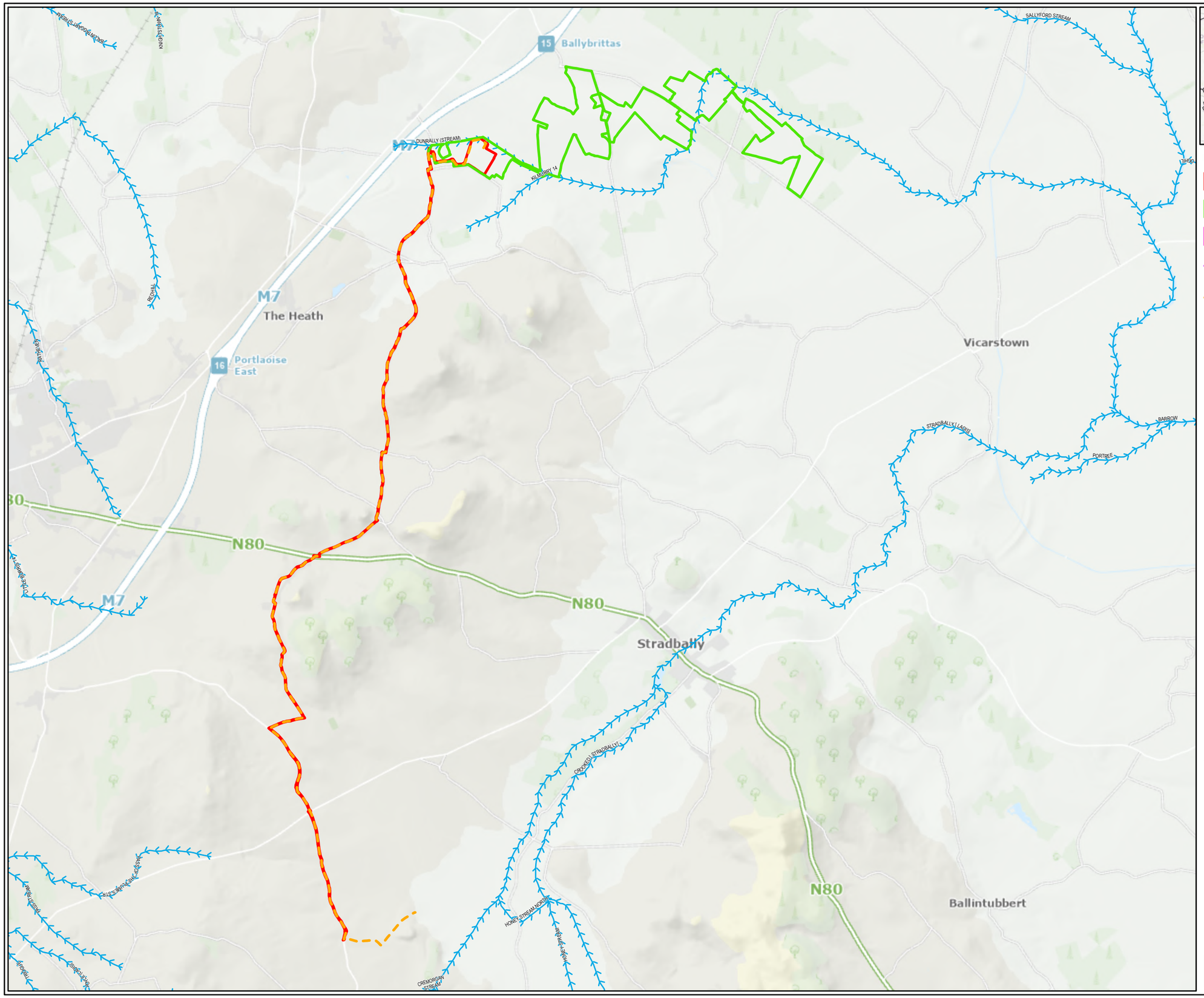
The proposed LILO connection, identified as Connection 1 within the submitted FRA, crosses mapped CFRAM Flood Zones A and B associated with minor watercourses. This comprises overhead infrastructure, with the conductors located above all predicted flood levels and support structures which do not obstruct flood flows or materially reduce floodplain storage. The FRA therefore classifies the fluvial flood risk as Low.

The underground grid connection to Coolnabacky 110kV Substation, identified as Connection 2 within the submitted FRA, lies entirely outside the mapped Flood Zone A and B extents and is therefore located in Flood Zone C. The route includes one stream/drainage-channel crossing and two local drainage culverts. The FRA concludes that underground grid connection to Coolnabacky 110kV Substation is not at risk of inundation and will not increase flood risk elsewhere.

Overall, the FRA classifies the fluvial flood risk associated with the proposed grid connection infrastructure as Low.

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Legend

- Site Boundary
- Permitted Solar Farm
- WFD River Sub Basins
- Cushaling - PortLaoise 110kV OH line to the Portlaoise 110kV Substation
- Tail-Fed connection to the Coolnabacky 110kV Substation
- Rivers

TITLE: River Waterbody Catchment Map			
PROJECT: Cappakeel Solar Farm			
FIGURE NO:	6.2		
CLIENT:	Perigus Energy Ireland Midco Limited		
SCALE:	1:50,000	**REVISION:**	0
DATE:	10/07/2026	**PAGE SIZE:**	A3

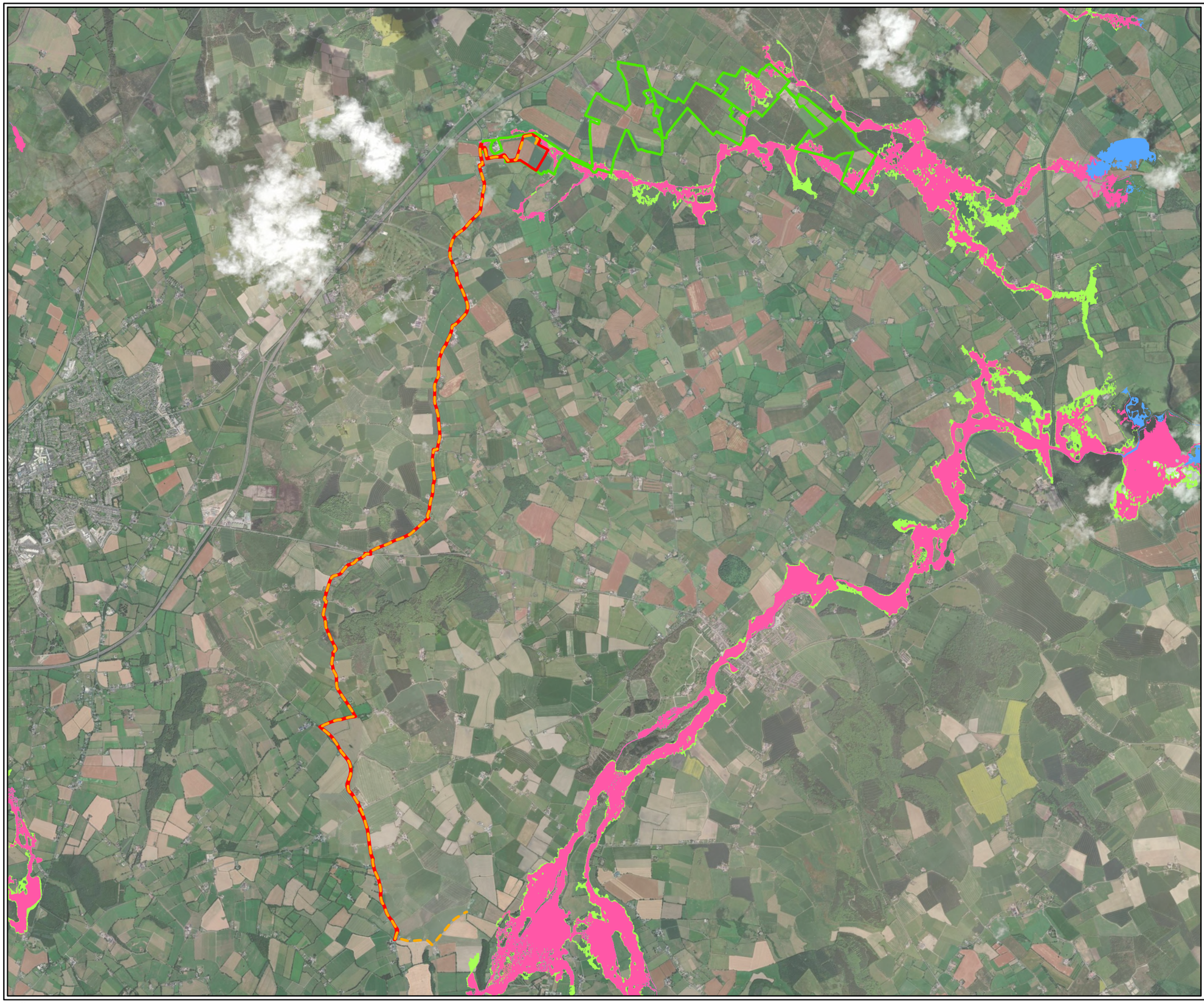
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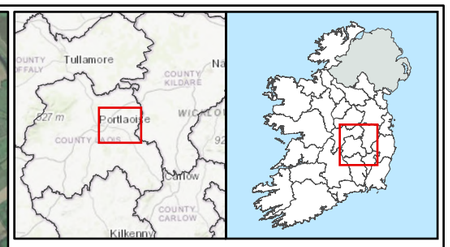
N W E S

0 0.5 1 2 Kilometers

World Imagery: Earthstar Geographics
World Topographic Map: Esri, HERE, Garmin, FAO, USGS
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Legend

- Site Boundary
- Permitted Solar Farm
- NIFM River Flood Extents Current Scenario 20 Years
- NIFM River Flood Extents Current Scenario 100 Years
- NIFM River Flood Extents Current Scenario 1000 Years

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TITLE: OPW Flood Data Map			
PROJECT: Cappakeel Solar Farm			
FIGURE NO:	6.3		
CLIENT:	Perigus Energy Ireland Midco Limited		
SCALE:	1:50,000	**REVISION:**	0
DATE:	10/07/2026	**PAGE SIZE:**	A3

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7.4.3 Water and Groundwater Quality

WFD water quality status and river waterbody risk within the study area is provided in Table 6-3.

Table 7-3: WFD River Status and River Waterbody Risk

Waterbody	CODE	River Status	Waterbody Risk
DUNRALLY STREAM_010	IE_SE_14D050200	Moderate	Review

According to the EPA data the river water quality status of the Dunrally stream is 'Moderate'. The river waterbody risk of the Dunrally stream is under 'Review' pending further characterisation.

Groundwater is important for a drinking water supply as well as the supply to surface waters. Groundwater is contained in aquifers which are the underground layers of rock which contain water. Aquifers are exposed in our surface lakes and rivers. Qualitative and quantitative criteria determine the classification of groundwaters in accordance with the provisions of the European Communities Environmental Objectives (Groundwater) Regulations 2010 S.I. No. 9 of 2010. The WFD sets out a series of criteria that must be met for a body to be classed as good chemical and quantitative status. Groundwaters are classified as being either 'Good' or 'Poor'.

7.4.4 Hydrogeology

The proposed development site is located within the Dunrally stream_010 sub basin which underlies the entire extent of the study area. Groundwater is most at risk where the subsoils are absent or thin and, in area of karstic limestone, where surface streams sink underground at swallow holes.

The Dunrally stream flows south to north along the western boundary of the site, the stream is shown in Figure 7-2. The Dunrally Deel stream flows through the site in a Southeast to West direction before connecting to the River Barrow before entering through the town of Athy approximately 14km southwest of the site boundary.

Therefore, the Proposed Development has a hydrological connection with the River Barrow And River Nore SAC (002162) which is located approximately 5km east of the site.

The underlying aquifer is classified by the GSI as 'Locally Important Aquifer – Bedrock which is moderately productive only in Local Zones'.

According to the GSI online mapping, the quaternary geology underlying the proposed site area is predominantly comprised of 'Till' derived from 'Carboniferous limestones', Karstified limestone bedrock and Alluvium. The subject site is principally occupied by agriculture with significant areas of natural vegetation. Bedrock is expected to be relatively shallow according to some wells in the vicinity of the site.

The Geological Survey Ireland Groundwater Flooding Viewer does not identify predictive groundwater-flooding extents within the Proposed Development. Historic groundwater flooding has occurred elsewhere in the wider area but has not been recorded within the Proposed Development boundary.

Karst features, including wells and springs associated with geological faults, occur in the wider area. However, the FRA confirms that no identified karst feature intersects either grid connection route. On this basis, the FRA screened out groundwater flooding as a significant source of flood risk to the Proposed Development.

7.4.5 Protected Ecological Environment

The site is not situated within any environmentally designated areas. However, surface water runoff drains into the Dunrally stream which flows into the River Barrow And River Nore SAC 5km east of the site boundary. There is a hydrological connection with the proposed site to a protected area.

7.4.6 Internal Site Drainage

A site visit was undertaken to examine the existing drainage and hydrological features associated with the Proposed Development and to record the location of existing drainage features. As described in the Flood Risk Assessment (FRA) prepared by JBA Consulting, the proposed 110kV substation is located in Flood Zone C and is at low risk of fluvial flooding. Particular focus during the FRA site assessment was placed on the underground grid connection to Coolnabacky, as this element will be installed at ground level. Several drainage channels and streams are located along the cable route.

The underground connection to Coolnabacky is also located within Flood Zone C. Its buried nature within the public road network and subsequent reinstatement mean that it will not materially affect floodplain storage or conveyance during operation. Existing roadside drainage comprises drainage ditches, culverts and associated drainage features which convey surface water along and beneath the road network. These existing drainage features will be maintained during construction and reinstated following completion of the works.

Three watercourse/drainage crossings have been identified along the underground grid connection route to Coolnabacky 110kV Substation. These comprise one bridge overcrossing and two culvert undercrossings. At the two culvert locations, the UGC will pass beneath the existing culverts, which will remain in place where possible.

The LI/LO connection has limited overlap with mapped Flood Zones A and B. The overhead conductors will be elevated above predicted flood levels, while the supporting structures will occupy a limited area and will not materially obstruct flood flows or reduce floodplain storage.

The submitted FRA classifies the fluvial flood risk to the grid connection routes as Low. Potential blockage of existing bridge or culvert structures represents the principal residual flood risk identified in the FRA. However, the proposed construction methodologies, comprising overhead infrastructure for LI/LO and underground ducting for grid connection within the public road, mean that such blockage would not materially affect either connection.

Following construction, any affected drainage ditches and road verges will be reinstated to their original profile and hydraulic capacity. The underground cable will not create a permanent impermeable surface or alter the existing drainage regime. The proposed methodology for the underground cable to cross the bridge in the area of the Fen involves installation of the UGC within the bridge deck, with the road level over the bridge raised locally by up to 110mm to achieve the required cable cover. The approach was agreed in principle with Laois County Council, subject to a condition survey of the bridge and any necessary remedial works.

7.5 Potential Impacts

The potential impacts on the hydrological regime at the site and quality of waters draining the site are assessed in the following sections for the activities associated with each phase (construction, operation, maintenance and decommissioning) of the proposed development. The potential impacts are assessed in accordance with the evaluation criteria outlined in Section 6.2.5.

7.5.1 Potential Impact of 110kV AIS Substation

7.5.1.1 Do Nothing Scenario

If the proposed development does not proceed, the site will remain as agricultural land for the foreseeable future including grazing and arable uses.

7.5.1.2 Potential Impacts During Construction

Possible potential impacts on hydrology and water quality during construction activities of the substation include:

- Increased runoff due to the construction of new hardstanding areas;
- Standing water in excavations could contain an increased concentration of suspended solids as a result of the disturbance of the underlying soils;
- Silt carried on the wheels of vehicles leaving the site could be carried onto the public road;
- Inappropriate site management of excavations could lead to loss of suspended solids;
- Grid connection and internal cable trenches could act as a conduit for surface water flows;
- The construction of new infrastructure has the potential to obstruct existing overland flow.

The loop-in/loop-out connection will comprise elevated conductors and support structures situated outside Flood Zones A and B. It will therefore not obstruct flood flows or materially reduce floodplain storage.

The underground grid connection is located in Flood Zone C. As described within Section 7.4.6, above, the proposed underground grid connection route has three watercourse crossing. There are two crossings of existing culverts, it is intended to undercross these culverts without removing or altering the culverts. The third crossing is an overcrossing of an existing bridge crossing in the Fen area, the UGC will be installed within the bridge deck. No in-stream works are proposed at these crossings.

Subject to the implementation of the Construction Methodology and CEMP measures, construction of the Proposed Development will not increase flood risk elsewhere or result in a significant effect on hydrology or water quality.

7.5.1.3 Potential Impacts During Operation

Without mitigation in place, discharge of drainage from the proposed substation would have the potential to result in intermittent, significant effects on the hydrology and water quality of the Dunrally stream.

Due to the non-intrusive nature of all other site operations, it is unlikely there will be release of the suspended solids. The proposed settlement ponds are in place to treat runoff for suspended solids.

There is a potential risk of some hydrocarbons leaking from the vehicle's transformers. However, the volumes would be low and insignificant, there is also a petrol interceptor in place to treat surface water runoff from the substation compound.

It is not envisaged that the Operational and Maintenance phase of the proposed development will have a significant impact on hydrology and water quality.

7.5.1.4 Potential Impacts During Decommission

While the solar farm associated with the Proposed Development has a defined operational lifespan (40 years), the 110kV AIS substation, underground grid connection and LILO grid connection are intended to become a permanent node within the Irish National Electricity Grid. Upon completion and commissioning, the substation and its associated 110kV loop-in infrastructure will be handed over to EirGrid. It is expected that this infrastructure will remain in situ as a strategic asset for the national grid network long after the solar farm has reached its end-of-life. Consequently, a decommissioning phase for the substation is not anticipated.

7.6 Proposed Drainage

The catchment area of the Proposed Development is small compared to the catchment area of the sub-basin the site is located in. The runoff volumes generated within the site are small. Thus, there are segments of the development which do not require surface water management. The application of Sustainable Urban Drainage Systems (SuDS) has been optimised and maximised to mitigate flood risk, enhance biodiversity, protect and enhance visual amenity.

7.6.1 Proposed Surface Water Drainage Network

The proposed 110 kV Substation will have a surface water and foul water network. The proposed drainage scheme is as shown on drawing P23-226-0600-0001, submitted as part of this application.

Attenuation for the Proposed 110 kV Substation is provided by settlement ponds. Settlement ponds have been sized for the Proposed Development in line with CIRIA C532 guidance. Details of the settlement pond design methodology are included in section 7.6.2 below.

Interceptor drains are proposed to collect the overland flow paths from the upslope side of the substation and redirect them around the substation. These interceptor drains will discharge to diffuse stone outfalls, mitigating the potential for erosion and minimising the impact of the Proposed Development on the natural overland flow paths at the Application Site.

Within the substation compound channel drains are proposed to collect surface water runoff from carparking spaces. These channel drains will be collected by a piped surface water drainage network, which will pass through a petrol interceptor before discharging to the proposed settlement ponds.

Rainwater downpipes are proposed for the substation buildings. Channel drains are proposed at each doorway of the buildings. Additionally, the walkways and ground around the buildings will fall away from the building, redirecting any surface water away from the building and towards other surface water drainage features.

Swales are proposed along the downslope edge of the proposed substation. These swales will collect any excess surface water runoff from the substation compound and discharge it to the proposed settlement ponds.

It is proposed to include a rainwater harvesting system as part of the surface water drainage network. The system will comprise a filter, an underground tank and a pump. The proposed system collects rainwater from the roofs of substation buildings, filters it and stores it in underground tanks which are fitted with a pump. This stored water can then be reused by the Proposed Development.

7.6.2 Settlement Pond Sizing

Settlement ponds have been sized for the Proposed Development in line with CIRIA C532 guidance.

The settlement pond design is based on primary settling out of suspended solids from aqueous suspension. The theory behind the design of the settlement ponds is the application of Stoke's Law. The settlement ponds will be designed to provide sufficient retention time and a low velocity environment to allow suspended solids of a very small particle size to fall out of suspension prior to allowing the water to outfall to the receiving environment.

Treated water will percolate to groundwater or travel over ground and be assimilated into the existing drainage network. There will be no direct discharges from the Proposed Development to any existing natural watercourse. Discharge from the settlement ponds will be by diffuse stone outfall. Flow rates for storm events will be maintained at or below greenfield run-off rates.

7.6.2.1 Coefficient of Runoff

The substation compound being treated by the settlement ponds are primarily unbound surfaces. The substation compound is split between a customer compound and an Eirgrid compound, with a combined area of 17,750 m^2. The substation layout is as shown on drawing 300100925-DR-100. Substation details including buildups for the different surface types are included in drawing 300100925-DR-106.

Within the overall compound the areas that could be considered as impermeable are the two buildings with associated concrete walkways and the Eir Grid compound's concrete access track. These areas sum to 1,845 m^2 or c. 10% of the overall compound area. There are some limited concrete areas within the remaining 90% of the substation area, but this area is primarily unbound stone. This surface type will facilitate surface water infiltrating to ground across c. 90% the compound.

As a conservative approach the settlement ponds were sized as if the entire catchment (the substation compound) were impermeable, with no rainfall permeating to ground prior to entering the ponds.

7.6.2.2 Climatic Data

Climatic Data for the Application Site was obtained from Met Éireann's Rainfall Return Period Calculator. The full rainfall return period for the application site is included within the pond sizing calculations. A 30% factor was applied to all rainfall values to account for potential future increases in rainfall due to climate change.

7.6.2.3 Calculations

For the preliminary design Stokes' law is used in combination with the Rational Method. The inflow to stilling pond is calculated using Modified Rational Method:

Q = 2.78 x c x I x A (l/s)

C = coefficient runoff, for hardstanding area the value of 1 is used.
I = intensity (mm/h) for 1 in 75 years storm event, duration 10 mins
A = contributing area (ha)

According to the CIRIA 648 a pond volume is defined by inflow and retention time:

V = Q x t

Full calculations for the sizing of settlement ponds are appended to the Construction and Environmental Management Plan included in Appendix 6.

7.6.2.4 Settlement Pond Construction

Settlement ponds will be installed concurrently with the formation of the access tracks. Settlement ponds will be monitored closely over the construction timeframe to ensure that they are operating effectively. Settlement pond maintenance and/or cleaning will not take place during periods of extended heavy rain; this will be carried out under low or zero flow conditions so as not to contaminate the clean effluent from the pond. The water level would first be lowered to a minimum level by pumping through a settlement tank without disturbing the settled sediment. Then excavator can remove sediment;

All settlement ponds have been set back a minimum of 50m from water framework directive waterbodies. Of the two proposed ponds, Pond SSP (2) is set back c. 70m from the Dunrally Stream_010 and Pond SSP (1) is set back c. 115m from same.

In the event of an emergency, the settlement ponds will provide a temporary holding area for any accidental spills on site as it will be possible to block off the outflow from these ponds for a limited period. Erosion control and retention facilities, including settlement ponds will be regularly maintained during the construction phase.

The following shall apply to construction of settlement ponds at the Site:

- Pond depths generally to be excavated to 0.5m;
- Side slopes to be shallow, nominally at a 1 in 2 side slope (maximum); and
- Material excavated from the settlement pond should be compacted around the edge of the pond.

7.6.3 Proposed Foul Drainage Network

The proposed 110 kV Substation will have a surface water and foul water network. The proposed drainage scheme is as shown on drawing P23-226-0600-0001, submitted as part of this application.

Permanent sanitary facilities will be provided at the substation. A foul system is proposed within the station to cater for the wastewater generated in the welfare facilities of the control building. The foul system will consist of an underground pipe network, foul manholes and a full retention foul effluent storage tank. The tank will have an associated high-level alarm which will be connected to the control building. A foul holding tank to be maintained and emptied bi-annually is the proposed means of treating and disposing of foul waste from the site.

The licensed contractor charged to empty and dispose of the waste will be the holder of a valid waste collection permit.

7.7 Mitigation Measures

7.7.1 Proposed Mitigation Measures 110kV AIS Substation

7.7.1.1 Proposed Mitigation Measures during Construction

The impact of the substation during the construction phase is **not significant** for hydrology and water quality.

The proposed drainage within the site will ensure that any additional runoff generated by the Proposed Development are retained within the site and sediments do not enter the private properties surrounding the site.

In accordance with the FRA carried out by JBA consulting, the substation and LI/LO connection is proposed to be located in Flood Zone C. This area has a low associated flood risk.

Surface water will be managed according to the Construction Environmental Management Plan (CEMP) which is enclosed with this application. The CEMP is based on 'best practice' and provides mitigation measures that can be implemented during the construction stage.

Examples of such measures are outlined in Section 4.2.2 of the CEMP.

- Silt fencing;
- Silt Traps;
- Erosion Control;
- Inceptor Drains;
- Cross Drains;
- Roadside Swales.

No additional flood-specific structural mitigation is therefore required for this connection.

The underground grid connection is located within Flood Zone C. Subject to the above measures, it will not obstruct flood flows, reduce floodplain storage or increase flood risk elsewhere.

For further information, please refer to Section 4.2.2 of the enclosed CEMP for the full list of measures which could be used if necessary.

7.7.1.2 Proposed Mitigation Measures during Operation and Maintenance Stage

The effects on hydrology and water quality in the Dunrally Stream, as a result of the Proposed Development have the potential to be significant in the absence of mitigation. However, the proposed design includes:

- Settlement Ponds are in place to both treat surface water runoff and to attenuate surface water discharge.
- Oil interceptor and silt traps are proposed upstream of the settlement ponds to provide additional treatment to surface water runoff.

The proposed design will control run-off rates to be at or below greenfield run-off rates.

Following the implementation of the above mitigation, the impact on hydrology and water quality of the substation for the Operation and Maintenance stage is not significant.

The proposed drainage will ensure that the extra volumes generated due to the development are retained within the site. There will be no releases of the sediments as there will be no further disturbance of soils post-construction.

No further specific mitigation measures are required. However best practice measures are outlined in the enclosed CEMP.

7.7.1.3 Proposed Mitigation Measures during Decommissioning Stage

While the solar farm associated with the Proposed Development has a defined operational lifespan (40 years), the 110kV AIS substation, underground grid connection and LILO grid connection are intended to become a permanent node within the Irish National Electricity Grid. Upon completion and commissioning, the substation and its associated 110kV loop-in infrastructure will be handed over to EirGrid. It is expected that this infrastructure will remain in situ as a strategic asset for the national grid network long after the solar farm has reached its end-of-life. Consequently, a decommissioning phase for the substation is not anticipated.

7.8 Cumulative Impact

As part of the assessment of cumulative impacts, planning searches were undertaken using online planning enquiry portals to search for large scale developments within 20km of the proposed developments. The planning portal was also searched for small scale developments. The majority of the applications were of a scale and/or distance that they would not cause a cumulative effect in relation to Hydrology and Water quality.

No significant developments in the vicinity of the proposed development are identified.

As stated in Section 6.5 the increase in runoff due to the construction and operational stage of the project is 'not significant'.

The construction of the substation might commence at the period of the construction of the solar farm. Therefore, the disturbance of the soil could take place at the same time. The release of suspended solids and pollutants during the construction of the substation and solar farm will be mitigated by proposed mitigation measures provided in CEMP, which forms the part of this application.

Each permitted development is required by the Local Authority to provide suitable attenuation on site to ensure greenfield run-off rates and that there is no increase in offsite flooding as a result of development.

The residual cumulative impact on water and hydrology for the construction and operation phases is anticipated to be long-term, neutral in terms of quality and of imperceptible significance, once appropriate mitigation measures to manage water quality runoff in compliance with legislative requirement are put in place for each development.

7.9 Residual Impacts

The presence of flood defences, by their very nature, hinder the movement of flood water across the floodplain and prevent flooding unless river levels rise above the defence crest level, or a breach occurs. This is known as residual risk.

With the provision of the mitigation measures set out in Section 7.7, the impact assessment for water quality has found that there are no significant effects anticipated from the proposed 110kV AIS Substation. Accordingly, there is no significant residual risk.

7.10 Conclusion

It is concluded that the potential impact of the proposed 110 kV AIS Substation development during all three phases of the project is 'not significant' to 'slight'.

JBA Consulting were appointed by Fehily Timoney and Company to appraise the flood risk of the proposed development in Cappakeel, Co. Laois. The substation is proposed to be located in the area of Flood Zone C, which has a low associated flood risk.

New hard surfaces have the potential to contribute to an increase in runoff. However, the road at the Customer MV switch gear building will be constructed from permeable material to allow surface water to permeate to the soil below. The outfall of the surface water drainage network will be to settlement ponds with diffuse stone outfalls. Therefore, any increase in run-off will not be significant.

The stormwater drainage of the substation, which is proposed to drain to settlement ponds has the potential for significant effects on hydrology and surface water. However, the design approach proposed will mitigate the potential effects such that the residual effects are not significant.

The construction, operation and decommissioning stages will be carried out in accordance with CEMP prepared for wider Project and 'best practice' approach.

Residual impact on hydrology and water quality is not significant. No significant developments within the vicinity of the proposed development are identified. Thus, the cumulative impact of the proposed 110kV AIS Substation development is not significant.

8. BIODIVERSITY AND ECOLOGY

8.1 Introduction

This chapter has been prepared to describe the existing ecology and biodiversity of the study area and to examine if and how it could be affected by the activities associated with the Proposed Development.

8.2 Methodology

8.2.1 Relevant Guidance

The methodology for this appraisal has been devised in consideration of the relevant planning policy and legislation as identified within the accompanying EcIA report.

8.2.2 Desktop Study

A desk study was carried out to collate available information on the existing natural environment at the proposed project location. This comprised a review of the following publications, data and datasets:

- Environmental Protection Agency (EPA) (on-line map-viewer including the Appropriate Assessment Tool)[17];
- Department of Housing, Planning, and Local Government- EIA Portal;
- National Parks and Wildlife Service – online European site network information, including site conservation objectives[18];
- National Parks and Wildlife Service – Information on the status of EU protected habitats and species in Ireland (including Article 17 and Article 12 Reports)[19];
- National Parks and Wildlife Service - Flora (Protection) Order 2022 Map Viewer;
- National Biodiversity Data Centre[20]
- Consented Cappakeel Solar Farm Planning Application (Ref No.: PL-500061-LS) and Associated documents – Ecological Impact Assessment (EcIA)

17 https://gis.epa.ie/EPAMaps/ Accessed 05/02/2025
18 www.npws.ie Accessed 05/02/2025
19 https://heritagedata.maps.arcgis.com/apps/webappviewer/index.html?id=a41ef4e10227499d8de17a8abe42bd1e Accessed 05/02/2025
20 www.biodiversityireland.ie Accessed 05/02/2025

8.2.3 Field Study

An ecological walkover survey was carried out on the 9th October 2025 within the Proposed Development. Of the surveys carried out on 9th October 2025, the following are relevant for Appropriate Assessment (i.e. have a relationship to European Sites as a potential special conservation interest/ qualifying interest of European sites or a habitat / species that can support a special conservation interest/ qualifying interest) and are included here as information relied upon in this NIS:

8.2.3.1 Habitats

The habitats within the Proposed Development were identified and classified according to 'A Guide to Habitats in Ireland' (Fossitt, 2000). The flora species present in each habitat type was recorded using the DAFOR scale.

Plant nomenclature for vascular plants follows 'New Flora of the British Isles' (Stace, 2019). Botanical species were assessed in accordance with their occurrence on the Flora (Protection) Order 2022 and The Ireland Red List No. 10: Vascular Plants. Other species records were assessed according to the Irish Red Data Lists. Habitats were assessed with respect to Annex I habitat criteria.

Invasive plants, including species listed on the Third Schedule to the Habitats Regulations, and other species which can negatively impact biodiversity were recorded and mapped during the habitat survey.

8.2.3.2 Mammals

All field sightings and field signs observed on the day were recorded using FieldMaps, such as tracks, trails, droppings, resting places or other marking signs. Survey techniques followed best practice guidance:

- NRA (2009) 'Ecological Surveying Techniques for Protected Flora and Fauna During the Planning of National Road Schemes'
- NRA, (2006). Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes
- NRA, (2008). Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes
- JNCC (2004) 'Common Standards Monitoring Guidance for Mammals'
- Scottish Badgers (2018). Surveying for Badgers: Good Practice Guidelines. Version 1

Reid (2013) National Otter Survey of Ireland 2010/12. Irish Wildlife Manuals No. 76

8.2.3.3 Bats

Preliminary roost assessments (PRA) were conducted along the UGC route by FT ecologists on 9th of October 2025, to record suitable habitats for bat roosting, commuting and foraging. The focus of this survey was suitable roosting features within the ZoI/immediately adjacent to the grid connection route.

There as a stone masonry bridge hereinafter known after known as Bridge 1 as labelled in the Construction methodology, located within the Proposed Development. These assessments were conducted following methodology from Collins (2023) . Reference was also made to the diagnostic features set out in the Augney et al., 2008 Guidelines and the Bat Tree Roost ID Key (Rotherham, 2018).

8.2.3.4 Avifauna

Bird species observed along the UGC route were noted during the ecological site walkover on 9th October 2025 and during the culvert inspection on 29th January 2026.

8.2.3.5 River Habitat Assessment

A river habitat survey (RHS) was undertaken on the 9th October 2025 along 1km stretch the Dunrally Stream_010 (IE_SE_14D050200) that flows north of the field containing the substation. Survey methodology followed the UK Centre for Ecology and Hydrology guidelines, and River Habitat Survey (RHS) data collected used RAPID 3.0 software[21]. The following criteria were assessed: the substrate type, water depth, flow velocity, instream vegetation, and fishery habitat suitability.
On 29th January 2026, a RHS was undertaken at the stream flowing below Bridge 1.

8.2.3.6 Other Fauna

During the course of the ecological surveys at the Proposed Development the potential for species from other groups of fauna - such as amphibians, invertebrates etc. - were noted and included in the report.

8.2.3.7 Survey Limitations

- UGC route surveys conducted from the public road as access to third party lands was not permitted.
- Habitat surveys were conducted in October which lies outside the optimal season (April – September).
- River Habitat survey carried out at Bridge 1 along the grid connection were conducted two days after (29th January 2026) a nationwide heavy rainfall Storm Chandra which would have resulted in exceptionally high/fast river levels.

[21] Rapid 3.0 software. UK Centre for Ecology & Hydrology. Available at: https://www.ceh.ac.uk/services/rapid-21-software (Accessed: 07 March 2025).

8.3 Receiving Environment

CIEEM guidelines on EcIA recognises the requirement for a proportionate approach to the ecological assessment for a Proposed Development noting that "*the level of detail required in an EcIA will inevitably be proportionate to the scale of the development and complexity of its potential impacts*". In this regard the guidelines prescribe that the zone of influence (ZoI) of the proposed project should be established i.e. the area(s) over which ecological features may be affected by the biophysical changes caused by the Proposed Development and associated activities. The guidelines also state that "*ecologists undertaking EcIAs should determine whether an ecological feature within the zone of influence of a development should be 'scoped out' (excluded) and justify the reasons for doing so*".

Each ecological feature will have different zones of influence, depending on its ecological characteristics and sensitivity to an environmental change.

Consideration is given to the following in determining the spatial and temporal scale of potential biophysical changes in the environment which might occur as a result of the development:

- The characteristics, size and location of the Proposed Development; and
- whether there could be landscape[22] or ecological connectivity[23] to any ecological receptor.

As such the scale of the EcIA extends beyond the footprint of the works and associated development boundary for the Proposed Development and considers potential for direct and indirect links to ecological receptors and associated ecological structure and function. From this, the key ecological receptors (KERs)[24] are identified and are considered further in terms of their Zones of Influence (ZoI) i.e. the pathway for an effect on the KER (as determined through source-pathway-receptor model[25]) and the sensitivity of the KER to the effect as informed by best available guidance / data. In this regard, the following is noted:

The temporary ZoI for dust effects during construction and demolition is established having regard to 'Guidance on the Assessment of dust from demolition and construction' (Institute of Air Quality Management, Holmen et al, 2024) which states that for ecological receptors, effects from dust soiling is 'High' to 'Medium' up to 20m from the source (depending on sensitivity of ecological receptor) and reduces to 'Medium' to 'low' over 50m from the source. The guidelines state that ecological receptors should be considered within 50m of the project and within 250m of site entrances and construction compounds where trackout[1] may occur.

[22] Landscape connectivity is a combined product of structural and functional connectivity, i.e. the effect of physical landscape structure and the actual species use of the landscape.
[23] Ecological connectivity is defined as a measure of the functional availability of the habitats needed for a particular species to move through a given area. Examples include the flight lines used by bats to travel between roosts and foraging areas or the corridors of appropriate habitat needed by some slow colonising species if they are to spread.
[24] According to the National Roads Authority guidelines (NRA 2009), key ecological receptors are features of sufficient value to be material in the decision-making process for which potential effects are likely. According to the NRA Guidelines, key ecological receptors are therefore defined as features of Local (Higher Value), County, National, or International Importance.
[25] Based on the guidance provided in the Office of the Planning Regulator: Office of the Planning Regulator (OPR) (2021) Practice Note PN01 Appropriate Assessment Screening for Development Management and Office of the Planning Regulator (OPR) (2021) Practice Note PN02 Environmental Impact Assessment Screening.

In terms of the ZoI of construction works in proximity to the Dunrally stream, regard is had to (Stephanie Lachance, 2008) which found that downstream of culverts, the elevated fine-sediment accumulation from construction persisted for distances up to c. 1.5 km before returning to upstream background conditions. This is considered in terms of increased risk of sedimentation during the construction phase causing a likely effect on the structure and function of the habitat at the stream and within 1.5km downstream.

During the construction period, there will be an increase in human activity in the locality of the project which can cause disturbance / displacement of animals which can range from high (response to noise / visual stimuli) to low (unlikely to cause response) and can depend on the sensitivity of individual species to the stimuli. In terms of disturbance / displacement responses during construction, the following guidelines / studies are referred to:

- NatureScot Research 'Disturbance Distances Review: An Updated Literature Review of Disturbance Distances of Selected Bird Species' (Goodship, N.M and Furness, R.W, 2022) - a general Zoi of 1km is adopted, but reviewed on a species level as appropriate;
- Transport Infrastructure Ireland Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes (CC-ENV-01104) (TII, 2006 republished 2025) and Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes (CC-ENV-01103) and TII (2006, and republished 2025) - a ZoI of 150m is adopted.

Regard was had to the UK Bat Mitigation Guidelines (Reason & Wray, 2025)[26] and the zone of influence for disturbance to bats was considered within the footprint of the Proposed Development given the limited scale and nature of the proposed works.

For Groundwater Dependent Terrestrial Ecosystems (GWDTE) regard was had to 'Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems, Land Use Planning System SEPA Guidance Note 31' (2017) which notes a 250m potential zone of influence from ground works.

Designated Sites

Within the potential Zone of Influence of the Proposed Development, one SAC was identified: River Barrow and River Nore SAC (002162) located 11.2km downstream of the Proposed Development. There is suitable habitat for QI species lamprey and otter within the Dunrally stream that runs north of the Proposed Development.

The accompanying NIS concludes that implementing mitigation measures specified, there are no likely significant effects to European sites identified by the proposed development.

There are no NHAs within the ZoI of the Proposed Development.

The grid connection traverses the boundary of The Great Heath of Portlaoise pNHA (000881). The works remain in road within this section and as such there are no pathway for effects to any of the associated ecological features.

[26] Reason, P.F. and Wray, S. (2025). UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats. Version 1.2. Chartered Institute of Ecology and Environmental Management, Ampfield.

8.3.1 Habitats

There are no habitats within the Proposed Development that conform to those listed under Annex I of the EU Habitats Directive.

The UGC will be within road and as such wholly within buildings and artificial surfaces (BL3). This is the dominant habitat within the Proposed Development followed by improved agricultural grassland (GA1) which is the dominant habitat covering the lands in which the proposed substation is located. Other habitats include treelines (WL2), hedgerows (WL1), depositing/lowland river (FW2), stone walls and other stonework (BL1) and amenity grassland (GA2).

8.3.2 Flora

No rare or protected flora species protected under the Flora Protection Order (2022) or listed in Annex II and IV of the EU Habitats Directive (92/43/ECC) were recorded during the surveys.

The NPWS FPO Sites Mapviewer showed records of lesser centaury (*Centaurium pulchellum*) within hectad N50 and small-white orchid (*Pseudorchis albida)* within hectad S59 which transect the Proposed Development[27].

The Proposed Development does not overlap any Bryophyte Sites (NPWS FPO Bryophyte Sites Mapview[28]).

No records of Japanese Knotweed were recorded along the Proposed Development during ecological walkover.

Third Schedule species Rhododendron *Rhododendron ponticum* was recorded during the ecological walkover One plant was recorded within WD2 Mixed broadleaved/conifer woodland adjacent to the UGC located at 653207.474 699917.122 ITM coordinates, during the ecological walkover

8.3.3 Fauna

There is suitable nesting and foraging habitat for several bird species within 500m disturbance zone of the UGC route including treelines, hedgerows, woodlands, fen and scrub. No signs of nesting were recorded along the grid route and all the works will be contained within road.

According to Cappakeel Solar Farm Planning Application (Ref No.: PL-500061-LS) EcIA the red listed species yellowhammer was recorded as 'confirmed breeding' in a tilled field located alongside a hedgerow (654266.136 702894.858 ITM coordinates), situated 5m S of the proposed substation field. A kingfisher was recorded flying along the Dunrally stream to the north of the substation. The hedgerows and treelines within the substation field are of value to passerine species for breeding, roosting and foraging. The combination of hedgerows and arable land provides habitat for yellowhammer, which was common throughout the surrounding area. Raptors such as buzzard (and potentially kestrel) hunt over the agricultural grassland, though this habitat is generally considered to be of low value.

[27] Flora (Protection) Order 2022 Map Viewer
28 NPWS Bryophyte Viewer
https://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=71f8df33693f48edbb70369d7fb26b7e

No evidence of mammals was recorded along the Proposed Development grid route. There is potential for deer resting areas in the rich fen and flush and adjacent woodland. There is suitable habitat for foraging/commuting otter outside the Proposed Development within the unnamed stream below Bridge 1. No signs of activity were recorded during the survey. Despite locally suitable habitat, otter are less likely to commute through the agricultural drains downstream of Bridge 1.

No evidence of mammals was recorded within the substation field despite suitable hedgerow linear habitats.

Four Potential Bat Roost Features (PRFs) were recorded adjacent to the Proposed Development along the grid connection. None of the PRFs are within the footprint of works and will not be subject to removal or direct disturbance. The key resources identified on site for bats are the treelines and linear habitat features on site. The Proposed Development does not include for the removal of any treeline or hedgerows (beyond what is already consented under the solar farm development).

Table 8-1: Evaluation of KER's within the study area.

Site/ Habitat/ Species	Ecological Value	Rationale
Depositing/Lowland River	National	The Proposed Development is within 5m of the Dunrally stream which provides a pathway to the River Barrow and River Nore SAC, therefore there is potential for water quality impacts during construction, therefore it has been considered as a KER. An NIS has been prepared to assess the potential for significant effects on the SAC.
Improved agricultural grassland	Local Importance (Higher Value)	There will be some loss of GA1 habitat in the field where the Proposed Development.
Avifauna	Local (Higher Value)	There is suitable nesting and foraging habitat for several bird species, including confirmed breeding yellowhammer situated 5m S of the proposed substation field (within 500m disturbance zone to the Proposed Development as outlined in Section 4.4.1). As such, there is potential for construction phase related noise disturbance. Additionally, there will be small-scale loss of improved agricultural grassland due to the construction of the substation. This will result in reduction in foraging habitat for some passerine and raptor species. Therefore, local avifauna are considered KERs.
Aquatic Fauna	National	Construction activities associated with the Proposed Development within a minimum distance of 5 m of the watercourse—present a risk of sedimentation with potential to negatively affect water quality and aquatic habitat. This could impact aquatic fauna such as lamprey a named QI of the River Barrow and River Nore SAC, using suitable habitat within the 1.5km downstream ZoI for sedimentation. As such, aquatic fauna are considered KERs. An NIS has been prepared to assess the potential for significant effects on the SAC

Site/ Habitat/ Species	Ecological Value	Rationale
Mammals (excluding bats)	Local (Higher Value)	There is potential for disturbance to local mammals using habitats along the Proposed Development including woodlands, heath, scrub and fen. There is no pathway for direct effects on mammalian species as no signs of activity or breeding/ resting sites were identified during the ecological walkover. In addition, the works are confined within road and as such, there will be no loss of habitat. However, mammals are considered as a KER due to potential for disturbance.

8.4 Potential Impacts of the Proposed Development

8.4.1 Impacts during Construction

8.4.1.1 Habitats

The consented solar farm (Planning Ref No.: PL-500061-LS) includes for the removal of 75m of hedgerows (in 15 sections within the solar farm site, each five metres long) for access purposes. The proposed substation site is located within the boundary of the consented solar farm project, and will utilise the consented access. As such, no additional hedgerow removal beyond what is already consented will be required, of which 10m (two 5m sections) is located within the proposed substation boundary. The extent of such hedgerow removal is not of a scale that would cause a change to the field or land parcel shape and/or boundaries and will not alter habitat availability, connectivity or continuity for mammals and birds.

There is a pathway for the release of sediment to the Dunrally watercourse. Construction activities associated with the Proposed Development within a minimum distance of 5 m of the watercourse—present a risk of sedimentation with potential to negatively affect water quality and aquatic habitat. Consequently, there is potential for deterioration in water quality, degradation of aquatic habitats.

Similarly, an unnamed stream below Bridge 1 flows north towards Dunrally stream. The raising of the road at this location to allow for ducting will result in potential for surface water contamination to enter this stream which will ultimately end up in the Dunrally stream.

In the absence of mitigation, there is potential for surface water contamination and sedimentation resulting in habitat degradation. This would result in a **temporary, significant reversible effect**.

In addition to surface water protection mitigation measures described in Section 8.8 to minimise effect on the Dunrally stream river habitat, a full NIS has been prepared to assess the significance of effect on the downstream River Barrow and River Nore SAC.

8.4.1.2 Avifauna

Habitat Loss

As per Section 8.4.1.1, the proposed substation will not result in loss of hedgerow or treeline habitat beyond what is already consented, which has been evaluated as not being significant as part of the consented solar farm.

However, there will be small-scale loss of improved agricultural grassland. This will result in reduction in foraging habitat for some passerine and raptor species but this is not considered to have a significant effect due to the low value and high availability of this habitat type in the surrounding wider area. Therefore, a permanent non-significant effect is anticipated.

Disturbance

Considering the grid UGC construction will be phased, (100m over 2 days) and the confined nature of the works within road, disturbance to local birds inhabiting neighbouring habitats is not anticipated**.**

The construction of the substation has the potential however, to result in temporary noise disturbance to local nesting avian species including 'confirmed breeding' yellowhammer situated 5m of the substation field. As such, there is potential for **temporary slight, negative effect on avifauna in a local context.**

8.4.1.3 Mammals

Habitat Loss

There is no pathway for direct effects on mammalian species as no signs of activity or breeding/ resting sites were identified within the Proposed Development ZoI during the ecological walkover. As per Section 8.4.1.1, the proposed substation will not result in loss of hedgerow or treeline habitat beyond what is already consented, which has been evaluated as not being significant as part of the consented solar farm. As such, there will be no loss of habitat. **No significant effects are anticipated**.

Disturbance

Considering the UGC construction will be phased, (100m over 2 days) and the confined nature of the works within road, disturbance to local mammals inhabiting neighbouring habitats is not anticipated. **No significant effects are anticipated.**

8.4.1.4 Aquatic Fauna

There are no instream works required for the Proposed Development. However, there is a pathway for the release of sediment to the Dunrally watercourse. Construction activities associated with the proposed development within a minimum distance of 5 m of the watercourse—present a risk of sedimentation with potential to negatively affect water quality and aquatic habitat. Consequently, there is potential for deterioration in water quality, degradation of aquatic habitats. Considering lamprey habitat was recorded within the 1.5km ZoI outlined in Section 3.1, there is potential for sedimentation to degrade lamprey habitat, and cause disturbance to this species. This would result in a **temporary, significant reversible effect.**

8.4.2 Impacts during Operation

8.4.2.1 Habitats

No further excavations will be required during the operational phase of the Proposed Development and therefore there will be no source of impact for effects on depositing/lowland river; Dunrally stream and the stream below Bridge 1.

8.4.3 Avifauna

There is potential for increased collision risk between local avifauna including foraging raptors and the two newly installed 21m steel loop-in masts within the substation field. This could result in direct mortality or displacement of birds flying over this field. Considering the proposed 21m masts are to replace existing 16m, the risk of increased collision is deemed imperceptible and as such resulting in a **long-term imperceptible effect on local avifauna.**

8.4.4 Mammals

As no further excavation or construction works shall be required during the operational phase of the Proposed Development, no further impacts to terrestrial mammals are envisaged. There shall be some human activity within the site as part of general maintenance. However, this shall not differ markedly from the current level of human activity associated with agricultural practices within the site. No further impacts are envisaged to terrestrial mammals during the operational phase of the Proposed Development.

8.4.5 Aquatic Fauna

No further construction works will be required during the operational phase of the Proposed Development and therefore there will be no source of impact for effects on aquatic fauna during operation of the Proposed Development.

8.5 Impacts during Decommissioning

The Proposed Development will remain in situ beyond the operational lifetime of the solar farm, as an operational component of the national electricity grid network. As such, decommissioning of the Proposed Development will not be required and therefore result in no source of impact on ecological key receptors.

8.6 Cumulative Impacts

Cumulative impacts will depend on species present, number and frequency of occurrence of fauna observed at the Proposed Development and at adjacent proposed and existing developments. The timing of the construction phase can also have a bearing on the magnitude of the impact. It is also dependent on distance from the Proposed Development to other existing and proposed similar developments and the habitats present between same or their linkage to the proposed solar development site.

A cumulative impact arises from incremental changes caused by other past, present, or reasonably foreseeable actions together with the Proposed Development. The surrounding environment consists of one-off dwellings with farmsteads and concentrations of single dwellings dispersed along the local road network, with the majority of surrounding lands dominated by grazing and crop growing.

The main damaging operations and threats to the greater region's ecological resources are agriculture, and other developments.

8.6.1 Agriculture

Agriculture is widespread within the greater area, with cattle farming and arable crops being the dominant land use. Potential impacts include an increase in nutrient levels of local watercourses.

The EPA records show the Dunrally Stream as having an ecological status of 'Good'. Therefore, there is no likely negative impacts to water quality from agriculture and so there will be no cumulative impacts.

8.6.2 Forestry

Forestry is a common practice in the surrounding area, with a large area of forestry directly to the northeast of the site. Potential effects include fragmentation of ecological corridors, increased sediment in watercourses, and risk of pollution of watercourses.

The EPA records show the Dunrally Stream as having an ecological status of 'Good'. Therefore, there is no likely negative impacts to water quality from forestry and so there will be no cumulative impacts.

8.6.3 Other Developments

The Proposed Development is likely to result in short-term, significant reversible effects on the Dunrally stream and localised temporary disturbance to mammals and avifauna. A planning search to assess other developments within the same water catchment and within the local disturbance zone were assessed.

A total of 430 planning applications were identified within the Barrow_050 14_17 Sub-Catchment. These were predominantly single dwelling developments, alterations or extensions.

As shown in Appendix 3 of the accompanying Ecological Impact Assessment (EcIA), there were 32 larger developments. Natura Impact Statements (NIS's) were prepared for 11 of these and were found to not have a significant effect on local hydrology and downstream River Barrow and River Nore SAC with appropriate mitigation measures applied. The remaining applications 21 were found to not have a pathway for effects on local hydrology.

Significant cumulative disturbance effects on local avifauna and mammals (within 500m) are not anticipated considering the temporary/phased nature for the UGC route works and considering the small-scale of the other developments within the ZoI that are not considered to have a significant effect on the local ecological environment. The two larger scale projects within the disturbance ZoI are planning application no. 2560237 and An Coimisiún Pleanála (ACP) no. 500151. With the implementation of mitigation measures significant effects are not envisaged for either of these projects and therefore cumulative effects with the Proposed Development are not predicted.

8.6.4 Cappakeel Solar Farm

The Proposed Development was also assessed cumulatively with the consented Solar Farm (ACP Ref. 500061),. Potential in-combination surface water effects arise with the permitted solar farm development (ACP Ref. 500061), which includes the construction of two clear-span bridges, one located approximately 350 m upstream of suitable lamprey spawning habitat. However, considering the application of mitigation measures prescribed for the solar farm there is no potential for a cumulative effects.

8.7 Mitigation Measures

8.7.1 Mitigation by Avoidance and Design

Mitigation is prescribed in accordance with the Environmental Protection Agency EPA guidance on EIAR (EPA, 2022) which requires mitigation by avoidance as a first approach. Where this is not feasible, measures to prevent impacts from giving rise to significant effects should be adopted (e.g. design of bunded storage). Where impacts cannot be avoided e.g. generation of noise, mitigation by reduction of impact is required to limit the exposure of the receptor to an acceptable level (often achieved by interrupting the pathway between the source and receptor).

A process of 'mitigation by avoidance', as informed by constraints assessment, was undertaken during the design of the Proposed Development with the objective of avoiding/ minimising the potential for adverse effects on European sites.

8.7.2 Site Supervision

Project Ecologist/Ecological Clerk of Works (ECoW) will be employed for the duration of the construction phase to ensure that all the mitigation measures set out in the EcIA, NIS and any conditions of consent pertaining to biodiversity are employed. The Project Ecologist/ECoW will advise on environmental effects and communicate with the project owner and contractor to ensure the required actions to implement the mitigation prescribed in this EIAR are carried out. The Project Ecologist/ECoW will be awarded a level of authority and will be allowed to stop construction activity if there is potential for significant environmental effects other than those predicted and mitigated in the EIAR.

8.8 Construction Phase Mitigation

8.8.1 Mitigation for the sediment runoff

Along with the water quality mitigation set out in the CEMP, the following mitigation measures are proposed during cabling works construction:

- Weather warnings will be monitored, and no construction will take place during extreme events to mitigate against potential flooding.
- Mitigation measures will be provided where surface water flows may be temporarily prevented from reaching gullies during trench excavation. Mitigation measures will include the provision of temporary over ground surface water channels using sand bagging for example to divert flows to downstream gullies.
- Trenches will be excavated during dry periods where possible in short sections and left open for minimal periods, to avoid acting as a conduit for surface water flows.
- Any excavated material will be used in the reinstatement of the cable trenches subject to approval. Surplus material will be removed from the site to an appropriate licenced facility. There will be no stockpiling of excavated material.
- All excavated soil material will be managed on site in accordance with the CEMP.

- Silt fencing will be provided around any exposed areas to prevent the ingress of suspended solids into adjacent watercourses. These mitigation measures will prevent surface water contamination and will prevent subsequent flows of contaminated water into watercourses. Silt fences will be established downslope along the perimeter of source areas of contaminated runoff. Silt fences will be installed close to source (as opposed to close to receptor). Silt fences will be constructed using a permeable filter fabric (e.g. Hy Tex Terrastop Premium silt fence or similar) and not a mesh or terram. The base of the silt fence will be bedded at least 15- 30 cm into the ground. Once installed the silt fence will be inspected regularly, daily during the proposed works, weekly on completion of the works for at least one month, but particularly after heavy rains and periodically thereafter. The integrity of the silt fencing will be checked daily by the ECoW and after poor weather conditions (rain or wind) and any failures rectified immediately. Any build-up of sediment along the fence will be removed as deemed necessary by the ECoW and in accordance with manufacturers requirements. The silt fencing will be left in place until the works are completed (which includes removal of any temporary ground treatment). Silt fences will not be removed during heavy rainfall. The silt fence will not be pulled from the ground but cutaway at ground level and posts removed. A record of when it was installed, inspected and removed will be maintained by the ECoW.
- A temporary berm (i.e., polypropylene bag, filled with clean pea gravel grade or rectangular straw bales) will be placed along the edge of the track to prevent loose material being dislodged or washed into the waterbody. Double silt fencing will be placed upslope of the buffer zone on each side of the water body. The silt fencing will have removable "gates" as required to allow access of excavator while maintaining ease of replacement overnight or during periods of heavy rainfall. The silt fencing will be extended at least 10m upstream and downstream of the crossing location.
- Daily visual inspections of drains and streams will be performed during the construction period to ensure suspended solids are not entering the streams and rivers alongside the work area, to identify any obstructions to channels, and to allow for appropriate maintenance of the existing roadside drainage regime. Water quality in the nearby downstream drains and watercourses will be monitored in real time for turbidity. Where turbidity equals or exceeds 28 Nephelometric Turbidity Units (NTU) the works will be stopped and an investigation into cause carried out and measures taken as appropriate.
- There will be no storage of material/equipment, excavated material or overnight parking of machinery inside the 20m buffer zone.
- Bog mats will be used underneath the excavator inside the 20-meter vegetative buffer zone to prevent soil erosion and potential water quality impacts from localised surface water runoff.
- Temporary storage of excavated overburden from the diversion channel will be undertaken outside of the 20m buffer on flat ground or within a local hollow.
- A containment berm will be placed downslope of the excavated material which in turn will be surrounded by secondary silt fence protection to prevent saturated soil from flowing back into the water body.
- The silt fencing on either side of the stream buffer will be left in place and maintained until the disturbed ground has re-vegetated.
- There will be no batching or storage of cement allowed at the stream crossing. There will be no refueling allowed within 100m of the stream crossing. All plant will be checked for purpose of use prior to mobilisation at the stream crossing.
- The waterproofing spray system will only be carried out during calm, dry weather periods (little to no breeze) to prevent drift of airborne substances or runoff towards the river.
- Consultation with the NPWS will be carried out as species protected under the Wildlife Act, EU Habitats Directive and the EU Freshwater Fish Directive occur within the river water bodies which the site drains into.

- Oils/hydrocarbons will be stored in a designated secure bunded area in watertight containers, preventing washout or disturbance of containers.
- Any generators stored in the compound will be bunded to 110% capacity.
- No fuel or oils will be stored within 50m of any watercourses or other surface water feature.
- Any temporary spoil heaps will be more than 10m away from trenches, drains and watercourses. The heaps will be surrounded by silt fences and preferably placed in a well vegetated area. Compact the surface of any stored soil or spoil heaps and keep their height to less than 2m.
- Surplus soil that is spread within the site will be deposited at least 50m away from watercourses, rolled and re-seeded with a certified native grassland seed mix. In heavy rainfall spoil heaps must be covered with geotextile to prevent erosion when not in use.
- Any surplus material will be transported off site and disposed of at a fully authorised soil recovery facility.
- Stockpiles will be restricted to less than 2m in height. Store all materials separately in bunded, safe areas greater than 50m from a watercourse and 10m from a drain which will be subject to approval by the site manager and ecological clerk of works (ECoW). Any surplus material will be transported off site and disposed of at a fully authorised soil recovery facility.
- Joint bay locations are located at a minimum distance of 147m from Dunrally stream. Nonetheless, during the installation of joint bays where ground levels slope towards a watercourse, or where there is a risk of sediment runoff, silt fencing in combination with straw bales will be installed between the works area and nearby watercourses or drainage features to prevent sediment migration. Check dams, constructed from stone or geocomposite-wrapped sandbags, will be installed both upstream and downstream of these culverts to intercept and retain any suspended solids generated during the works.

8.8.2 Mitigation for Accidental Spills and Leaks

Construction vehicles will be refuelled off-site, wherever possible. This will primarily be the case for road vehicles such as vans and trucks. Refuelling of mobile plant during construction will be carried out by mobile fuel tanks equipped with pressure relief valves, built-in vents, handles for easy transportation, pumps, hoses and meters to facilitate fuel transfer operations. Any additional fuel containers and for smaller equipment (such as generators, lights etc.) used on site will be positioned on appropriately sized plant nappy/bund and stored within additional secondary containment e.g. bund for static tanks or drip trays for smaller mobile containers. Taps/nozzles for fuels and storage containers for oils will be fitted with locks to ensure their use is controlled. Only designated trained and competent operatives will be authorised to refuel plant on site.

All tank and drum storage areas will, as a minimum, be bunded, either locally or remotely, to a volume not less than the greater of the following:

- 110% of the capacity of the largest tank or drum within the bunded area; or
- 25% of the aggregate volume of all other substance which could be stored within the bunded area.
- The purpose of this requirement is to ensure that any potential leaks, spills, or other releases from tanks or drums are effectively contained within the bunded area, preventing any environmental contamination or harm. The bunded area acts as a secondary containment system, providing an additional layer of protection against accidental releases and facilitating proper clean-up and mitigation measures.

- All plant and equipment will be in good working order, checked regularly and maintained when necessary and a maintenance log maintained.
- Fuels, lubricants and hydraulic fluids will be carefully handled to avoid spillage, properly secured and provided with appropriate type of spill containment kits in case of incident.
- All spill-kits will be inspected on a weekly basis by the EnCoW to ensure they are maintained as fit for purpose.
- Welfare / hygiene facilities will be located within the construction compounds only.
- All water from vehicle wheel washes will be removed from site and disposed of in line with Waste Legislation.

8.8.3 Mitigation for Concrete works

- Precast concrete will be used wherever possible for the structural elements such as foundations for loop in grid connection masts, substation foundations and joint bays during the construction phase. On-site batching will not be permitted. Concrete will instead be transported to the Site by concrete truck.
- Concrete pour is required for the installation of joint bays, laying of 110kV masts foundation and substation foundations. Concrete works are at a minimum setback distance of ca .100m from surface watercourses.
- Temporary storage of cement-bound materials (if required) will take place on designated hardstanding areas only, with no direct drainage to surface waters. These areas will be appropriately bunded, for example using sandbags and geotextile sheeting or silt fencing, to contain any potential runoff and prevent environmental contamination.
- All pouring operations will be continuously supervised to prevent accidental spillages outside the excavation. Only concrete chutes will be washed out on site at a designed impermeable (lined) washout area at the site compound; there will be no concrete wash out of trucks. The residual liquids and solids from concrete wash-out will be disposed of off-site at an appropriate licensed waste facility.
- Additionally, the formwork and site preparation works will contain the concrete in an enclosed, excavated area. For watercourse crossings requiring concrete works, these works will be carried out under dry works conditions, as discussed further below in relation to 'Works in or Adjacent to Waters'.
- The acquisition, transport and use of concrete will be planned fully in advance of commencing works such that volumes are minimised, the route to and through the Site is predetermined so as to aim to avoid drains and watercourses, and wash down areas are appropriately located. Additionally, all concrete works will be supervised at all times by the Developer's appointed EcOW.
- No surplus concrete will be stored or deposited anywhere on site. Such material will be returned to the source location or disposed of off-site appropriately.
- Concrete trucks will not be washed out on Site. Where chutes, hoppers/skips and equipment (e.g. vibrating wands) associated with concrete works need to be washed down this will be done into a sealed mortar bin / skip with the appropriate capacity and which has been examined in advance for any defects. The location of wash down areas will be set back as far as practically possible from any drain or watercourse, and a minimum of 50m. This requirement will be communicated to all on-site personnel and to each concrete truck driver prior to entering into the works area. Washout areas / mortar bins will be sized such that they are capable of withstanding an unexpected heavy rainfall event without overtopping and they will be covered when not in use.

- Concrete washing will be contained and managed. Waste concrete slurry, washings and supernatant will be allowed to settle/dry and will be taken to a licensed waste facility for disposal.
- Any shuttering / formwork installed to contain the concrete during pouring will be installed to a high standard with minimal potential for leaks. Additional measures will be taken to ensure this, for example the use of plastic sheeting, foams or other sealing products at joints.
- Pouring of concrete into standing water within excavations will not be undertaken. Excavations will be prepared before pouring of concrete by pumping standing water out of excavations to the treatment train and buffered surface water discharge systems in place.
- Concrete works will be scheduled during dry weather conditions to reduce the elevated risk of runoff and will avoid foreseen sustained rainfall (any event longer than 4-hour duration) and/or any foreseen intense rainfall event (>3mm/hour), and do not proceed during any yellow (or worse) rainfall warning issued by Met Éireann.
- It will be ensured that suitably sized covers are available for freshly poured concrete to avoid wash off in the event of rain.
- The ECoW will continually monitor the pH of any watercourse during concrete works in or adjacent to a watercourse or drain. Should any change in pH +/-0.5 be detected, concrete works will immediately be ceased. Steps will then be taken to identify the entry point to the drain or watercourse and appropriate measures will be implemented to prevent further escape to the environment. The ECoW should consult CIRIA C532 to consider the most appropriate measure.
- Spill kits will be readily available at the location of concrete works and will be appropriate for the containment and control of concrete spills and/or runoff.
- The Community Water Officer for the Western Region, National Parks and Wildlife Services and Inland Fisheries Ireland will be notified immediately of any concrete spills / runoff into a watercourse.

8.8.4 Mammals

A pre-construction mammal survey will be undertaken within the footprint of the development in order to reconfirm the findings from the ecology survey, and in the event that any badger sett/otter holts or couches should be encountered at any point, the NPWS will be informed and NRA Guidelines for the Treatment of Badgers Prior To the Construction of National Road Schemes/NRA Guidelines for Treatment of Otters Prior to the Construction of National Road Schemes will be followed. As an Annex IV species has not been recorded within the site during surveys, there is no requirement for a licence currently and this is not considered likely to change in the future given the habitats present within the footprint of the development. However, in the unlikely event that a strictly protected species is identified during re-confirmatory preconstruction surveys the appropriate licensing shall be sought.

8.8.5 Avifauna

Any vegetation removal that may be required within the footprint of works, will be carried out outside of the bird breeding season (March 1st – August 31st). It is particularly important that no section of hedgerow is cut more than once every three years.

In the event that vegetation clearance during the bird breeding season is unavoidable, an ECoW will be appointed to examine the area of construction/clearance for nests no more than 48 hours in advance of works. They will have the authority to include a buffer zone if needed until birds have fledged or breeding has been confirmed as failed.

8.9 Ecology and Biodiversity Residual Impact Summary

With the implementation of the detailed mitigation measures, the potential for negative effects on local receptors will be reduced.

The Proposed Development is not anticipated to have long-term significant effects on local ecological receptors.

9. ROADS, TRAFFIC & TRANSPORTATION

9.1 Introduction

This section describes the existing road network in the vicinity of the Proposed Development and the potential traffic and transportation impacts on same as a result of the project during construction, operation and decommissioning.

9.2 Sources of Information

- Open-source TII traffic counter information and private traffic count data carried out for historical impact assessments, accessed in November 2024.
- Ordinance survey, Google aerial and street view mapping, accessed in August 2026;
- Laois County Council Planning Enquiry website accessed August 2026.

9.3 Receiving Environment

Roads in the Republic of Ireland are classified as motorways, national (primary and secondary), regional and local roads. Transport Infrastructure Ireland (TII) has overall responsibility for the planning and supervision of the construction and maintenance of motorways, national primary and secondary roads. The local authorities have responsibility for all non-national roads. The hierarchy of roads throughout Ireland is outlined in Table 9-1.

Table 9-1: Road Categories

Road Category	Description
Motorways	These are high quality multiple lane roads with limited grade separated junctions. They are high speed (120km/per hour) roads predominantly provided to facilitate strategic traffic with reduced journey times.
National Primary Roads	These are predominantly single carriageway, with some that are dual carriageway. Generally high speed (100km/per hour) roads that facilitate strategic traffic, with reduced journey times.
National Secondary Roads	These are medium distance through-routes connecting towns, serving medium to large geographical areas and link to primary routes to form a homogeneous arterial network.
Regional Roads	Predominantly single carriageway roads of regional and local importance. These roads generally receive more frequent maintenance criteria than Local Roads and therefore tend to be structurally sound.
Local Roads (Primary, Secondary and Tertiary)	The local road system is operated in three tiers defining local importance, usage and maintenance priorities. They form a network of single carriageway roads of varying quality.

9.3.1 Motorways

The nearest motorway to the Application Site is the M7 which is c. 0.2km (straight line distance) west of the Proposed Development. The M7 connects Dublin to Limerick via the N7. The M7 runs from Naas, Co. Kildare, to Rossbrien, near Limerick City. It forms part of the haulage and delivery routes for the Proposed Development.

9.3.2 National Roads

The UGC component of the Proposed Development crosses the N80 National Road. The location of the crossing is between the N80's junction with the L6831 and L6772 local roads, approximately 5.5 km east of Portlaoise. The N80 does not form part of the haul/delivery route for the Proposed Development. Partial closure of the N80 will be required to facilitate laying of the UGC. Phasing of partial road closures and all temporary traffic management procedures to be agreed as part of road opening license application.

9.3.3 Regional Roads

The UGC component of the Proposed Development has 3.1 km of cable laid in the R426 regional road. This section of the UGC runs between the Coolnabacky 110kV substation and the junction between the R426 and L7832 local roads. The R401, R422 and R445 will form part of the haulage and delivery routes for the Proposed Development.

9.3.4 Local Roads

The UGC component of the Proposed Development has 9.4 km of cable laid in local roads, the L7832, L6772, L6831, L7830, L3813 and L7815. The L3002, L7007, L7008, L7011, L3011 and L7815 local roads form part of the haul route for the Proposed Development.

9.4 Haul Routes and Site Access

This section presents the route taken to reach the entrance of the substation component of the Proposed Development.

9.4.1 Delivery and Haul Route

The vast majority of loads associated with this project are standard size and can navigate from any port to the national road network without transport issues. The oversized transformer load will likely be delivered to Dublin Port. From the port of entry, it is proposed that the site shall be accessed via the following delivery route:

- Loads shall depart the port of entry and navigate to the M50;
- Continue along the M50 at Foynes for 25km;
- Turn right onto the N7 at Junction no. 9;
- Continue west along the N7, onto the M7 for 64km until the no. 15 junction is reached.

From this point, directions to the Proposed Development are described as follows:

- Exit the M7 at the no. 15 junction;

- Take the 3rd exit at the roundabout onto the R422 overpass of the M7 and approach next roundabout;
- Take the 1st exit of the roundabout straight ahead and approach another roundabout;
- Take 1st exit heading west on the R445;
- Take the 2nd exit of the roundabout continuing in the R445;
- Continue west along the R445 for 1.3km;
- Turn left onto the L-7815 over the M7;
- Loads will reach the site entrance on the left after 0.5km.

The haul route from the Arkil Quarry, Drennanstown, Rathangan, Co. Kildare for construction materials will utilise the M7 and R445 for the majority of the route. The quarry can provide both aggregates for road construction and concrete. Consideration has been made to keep loads on the highest road class for the majority of the route to minimise traffic disruption.

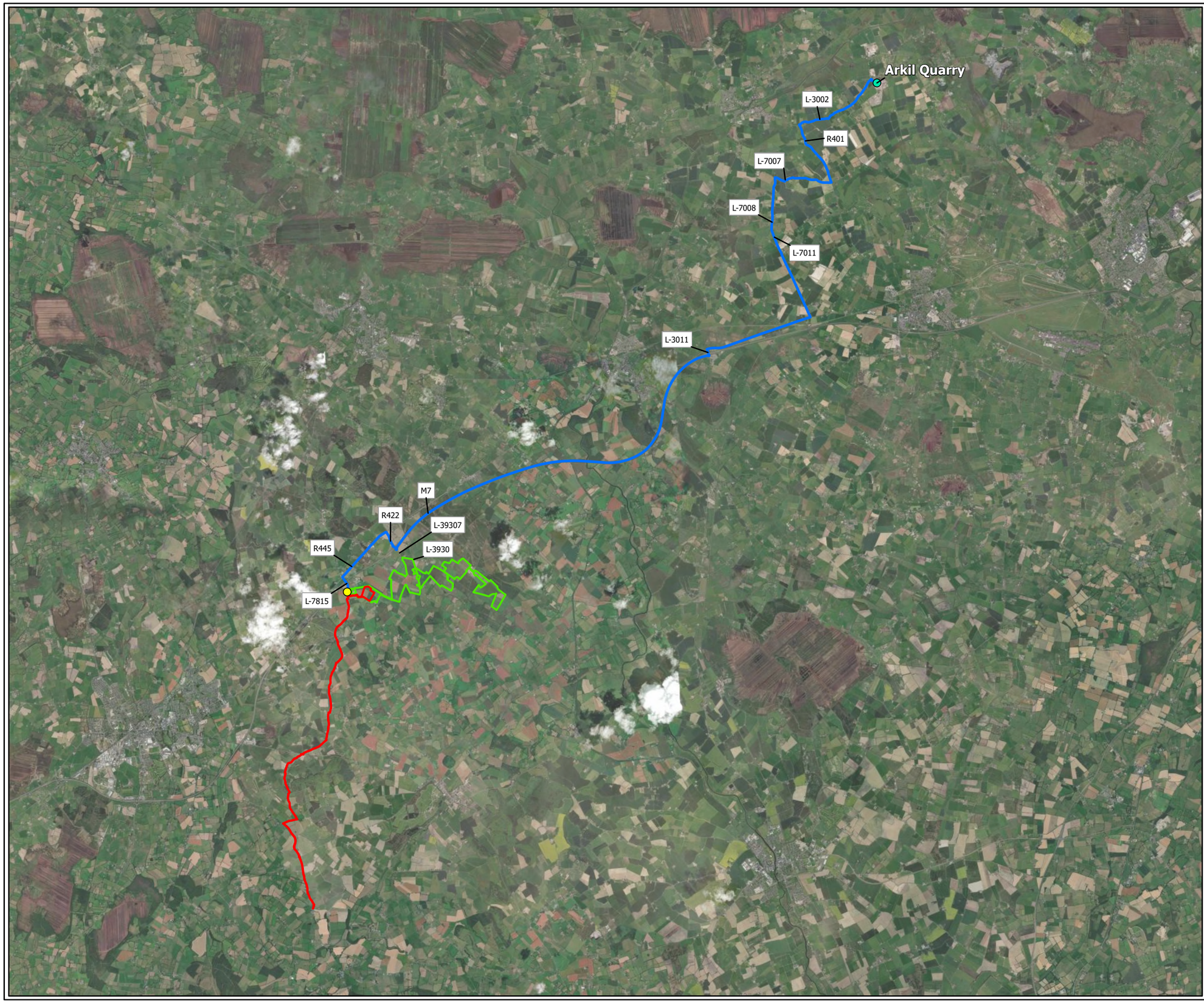
From the quarry, it is proposed that the site shall be accessed via the following delivery route:

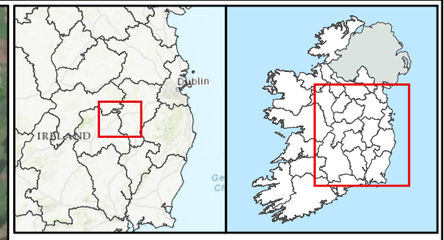
- Loads shall depart the quarry and navigate to the L-3002;
- Continue west along the L-3002 for 3.3km;
- Turn left at the L-3002/R401 junction towards Kildare onto the R401;
- Continue on the R401 for 2.3km;
- Turn right onto the L-7007 and continue for 2km;
- Turn left onto the L-7008 and continue for 1.8km;
- Continue straight onto the L-7011 at O'Neill's Crossroads (the L-7011/L-7008/L-7007 junction);
- Continue south along the L-7011 for 3.2km;
- Turn right at the L-7011/R445 junction onto the R445;
- Continue west along the R445 for 3.7km;
- Turn left at the no. 14 junction of the M7;
- Take the 2nd exit of the roundabout onto the M7 overpass and approach next roundabout,
- Take the 2nd exit of the roundabout to the right going onto the M7;
- Continue west along the M7 for 13km until the no. 15 junction is reached.
- Exit the M7 at the no. 15 junction;
- Take the 3rd exit at the roundabout onto the R422 overpass of the M7 and approach next roundabout;
- Take the 1st exit of the roundabout straight ahead and approach another roundabout;
- Take 1st exit heading west on the R445;
- Take the 2nd exit of the roundabout continuing on the R445;
- Continue west along the R445 for 1.3km;
- Turn left onto the L-7815 over the M7;
- Loads will reach the West Parcel (A) site entrance on the left after 0.5km.

A small number of HGV trips associated with other construction materials will access the site from the national road network as well as service vehicles associated with waste management and servicing throughout the construction phase. All transport routes are illustrated in Figure 9-1 and Figure 9-2.

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Legend

- SID Boundary
- Permitted Solar Farm
- Haul Route
- Quarry Location
- Site Entrance

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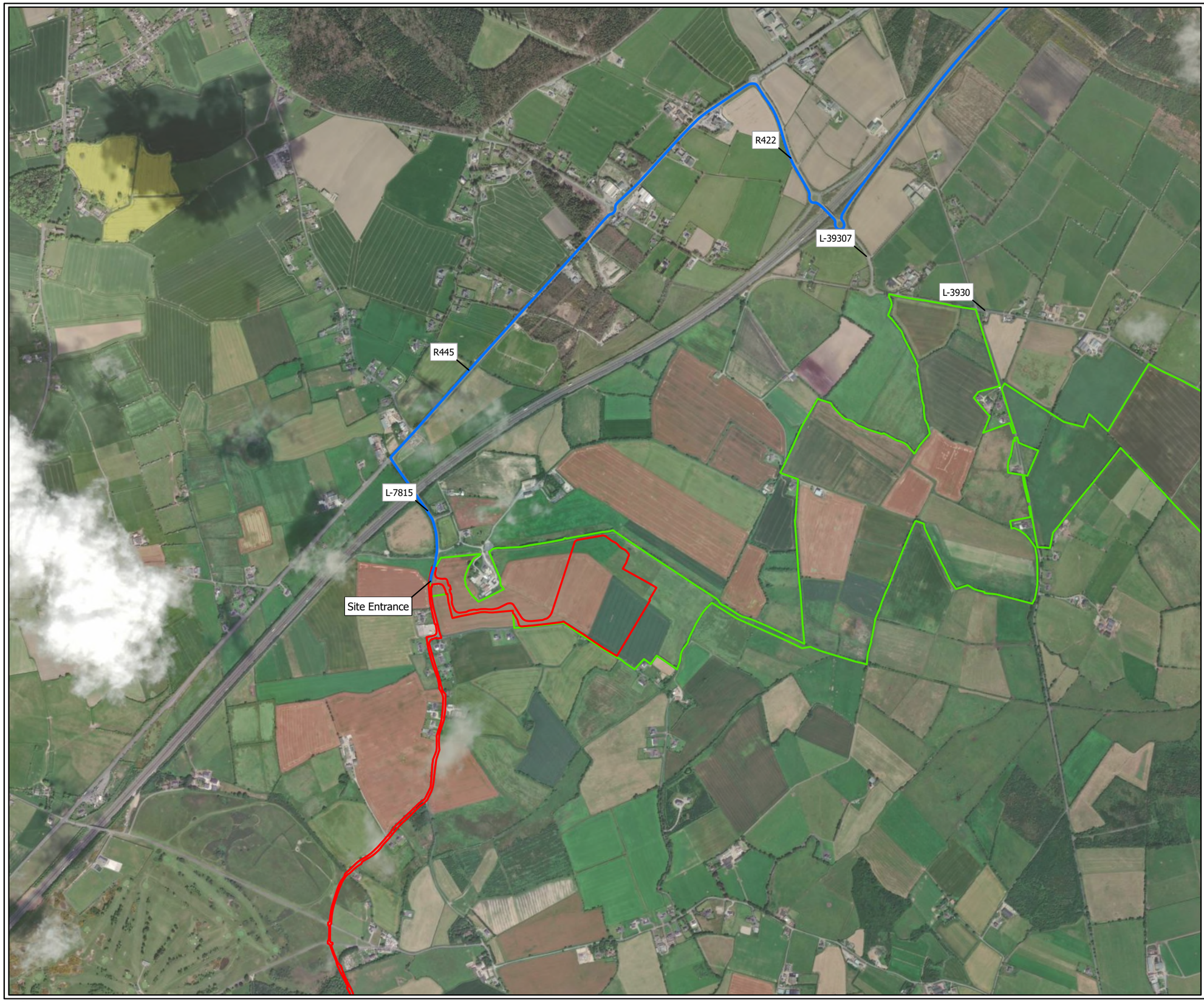
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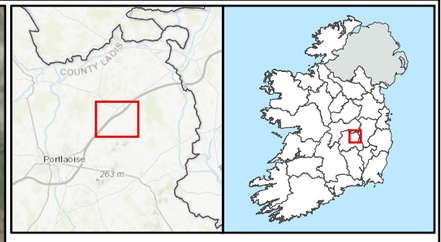
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PROJECT:	Cappakeel Solar Farm		
FIGURE NO:	9.1		
CLIENT:	Perigus Energy Ireland Midco Limited		
SCALE:	1:125,000	**REVISION:**	0
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Legend

- SID Boundary
- Permitted Solar Farm
- Haul Route

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PROJECT:	Cappakeel Solar Farm		
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9.4.2 Site Access

The Proposed Development shall be accessed via a new entrance from the public road consented as part of the associated Cappakeel Solar Farm. On appointment the main contractor will develop a detailed traffic management plan to coordinate construction traffic with construction traffic associated with the consented Cappakeel Solar Farm.

The Proposed Development was considered in the design of the entrance, which was consented under the Solar Farm application. The Proposed Development will require the delivery of an abnormal load (a transformer), the delivery of this abnormal load was considered in the entrance design, an autotracking exercise was done and the entrance width was designed to accommodate the Proposed Development's abnormal load delivery.

The coordinates of the site entrance are shown in Table 8-2:

Table 9-2: Proposed Access Location

Location Coordinates (ITM)		Local Road	Description
X	Y		
653814	703081	L7815	Proposed Site Entrance

9.4.2.1 Vehicle Tracking and Swept Path Analysis

Swept path analysis using Autodesk AutoTrack 2022 software was carried out on the proposed site entrances. The results of the swept path analysis provided the wheelbase tracking and the chassis tracking to produce a practical design for the proposed accesses.

The site access is considered safe and suitable for the proposed traffic movements and no public safety or obstruction to traffic flow is anticipated.

9.5 110 kV UGC

The proposed underground grid cable between the proposed Cappakeel Solar Farm 110kV Substation and Coolnabacky 110kV Substation runs predominately within the public road for a distance of c. 13.7 km along the L-7815, L-3813, L-7830, L-7832, R-426 public roads with a total of c, 12.56km within the public road, c. 2.4km on private land.

It is intended to connect the Proposed Development (Cappakeel Solar Farm 110kV Substation) to the existing Coolnabacky 110kV Substation by UGC. A breakdown of the location in which this cable is to be laid is included below:

Table 9-3: Grid Connection Location Summary

Description	Route Length
National Roads	0.06km
Regional Roads	3.1km
Local Primary Roads	4.3km
Local Secondary Roads	5.1km
Total Road Network	12.56km
Private Lands (Access Track)	1.2km
Total Off-Road Network	1.2km
Total Route Length	13.7km

This UGC cabling will require delivery of plant and construction materials, followed by excavation, laying of cables and subsequent reinstatement of trenches and road surfaces. Excavated material will be stored adjacent to the trench and incorporated into the backfilling where possible. Should there be any excess material it will be removed offsite to a licensed facility.

The Underground Cable (UGC) grid connection will be primarily contained within the public road, and will consist of a single 110kV UGC circuit, which will be installed predominantly within the public road network. The UGC works will consist of the installation of 6 no. ducts in an excavated trench to accommodate 3 no. power cables, 2 no. fibre communications cables and 1 no. earth continuity conductor (ECC). The fibre communication cable will allow communications between the Proposed Development and Coolnabacky 110kV Substation.

9.5.1 Temporary Traffic Management

The proposed temporary traffic management measures are outlined within the Construction and Environmental Management Plan submitted as part of this application. A fully detailed traffic management plan will be developed by the lead contractor on appointment. All traffic management measures will be agreed with Laois County Council in advance of commencement and will be subject to conditions of the required road opening licence.

9.6 Traffic Assessment

It is estimated that the construction period for the Proposed Development will last 18 months. The Proposed Development will be constructed simultaneously to the associated consented solar farm. Construction of the two developments is to be phased to minimise the level of impact of the construction on the local road network and residents. The construction programme for the Proposed Development is shown in Table 9-4 below.

The distribution of expected construction related traffic associated with the project is presented in Figure 9-3. This is based on an outline construction programme and subject to refinement at subsequent stages of the project.

9.6.1 Construction Phase

In order to assess the impact of the additional construction related traffic on the existing road network it is first required to estimate the amount of construction traffic that will be generated (trip generation) as a result of the proposed project.

This assessment was done by estimating the amount of traffic, in the form of heavy goods vehicles (HGV) and light goods vehicles (LGV) that will be generated during the construction phase and then distributing it over the duration of the construction programme. In determining the number of 'trips' the estimated number of HGV vehicles was multiplied by a factor of 2 to account for a single trip 'in' and a corresponding single trip 'out'. The full traffic calculations for the project are presented in Appendix 10.

In the case of LGVs, the estimated number of vehicles was multiplied by 2.5 to account for some additional LGV movements e.g. some workers taking lunch breaks in the local area. The analysis allowed for a total number of trips per month to be calculated. This is translated to annual average trips per day (AADT).

Some key assumptions taken when preparing the trip generation estimates include:

- An average ready mix concrete truck carries a load of approximately 8m^3 of concrete;
- An average tipper truck carries approximately 10m^3 of soil/rock/aggregate; A construction period of 18 months is expected for the Proposed Development based on the nature and scale of the proposed works. This construction program is indicative pending grant of permission and detailed design. Any alterations to the construction program will be agreed in advance with the Local Authority;

Table 9-4: Construction Programme

Construction Programme																		
Construction Activity: Substation & Grid Connection	**Month**																	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**
Mobilisation																		
Onsite Substation and Compound																		
Grid Connection Works																		
Testing and Commissioning																		
Landscaping and Reinstatement																		
Demobilization																		

The Proposed Development transport routes have been reviewed and inspected on site and are considered suitable to accommodate delivery vehicles in terms of alignment, condition and width. The equipment for the site, comprising electrical skids, cables, fencing and site offices will be delivered to site on HGVs. These will be similar in size and nature to those which already use this local road network for the purposes of agricultural deliveries (such as fertilizer and feedstocks) to the local farms in the area.

The construction phase for the Proposed Development will result in additional traffic on the roads travelling to the development, in particular the M7, R445, L-3920 and L-7815. This additional traffic will include the following:

- Construction worker vehicles;
- Vehicles carrying conventional earthworks equipment such as an excavator, roller, road paving equipment, heavy goods vehicles (HGVs), forklifts and a petrol/diesel powered generator;
- Delivery vehicles carrying conventional construction materials, e.g. aggregate;
- HGVs carrying-substation fit out materials; and
- Delivery vehicles carrying electrical cabling, electrical skids (containing inverters, transformers and switchgear) and electrical equipment for the on-site transformer compound.

It is estimated that the construction phase for the Proposed Development will lead to 5,595 additional HGV trips (two-way) per month over the duration of the construction works which is estimated to last 18 months. Calculations of vehicle movements indicate an average daily increase of 12 HGV trips per day and rising to 18 HGV trips per day during peak construction months occurring in months 6 - 14.

An average workforce of 15 no. site staff is anticipated, increasing to 45 during peak periods. This is estimated to give rise to an average increase in LGV traffic of 25 no. trips per working day and rising to 33 no. during peak construction period during months 14. The combined HGV and LGV average daily increase are 37 vehicles per day and rising to 52 vehicles per day during peak construction periods occurring in month 14.

The predicted baseline AADT during the estimated construction year of 2027 for the surrounding road network is presented in Table 9-5 and Table 9-6. They present the HGV and LGV average and peak construction traffic impacts respectively. The AADT volumes presented in each table assume all vehicles are travelling on the same route and is therefore a worst-case representation of the traffic impact. The results of traffic calculations for the Proposed Development are shown in the Tables and Figures below.

For all traffic count positions considered in the assessment, full yearly data available for 2024 was applied. A traffic growth factor is applied to the AADT data to arrive at a predicted AADT for the time of construction. For the purposes of this assessment the construction start date is set as 2027. The “AADT based on automated traffic counter”, provided in Table 8-4 and Table 8-5, includes the growth factor based on this estimated construction start date. The projected yearly growth factors are taken from the TII document “Project Appraisal Guidelines for National Roads Unit 5.3 - Travel Demand Projections, 2019.”

Table 9-5: Predicted AADT Volumes with Average Construction Phase Traffic

Location	Predicted AADT During Construction (Estimated Site Start 2027)	HGV AADT Pre-Development	Average Daily HGV Trips Generated by Proposed Development	Predicted HGV AADT During Construction	% Increase	LGV AADT Pre-Development	Average Daily LGV Trips Generated by Development	Predicted LGV AADT During Construction	% Increase	Average Daily Trips Generated by Development (Combined) During Peak Construction Month	Predicted Combined AADT During Peak Construction Month	% Increase
M07 Between Jn14 and Jn15 M7	36,957	3,776	12	3,788	0.3%	33,180	25	33,206	0.1%	37	36,994	0.1%

Table 9-6: Predicted AADT Volumes with Peak Construction Phase Traffic

Location	Predicted AADT During Construction (Estimated Site Start 2027)	HGV AADT Pre-Development	Average Daily HGV Trips Generated by Development during Peak Construction Month	Predicted HGV Daily Trips During Peak Construction Month	% Increase	LGV AADT Pre-Development	Average Daily LGV Trips Generated by Development during Peak Construction Month	Predicted LGV AADT During Construction	% Increase	Average Daily Trips Generated by Development (Combined) During Peak Construction Month	Predicted Combined AADT During Peak Construction Month	% Increase
M07 Between Jn14 and Jn15 M7	36,957	3,776	18	3,795	0.5%	33,180	33	33,214	0.1%	48	37,005	0.1%

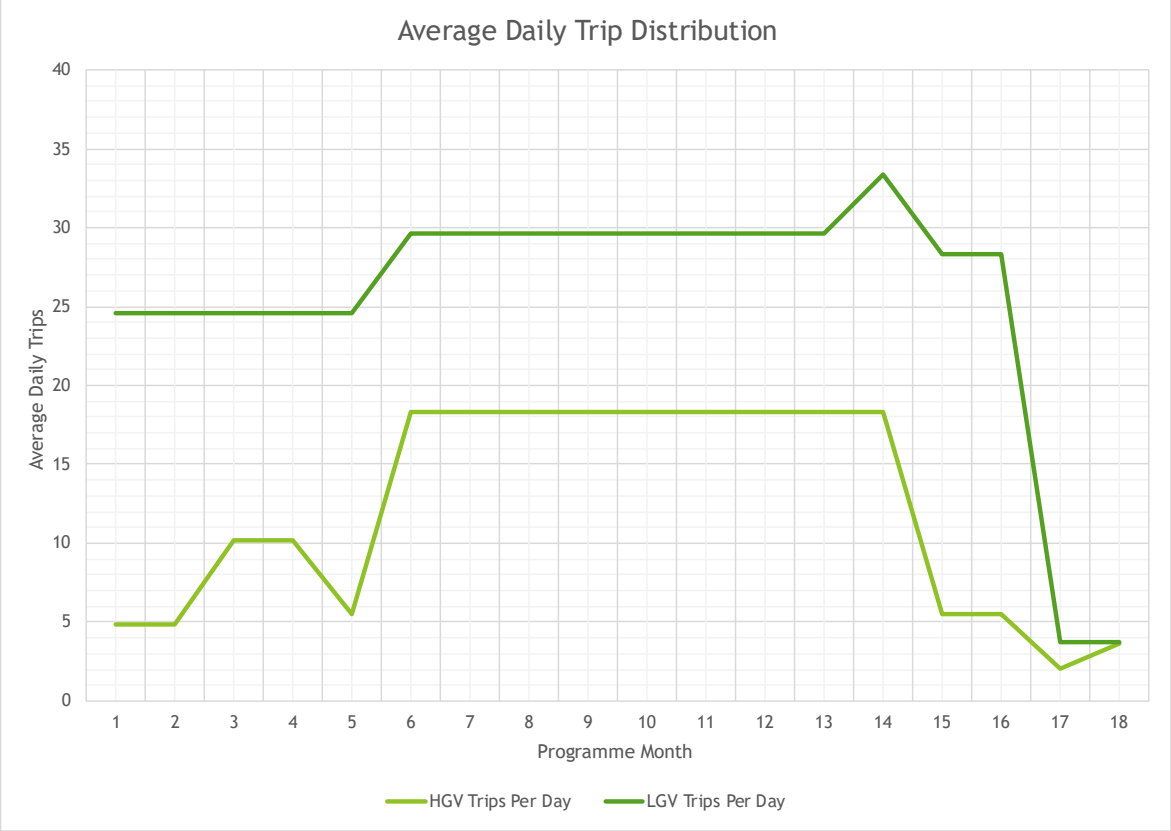


Figure 9-3: Estimated Average Daily Trip Distribution

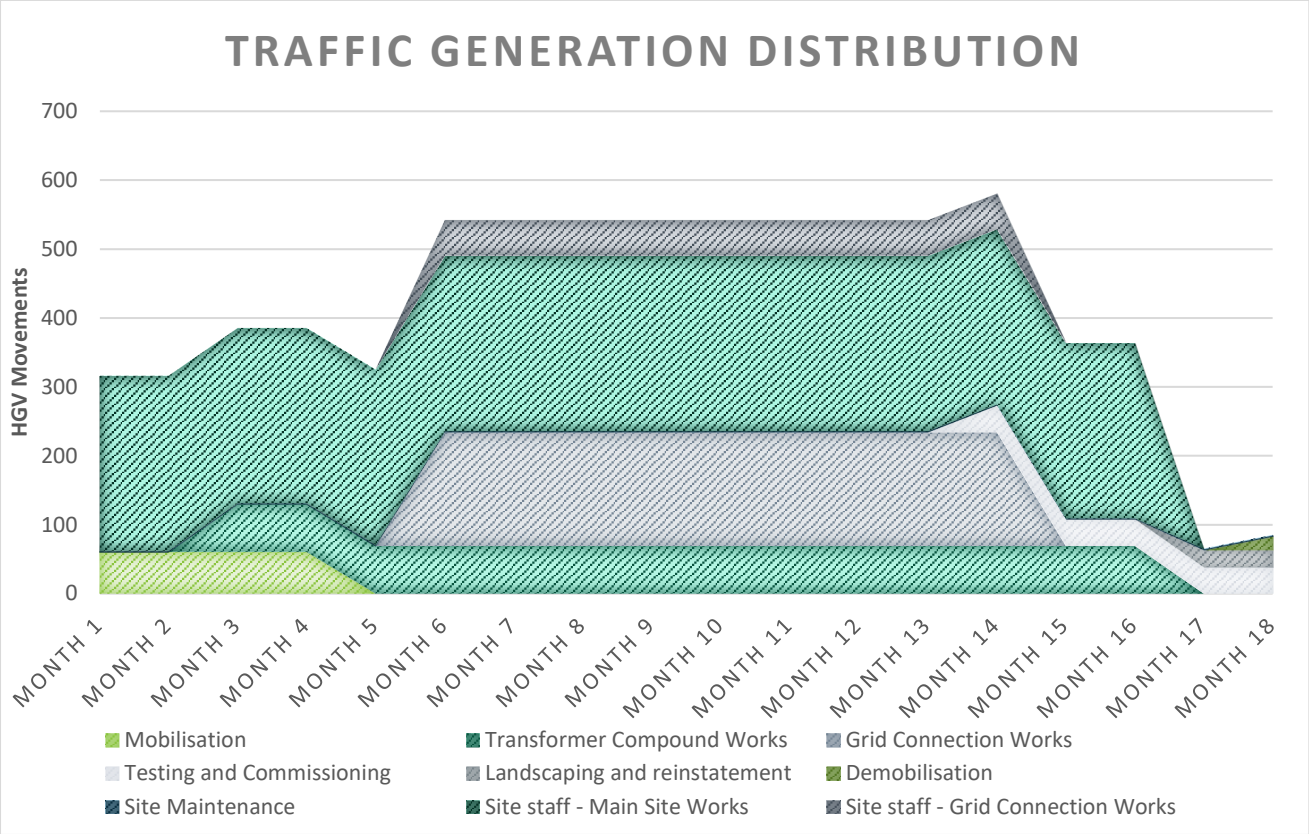


Figure 9-4: Estimated Cumulative HGV Traffic Distribution

9.6.2 Operational Phase

The substation will be monitored remotely. Should remote monitoring observe that the substation is experiencing operational issues, a maintenance technician will be deployed to the site in an LGV.

Maintenance work on the substation is anticipated to be required monthly. It is therefore estimated that traffic to the site during the operational phase would average one visit per month and the impact on the public road is considered negligible.

9.6.3 Decommissioning Phase

While the solar farm associated with the Proposed Development has a defined operational lifespan (40 years), the 110kV AIS substation, underground grid connection and LILO grid connection are intended to become a permanent node within the Irish National Electricity Grid. Upon completion and commissioning, the substation and its associated 110kV loop-in infrastructure will be handed over to EirGrid. It is expected that this infrastructure will remain in situ as a strategic asset for the national grid network long after the solar farm has reached its end-of-life. Consequently, a decommissioning phase for the substation is not anticipated.

9.6.3.1 Pre-mitigation Impact Assessment

Without appropriate mitigation measures, the construction works have the potential to lead to a negative impact on the local road network including:

- Delay and disruption to road users;
- Road safety issues, should the works not be carried out in line with good traffic management practices
- Damage to roads without the correct reinstatement;
- Inappropriate parking of construction vehicles along the route of the works;
- Soiling of the public road leading to a general lack of cleanliness and poor skid resistance on roads.

Based on the above, negative or adverse effects on the receiving environment associated with the construction works at the Solar Farm site are considered to be short-term in duration and slight in significance without appropriate mitigation.

9.7 Mitigation Measures

9.7.1 Construction

To mitigate against the potential impacts of traffic associated with the Proposed Development, a detailed Traffic Management Plan (TMP) will be prepared prior to commencement of construction. This plan will address construction traffic, road safety signage, phasing of the deliveries, and emergency access.

The contractor will be responsible for the implementation of all agreements between the developer and Laois County Council with the objective that the transportation needs for the Proposed Development will have a minimal impact on the road network and local communities. All vehicles hauling materials to and from the Site shall only use agreed transport routes. Outline Traffic measures are set out in the accompanying outline Construction Environmental Management Plan.

All vehicles hauling materials to and from the Site shall only use agreed transport routes as illustrated on the Transport Haul Route Figure 9-1 and Figure 9-2.

The proposed accesses will be created allowing adequate visibility sightlines in accordance with TII Standards DN-GEO-03060: Geometric Design of Junctions (priority junctions, direct accesses, roundabouts, grade separated, and compact grade separated junctions), May 2023, DN-GEO-03031: Rural Road Link Design, May 2023, and in accordance with County Development Plan. Required sightlines will be maintained in both directions at the site entrance and existing hedgerows will be trimmed and removed as necessary.

Public roads shall be kept free of mud, dust, spillages and debris from the construction site, construction plant or haulage vehicles. Any necessary measures shall be put in place at the Site entry/exit points.

When necessary, banksmen will be stationed at the site entrances to ensure that construction traffic from the Proposed Development are managed accordingly so to minimise conflict with public traffic.

Adequate signage shall be installed on approach to the proposed site entrance advising of the presence of a ‘site access ahead’ and ‘construction traffic ahead’. The above signage shall be removed following completion of the construction phase.

All construction related parking shall be accommodated within the site. Construction related vehicles will not be permitted to park on public roads. Turning space will be provided in the temporary site compound and near electrical skids hardstand areas.

Traffic movements for the construction of the Proposed Development will be discussed with local community representatives and where necessary and off-peak deliveries will be accommodated where possible.

9.7.2 Operation

Hedgerow trimming shall be carried out to the right and left of the proposed entrance to achieve required minimum visibility in both directions. Hedgerows shall be maintained by the operator to ensure required visibility throughout the operational phase of the project as part of the scheme’s operation and maintenance arrangements.

The Proposed Development will be monitored remotely which will remove the need for site access on a frequent basis.

9.7.3 Decommissioning

As discussed, the Proposed Development will be handed over to Eirgrid and will form a permanent part of the national grid, unlike the associated Solar Farm. Therefore, there is no decommissioning proposed and no decommissioning mitigation proposed.

9.8 Residual Impacts

The construction of the Proposed Development will lead to additional construction traffic, including HGV’s, during the construction phase. The construction programme will take place over approximately 18 months with the peak period for construction traffic occurring in month 14.

By adopting the mitigation measures proposed above and through the implementation of an adequately designed TMP, it is envisaged that the negative impact construction related traffic will have on the local road network will be ‘temporary’ to ‘short-term’ in duration, and ‘slight’ in significance.

9.9 Cumulative Effects

The construction of the Proposed Development is split into phases. Care has been taken in planning the construction phase timeline to ensure that the works are spread out to avoid any large peaks on the activities associated with the Proposed Development.

With the implementation of adequate mitigation measures as part of a well-designed construction stage TMP, the estimated level of traffic generated is not considered to exceed the local road network capacity or to give rise to local traffic obstruction either at the site entrances or on approach roads. Considering the cumulative effects of the development does not impact this conclusion.

All known existing and proposed projects within the cumulative study area of 20km that could potentially generate a cumulative impact with the Proposed Development in relation to traffic and transportation during construction, operation and decommissioning were identified and examined as part of this assessment. Table 8-6 provides details of the projects within the study area that were considered for cumulative impacts.

Table 9-7: Existing and Proposed Projects Assessed for Cumulative Impacts

Development Name	Planning Reference	Distance and Direction from proposed site	Status
Moanvane Wind Farm, Co. Offaly	17335	12.5km northwest of Proposed Site	Granted (21/11/2018)
Ummeras Wind Farm, Co. Kildare	2138	13km north of Proposed Site	Granted (26/05/2021)
Mountrath Solar Farm, Co. Laois	16217	19.5km southwest of Proposed Site	Granted (06/03/2017)

9.9.1 Moanvane Wind Farm

The Moanvane Wind Farm development is located approximately 12.5km northwest of the Proposed Development between the R400 and the R420 regional roads. The development consists of a site approximately 120 hectares in size containing 12 no. wind turbines with a tip height of 169m, one substation and recreational amenities.

It is understood from the submitted planning application documents that the construction period for the Moanvane Wind Farm will take 18 months and generate an additional 221 trips on average per day for the duration of the construction programme. Peak HGV traffic is month 5 with an estimated 131 trips per day. Peak LGV traffic is month 9 with an estimated 90 trips per day.

The N52 has an AADT of 13,221 and the R420 has an AADT of 7,704. With the addition of 221 trips, the daily traffic in these roads will rise by 1.67% and 2.87% respectively.

The Moanvane Wind Farm does not share a grid connection, delivery or haulage route with the Proposed Development. The delivery route utilises the M6, N52 and R400. The haul route utilises the R420 and L1013 from quarries northwest of the Moanvane Wind Farm site.

As the Moanvane Wind Farm will not share a grid connection route, delivery route or haulage route from nearby quarries with the Proposed Development, it is considered that no material cumulative impact will be created as a result of this development during the operation of the Proposed Development.

9.9.2 Ummeras Wind Farm

The Ummeras Wind Farm development is located approximately 13km north of the Proposed Development between the R414 and the L1002 roads, north of Monasterevin. Co. Kildare. The development consists of a site containing 5 no. wind turbines with a tip height of 169m and one substation.

It is understood from the submitted planning application documents that the construction period for the Ummeras Wind Farm will take 12 months and generate an additional 31 two-way HGV trips and 40 two-way LGV trips on average per day for the duration of the construction programme. In addition, there is expected to be 186 trips for concrete trucks for 5 days during concrete pours for the turbine foundations. Peak months fall from month 7 to 9.

On the R401, the peak construction traffic results in a 2.1% increase in HGV content compared to baseflow, from 3.7% to 5.8%. The AADT will increase from 8,389 to 8,615 with peak construction traffic. On the R419, the addition of the peak construction traffic to the baseflow will result in an increase in HGV content from 10.2% to 23.6%. The additional peak construction traffic of both LVG's and HGV's will increase the AADT from 992 to 1,218 AADT.

The Ummeras Wind Farm does not share a grid connection, delivery or haulage route with the Proposed Development. The delivery route for the wind farm utilises the M6, N52, R420, R419, R400, L1013 and L1002. The haul route utilises the R419, R401, L3002, L3003 and L1002 from quarries northeast of the Ummeras Wind Farm site.

As the Ummeras Wind Farm will not share a grid connection route, delivery route or haulage route from nearby quarries with the Proposed Development, it is considered that no material cumulative impact will be created as a result of this development during the operation of the Proposed Development.

9.9.3 Mountrath Solar Farm

The Mountrath Solar Farm development is located approximately 22km southwest of the Proposed Development, adjacent to the R430. The development of 12.5 hectares consists of a site containing 4.2MVA solar farm comprising photovoltaic panels mounted frames, 4 no. single storey inverter/transformer station, 1 no. single storey terminal station, 1 no. single storey electrical switch room, security fencing, CCTV and all associated ancillary development works.

The Mountrath Solar Farm does not share a grid connection, delivery or haulage route with the Proposed Development. The delivery route utilises the M7 and the R430, however, a different exit on the M7 is used, therefore the effect can be considered negligible. The haul route utilises the R445 and R430 from quarries northeast of the Mountrath Solar Farm site. The Proposed Development will not use these haulage routes.

As the Mountrath Solar Farm will not share a grid connection route, delivery route or haulage route from nearby quarries with the Proposed Development, it is considered that no material cumulative impact will be created as a result of this development during the operation of the Proposed Development.

10. POPULATION AND HUMAN HEALTH

10.1 Introduction

The following section of the Planning and Environmental Report examines the potential effects of the Proposed Development on population and human health. In this section, we address the now permitted solar farm components and the proposed 110kV substation and grid connection cumulatively, and include a planning assessment of the proposed underground cable within the public road connecting the permitted Cappakeel Solar Farm to Coolnabacky 110kV Substation.

The potential impacts of the Proposed Development include noise, visual, air quality, traffic and transportation and land use. The potential effects of the development on humans and residential amenity with respect to Traffic and Transport (Section 8), Noise and Vibration (Section 10), Visual Impact (Section 12) and in the separate supporting documents accompanying this application. This section includes a description of the existing human environment and the likely impacts on such arising from the proposed solar farm development. These include:

- Land use;
- Air quality;
- Socioeconomics i.e., the interaction of social and economic factors;
- Local population, residential amenity and tourism.

10.2 Existing Environment

10.2.1 Land-use and Residential Environment

The Proposed Development of the 110kV electrical substation and associated works are within the townland of Morett Co. Laois, which will connect the permitted Cappakeel Solar Farm to the national grid via the adjacent Cushaling-Portlaoise 110kV overhead line. The connection to the Coolnabacky 110kV substation is via an underground tail fed connection to provide a circuit between the Cushaling-Portlaoise 110kV line and the Coolnabacky 110kV Substation traversing the townlands of Derrytrasna, Park Or Dunamase, Aghnahily, Dysart, Coolnacarrick, Heathlodge, Ballygormill North, Ballinlough, Killenny, Raheen, Money Upper, Lamberton Demesne, Greatheath, Cremorgan, Ballygormill South, Carrigeen, Greatheath, Hophall, Ballycarroll, Morett and Powelstown, Co. Laois.

The settlement pattern in the wider area of the Proposed Development is of a low to mid density dispersed rural housing type, which follow a linear development pattern with development adjacent to and following the local road network. Housing density is low-medium in the area and in total 67 no. Eircode addresses were found within 500m of the site boundary of the Proposed Development. Of these, 65 no. are residential properties, and 2 no. are commercial properties. Exclusion areas will be necessary to protect residential amenity of these residences. The exact exclusion distances for screening and landscape management will be determined during project design. For the purposes of this report, an exclusion of 35m has been applied to the entire boundary of the Proposed Development site to the curtilage of residences.

Commercial activity within 500m of the subject site is generally small scale, as above noted, 2 no. of the residences are identified to include some sort of commercial activity These comprise for the most part of agricultural enterprises and will not be affected by the Proposed Development.

10.2.2 Socio-economic and the Local Population

In terms of socio-economic factors and the local population, the area containing the Proposed Development is considered as having medium-low population density. According to Census 2022, the Proposed Development site is situated within the Electoral Division (ED) of Emo with a total population of 1,338 persons, and within the ED of Moyanna, with a total population of 410 persons. When compared to County Laois as a whole which has an overall population density of c. 53 persons per square kilometre.

Emo Court and Parklands is a significant recreation feature and tourist attraction in the immediate area surrounding the Proposed Development. This is deemed a *Strategic Natural Asset* according to Table 11.4 of the CDP and is located approximately 3.5km west of the Proposed Development.

There are a total of 67 no. receptors within 500m of the site, comprising 65 no. residential dwellings, 2 no. of which are also commercial premises. There are a limited number of residences within a 100m distance of the identified site boundary. We also note the presence of a cluster of dwellings located to south, south east and south west of site, along the L78151, L3903 and L7815 roads.

There are no recorded archaeological sites which are listed in the Record of Monuments and Places (RMP) sites and monuments record within the 110kV Substation lands. It was concluded no areas within the subject site that would need to be excluded on account of archaeological constraints.

10.2.3 Existing Air Quality

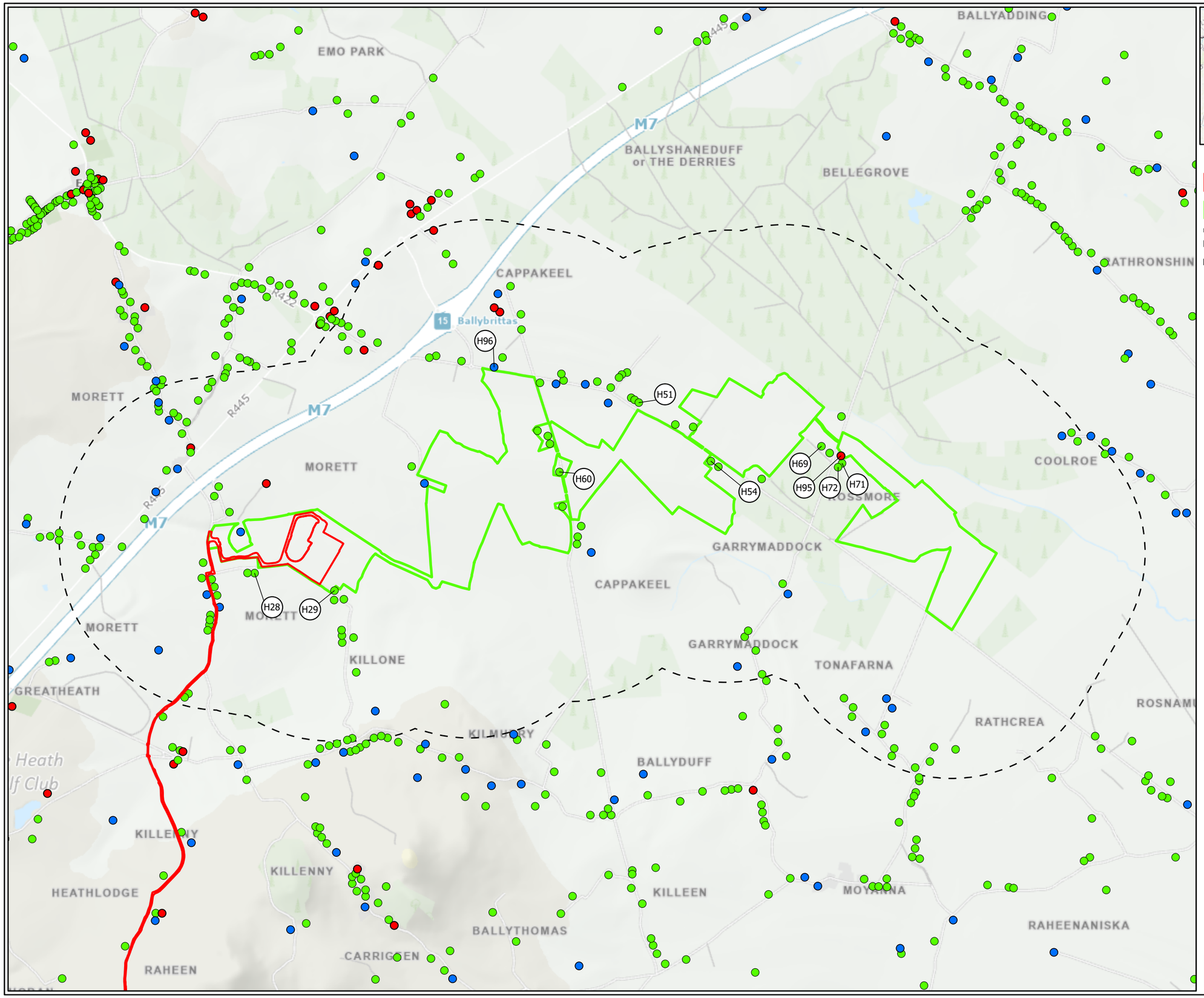
European air quality legislation requires that each member state be defined in terms of Zones and Agglomerations for air quality, with Ireland divided into four zones. Dublin Conurbation is one zone – *Zone A* and Cork Conurbation is defined as *Zone B*. *Zone C* consists of 24 cities and towns (such as Galway, Limerick and Waterford cities and towns such as Dundalk, Naas, Navan, Newbridge, Celbridge, Leixlip) with a population of greater than 15,000 while *Zone D* covers the remainder of the country.

The Proposed Development is located in *Zone D* in Rural Ireland. The *Air Quality in Ireland Report 2022* (EPA 2022) noted that Ireland's overall air quality was good and compares favourably with other member states. The Air Quality Index for Health map on the EPA website, shows that the current air quality within the proposed development site is classed as 1 – Good. There is no monitoring site for air quality in the proximity of the Proposed Development.

Dust emissions arise when particulate matter becomes airborne making it available to be carried downwind from the source. Dust emissions can lead to elevated PM10 and PM2.5 concentrations and may also cause dust soiling. Dust in the area would be expected to be generated by traffic movements and general agricultural practices.

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Legend

- SID Boundary
- Associated Solar Farm
- 1km Site Buffer

Receptors

- Commercial
- Residential
- Mixed-Use

N W E S

0 0.5 1 2 Kilometers

TITLE:	Receptors within 1km of the Proposed Development		
PROJECT:	Cappakeel Solar Farm		
FIGURE NO:	10.1		
CLIENT:	Ørsted Ireland Midco Limited		
SCALE:	1:25,000	**REVISION:**	0
DATE:	27/11/2025	**PAGE SIZE:**	A3

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10.3 Potential Construction & Installation Phase Impacts

10.3.1 Impacts on Land-use and Residential Environment

No land stripping will occur during the construction of the solar development and associated site works, with the exception of construction of access tracks and the installation of solar panels through the use of earth screws / piles which generally take up less than 0.5% of the total surface area. This will allow for the protection of most of the existing land use for continued some agricultural uses in and around solar arrays.

During the construction phase, there is likely to be a temporary beneficial impact to the local economy due to the influx of personnel during the construction phase who are likely to source materials and spend locally for the duration of the works. The design, construction and operation of the proposed development will provide for technical consultants, contractors and maintenance staff. The installation phase of the proposed development will result in short term direct employment.

The construction phase for the proposed solar development will see an increase in traffic on the roads in the vicinity of the development, and in particular on the local roads associated with the site. This will give rise to a slight temporary negative impact to other road users, appropriate mitigation measures are proposed to address these.

The Construction and Environmental Management Plan (CEMP) included with this application details the 'haul route' and mitigation measures proposed to handle construction traffic effects. Deliveries to site will be appropriately managed to minimise impact on the surrounding community and roads.

In general, construction impacts will be temporary and localised in nature. From most areas, the construction will be well screened by existing hedgerows and vegetation. There will be a need for limited excavation activities for the foundations of site tracks. Deliveries to site will be managed to minimise impact on the surrounding community and roads.

Impacts to tourism in the area are not foreseen as the Proposed Development is located at a sufficient distance to any touristic attractions although the temporary impacts on traffic and visuals may exist.

10.3.2 Air Quality Construction Impact

Dust emissions arise when particulate matter becomes airborne making it available to be carried downwind from the source. Dust emissions can lead to elevated PM10 and PM2.5 concentrations and may also cause dust soiling. The amount of dust generated and emitted from a working site and the potential impact on surrounding areas varies according to:

- The type and quantity of material and working methods;
- Distance between site activities and sensitive receptors;
- Climate/local meteorology and topography.

The principal sources of potential air emissions during the construction of the proposed development include:

- Dust arising from earthworks including trench excavation along internal cable routes and construction of new access tracks;
- Dust arising from the movement of construction vehicles over land as well as the transporting of materials to the site of the proposed development;

- Dust arising from the temporary storage of any excavated materials and wind blowing over unprotected, unconsolidated soils;
- Dust arising from uncovered truckloads, the movement of material around the site and the loading and unloading of aggregates and of materials within the site;
- Pollutants arising from temporary diesel generators.

Table 10-1: IAQM descriptions for the magnitude of an earthworks project

Source	
Scale	**Description**
Large	Total site area greater than 10,000 m2, potentially dusty soil type, more than 10 heavy earth-moving vehicles active at any one time, formation of bunds greater than 8 m in height, total material moved greater than 100,000 tonnes .
Medium	Total site area greater 2,500 m2, moderately dusty soil type, 5-10 heavy earth-moving vehicles active at any one time, formation of bunds 4 to 8 m in height, total material moved 20,000 tonnes to 100,000 tonnes.
Small	Total site area less than 2,500 m2, soil type with large grain size (e.g. sand), less than 5 heavy earth-moving vehicles active at any one time, formation of bunds less than 4 m in height, total material moved less than 20,000 tonnes, earthworks during wetter months.

Source: IAQM, 2014

Applying the IAQM criteria in Table 9-1: IAQM descriptions for the magnitude of an earthworks project, the overall construction of the proposed solar farm would probably be considered a "medium" scale construction site. While the site area is greater than 10,000 m2, it would be unlikely that more than 10 heavy earth-moving vehicles would be active at any one time. The formation of large bunds will not be necessary either, or the movement of large volumes of soils. On balance, it is considered that the site would represent a medium scale construction site, and this is considered conservative. The “magnitude” of the potential emissions is therefore “medium”.

A residential buffer which aims to prevent any solar or electricial infrastructure being located within 35m of the curtilage of any residential property has been applied to all nearby residential receptors around the entire boundary of the proposed Development. In the case of the Proposed Development, no receptors are within 20m of the proposed 110kV substation, with only two receptors within 20m of any dust-generating activities around the entire boundary of the Proposed Development, one of which is the involved landowner, and a house in the southwestern portion of the site in the West Parcel (A) which is well-screened with mature hedgerow/treeline around the curtilage. Therefore “sensitivity” of the area is considered to be “low”.

Combining the medium magnitude of the earthworks with the low sensitivity, the IAQM guidance indicates that the Risk of Dust Impacts are “*Low Risk*” for the Proposed Development. This will apply during the construction stage. Dust emissions during the operational stage will be negligible, following the same guidance. No scheduled decommissioning phase is proposed, and no separate decommissioning dust-risk classification is assigned.

Construction vehicles and plant emissions have the potential to increase concentrations of compounds such as NO2, Benzene and PM10 in the receiving environment. Local receptors may be exposed to these emissions. This exposure would be slight and short duration as the setting is rural and will allow for emissions to rapidly dilute in the open air. The number and types of vehicles accessing the site of the proposed development during the construction period is provided in Section 8 Roads, Traffic and Transportation.

Petrol/diesel generators will be required at various stages of the construction works. These will be relatively small units which will be operated on an intermittent basis.

Although there will be emissions from these units, the impacts due to these emissions will be negligible given the size and scale of the units and the length of time for which they will be operational.

10.4 Potential Operational Phase Impacts

10.4.1 Impacts on Land-use and Residential Environment and Amenity

The substation, permanent access infrastructure and associated above-ground connection works will result in a permanent change of land use within their respective footprints. The underground grid connection will remain in place, while disturbed road surfaces and temporary construction areas will be reinstated following installation.

The assessment does not assume that the substation site will revert to agricultural use at the end of the permitted solar farm's operational lifetime. Operational residential amenity effects are addressed through the relevant noise, landscape, traffic and environmental assessments.

Given that solar development is largely compatible with certain types of agricultural activity such as sheep grazing and beekeeping for instance, it is envisaged that the Proposed Development will allow for ecological restoration and agricultural uses within the overall site containing the permitted solar farm.

The site selected for solar array installations will augment the existing agricultural farming practices which will continue on their remaining land banks. Solar PV development has minimal impact on long-term land quality and viability, and once decommissioned the lands can revert fully to agricultural uses. ACP have taken the view that since Ireland does not have a grading system for land, there is no guidance or policy which would preclude the development of solar farms on agricultural land that is currently being used for grazing (ACP reference: PL17.248939).

A further ACP report states that with regard to the policy documents Food Wise 2025 and the targets set out within the document, there is no evidence that large scale solar would compromise the value of agri-food or the value of food exports such as would outweigh the benefits of the necessary renewable energy development (ACP reference: PL17.248028).

Existing habitats and ecological features will be protected where practicable, with additional ecological enhancement measures incorporated into the project.

Therefore, it is considered that the proposed development will have a positive impact on the biodiversity and ecological quality of the area. Solar energy is a means whereby, a naturally occurring resource (solar rays), are converted into a form that is more useful to people. As such, solar energy represents a type of energy production of which its function is similar to that of agricultural land use that dominates the countryside.

10.4.2 Socioeconomics and the Local Population

During the operational phase of the development, there will be occasional maintenance works associated with the site, however, it is considered that this will have an imperceptible impact on the local population in terms of traffic.

The operational solar farm will be largely monitored remotely. Should remote monitoring observe that the solar farm is performing sub-optimally, a maintenance technician will be deployed to the site in an LGV.

Maintenance work on the solar array is anticipated to be required from time to time, generally occurring at quarterly intervals. Operational traffic is anticipated to be less than one vehicle per week and will use the access road indicated in Chapter 9 - Roads, Traffic and Transportation. The associated impact on the public road network is considered negligible.

Once operational, the solar farm will be a significant material asset, providing a valuable source of renewable power to the grid and enhancement to the national transmission network, resulting in a positive impact on the local population. The operation of the solar array will also contribute to the local economy in the form of taxes and local authority rates.

In facilitating the proposed development on site, it is envisaged that this form of use will provide the landowner with an alternative use of the site to that of traditional agriculture, thereby providing the landholder with a secure income source, allowing the landowner to contribute to the local economy.

10.4.3 Impacts on Air Quality

A significant positive impact that will arise from the operation of the proposed development is the generation of electricity from a clean and renewable resource that has the potential to displace air pollutants generated by less clean forms of electricity generation (burning coal and peat). Once the Proposed Development is constructed, there will be no significant direct negative emissions to the atmosphere.

A petrol / diesel generator will be located at the substation, but this will only be operated as a back-up / emergency power supply. In the event that repair works are required where local excavation may be required, significant emissions are not considered likely.

10.5 Decommissioning Phase

10.5.1 Impacts on Land-use

No scheduled decommissioning of the Proposed Development is proposed. The assessment therefore does not assume removal of the substation or grid connections, restoration of the substation footprint to agricultural use, or employment and traffic associated with a defined decommissioning programme.

Any future proposal for substantial removal or decommissioning would require consideration of its effects on land use, residential amenity, local access, air quality and the local population.

10.5.2 Socioeconomics and the local population

During the decommissioning of the solar development, an increase in traffic movements along local road networks is envisaged, however, the number of vehicles associated with this will be significantly lower than that estimated for the installation phase of development, particularly given the fact that it is likely that some access tracks are anticipated, in agreement with the planning authority, to remain in situ during decommissioning phases.

10.5.3 Impacts on Air Quality

In the event that the local authority requires the removal of all infrastructure from the site, there will be the potential for emissions such as dust and vehicle / plant related emission resulting from an increase in vehicle movements associated with the works, as well as from the excavation, handling and temporary storage of materials. Therefore, dust emissions arising from the decommissioning of this element of the proposed development may be comparable, though of lower level, to the installation process.

Although there will be truck movements associated with the removal of the solar array components during decommissioning, the number of vehicles will be significantly lower than that estimated for the installation phase given that it is anticipated that some access tracks could remain in situ.

As part of the decommissioning process, the proposed grid connection cable will be cut and lifted with the ducts left in-situ. Therefore, dust emissions arising from the decommissioning of this element of the proposed development may be similar to the installation process.

Following decommissioning of the site, all above ground structures including the modules, mountings, control building and fencing will be removed. The nature of the construction means that following removal, the site can be returned to its existing condition very quickly and leave little or no trace that a Solar/PV farm ever existed.

10.6 Mitigation Measures

10.6.1 Land Use

No mitigation measures are required in relation to land use. When the solar farm is operational, the land will be used predominantly to generate renewable energy with small scale agricultural uses in and around solar arrays. The land will also be used to accommodate ecological enhancement measures which will contribute to the biodiversity of the area.

10.6.2 Socio-economics and the local population

The contractor will prepare a site-specific Traffic Management Plan (TMP) prior to the construction works commencing. The contractor will be responsible for the implementation of all agreements between the developer and Laois County Council with the objective that the transportation needs for the proposed development will have a minimal impact on the road network and on the local community. All vehicles hauling materials to and from the site shall only use the agreed transport routes.

The majority of the potential impacts of the proposed development on socio-economics and the local population are positive and therefore, do not require mitigation.

10.6.3 Air Quality

Traffic mitigation measures for the proposed haul routes are described in Section 8 above. The following mitigation measures will be implemented during the construction phase of the solar farm development to minimise impact to air quality:

- The applicant, in association with the contractor for the main civil works, will be required to produce and implement a Dust Control Plan. This plan will address all aspects of the development including excavations, trenching, access roads and temporary stockpiling. The plan will be prepared prior to any construction activities and will be established and maintained through the construction period. It will be submitted to Laois County Council for approval.
- All new access tracks within a parcel will be constructed and/or improved prior to the commencement of other construction activities. These tracks will be finished with graded aggregate.
- The drop height of excavated materials during access track construction will be minimised to a practicable level, to limit fugitive dust generation;
- Gravel will be used at site exit points to remove caked on dirt from tyres and tracks before travelling along public roads.
- The site supervisor will undertake daily visual inspections to examine dust generation;
- The working area will be kept as small as possible so as to minimise potential dust generation
- To suppress the migration of dust from site, a water bowser will be available to spray work areas and access roads, especially during periods where excavation works coincide with dry periods of weather or existing activities;
- All loads with potential to cause dust nuisance will be covered using strong, waterproof sheets such as tarpaulin sheets and will not be overloaded. This will minimise the potential for fugitive emissions during transport;
- All other stockpiles will be kept damp and covered to prevent windblown dust emissions.

Construction vehicles and plant will be routinely serviced to minimise the exhaust emissions during construction. Vehicles will not be left running unnecessarily and low emission fuels will be used where possible.

10.7 Residual Impacts

The principal effects on population and human health arise from construction traffic, temporary access disruption, noise and dust, together with the permanent land-use change associated with the substation and related infrastructure.

Construction effects will be managed through the measures identified in this report and the accompanying CEMP. Chapter 11 identifies significant negative temporary noise effects at the closest properties, approximately 10 m from underground cable works, notwithstanding the proposed mitigation.

Operational activity will principally comprise inspection, maintenance and equipment servicing. Operational noise and landscape effects are addressed in Chapters 11 and 13 respectively.

The Proposed Development will facilitate the connection and transmission of renewable electricity. It does not include the separately permitted solar-generating infrastructure, and benefits or effects attributable to that development are distinguished from those of this application.

10.8 References

- EPA, 2022. Air Quality in Ireland Report 2022. Environmental Protection Agency, Ireland.
- NRA, 2011. Treatment of Air Quality During the Planning and Construction of NRA Schemes. National Roads Authority, Ireland.
- British Standard BS 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Noise.
- Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) (Environmental Protection Agency, 2016

11. NOISE AND VIBRATION

11.1 Introduction

This section of the report addresses potential noise and vibration impacts from the proposed development, as a result of the proposed temporary and permanent works. The proposed development context and detailed description is provided in Chapter - 1 Introduction and Chapter 2 - Description of the Development.

The noise and vibration assessment submitted as part of the now permitted Cappakeel Solar Farm application included a noise and vibration assessment of the whole project (Solar Farm, grid connection route and substation) for environmental assessment purposes. The noise and vibration assessment of the solar farm, substation and grid connection route has been updated in this report to supplement the noise and vibration assessment submitted as part of the solar farm application and includes the final grid connection route and substation details (i.e., the proposed development). The updated noise and vibration assessment is outlined in the following sections.

11.2 Existing Environment

The proposed development consists of a 110kV electrical substation and associated works, which will connect the associated solar farm to the national grid.

The subject site is located between the towns of Portlaoise to the south-west and the Monasterevin to the north, with the 'West' and 'Centre West' Parcel's being located within a linear kilometre of the M7 motorway (linking Limerick and Dublin) and R445 regional road (linking Portlaoise to Monasterevin). The proposed development and associated permitted solar farm site consists of 5 no. parcels, totalling c. 249 hectares. As described in Chapter 2 - Description of the Proposed Development, these land parcels are referred to as the West (A), Centre West (B), Centre (C), Centre East (D) and East Parcels (E).

The main existing local noise sources include road traffic noise on the surrounding road network and agricultural plant and machinery. The western site boundary is approximately 280m from the M7 Motorway and 400m from the R445 regional road. The N80 national primary route is located c. 5.6km south of the site.

There are 45 no. locations identified as residential dwellings and 7 no. mixed-use buildings (residential and commercial) within 500m of the site boundary. In addition, there are two commercial properties. Noise sensitive locations are mainly located, north, centre and west of the site. A figure showing noise sensitive locations within 500m of the site boundary is displayed in Figure 11-1.

11.3 Baseline Noise Survey

11.3.1 Survey Methodology and Equipment

Noise monitoring was carried out using Svantek Svan 307 Type 1 Sound Level Meters (SLMs). The meters were fitted with a 1/2" microphone. The microphone was fitted with a windshield. The sound level meter was mounted on a tripod at a height of 1.5 m. The microphone was placed at least 3.5 m from reflecting surfaces to obtain 'free-field' conditions. The sound level meter was set to log a range of noise parameters every 15 minutes. The sound level meter was set to a frequency weighting of 'A' in accordance with international standard IEC 61672:2013 and various national standards relating to the measurement of sound pressure level representative of human hearing and a fast response time. All equipment was calibrated before and after the survey and no significant drift in calibration was noted.

All measurements were taken in accordance with ISO 1996 Standards Acoustics - Description and Measurement of Environmental Noise, Part 1 (ISO 1996-1:2016) and Part 2 (ISO 1996-2:2017) and the EPA document NG4 2016: Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities.

11.3.2 Noise Monitoring Locations

Three noise monitoring locations were identified to obtain a detailed representation of the ambient and background noise levels in the vicinity of the proposed development.

The details of the noise monitoring locations are summarised in Table 11-1 below. A figure showing the monitoring locations is provided in Figure 11-1.

Table 11-1: Noise Monitoring Locations

Monitoring Location	Location Description	Photograph
AL1 ITM 653806 703074	Attended monitoring location, situated at field entrance along local road at western site boundary approximately 300m from M7 Motorway. Representing a group of residential dwellings west of site.	

Monitoring Location	Location Description	Photograph
UL2 ITM 656143 703682	Unattended monitoring location, within agricultural field in the centre of site, representing residential dwellings to the centre of site.	
UL3 ITM 658086 703724	Unattended monitoring location in agricultural field to the east of site, adjacent to residential properties and commercial repair business.	

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World Topographic Map: Esri, HERE, Garmin, FAO, USGS, NGACreative and Commons Attribution 4.0 International (CC BY 4.0) licence https://creativecommons.org/licenses/by/4.0/ [INPUT SOURCE HERE]; If Applicable: Mapping Reproduced Under Licence from the Ordnance Survey Ireland Licence No. CYAL50368274 © Government of Ireland
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Legend

- SID Boundary
- Associated Solar Farm

Noise Monitoring Locations

- Attended Monitoring Location
- Unattended monitoring location

TITLE:	Noise Monitoring Locations		
PROJECT:	Cappakeel Solar Farm		
FIGURE NO:	11.1		
CLIENT:	Ørsted Ireland Midco Limited		
SCALE:	1:20,000	**REVISION:**	0
DATE:	27/11/2025	**PAGE SIZE:**	A3

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11.3.3 Survey Results

11.3.3.1 Meteorological Conditions

In line with best practice acoustic guidance including EPA NG4, an average wind speed of less than 5m/s is the required limit during periods when noise measurements are being taken with occasional exceedances of up to 7m/s due to gusting wind conditions considered acceptable.

Rain and wind speed data was obtained from a review of data from the closest Met Éireann weather station (Oak Park). The weather conditions during the noise survey period were dry and calm. The temperature ranged from 12-19°C with average wind speeds in the range 2m/s to 5m/s, from a south to south-westerly direction. No rainfall was recorded during the survey period.

11.3.3.2 Noise Survey Results

Table 11-2 to Table 11-4 presents the measured L_{Aeq}, L_{AFmax} and L_{A90} noise levels for the three monitoring locations. The attended monitoring location (AL1) was surveyed for the daytime period only. For the unattended monitoring locations (UL2 & UL3), the 24hr measurements are displayed averaged to daytime, evening and night-time periods. The L_{Aeq} is the logarithmic average, L_{AFmax} is the maximum value during the measurement period and L_{A90} is the noise level exceeded for 90% of the measurement period, representative of the background noise level. The main noise sources noted during the measurement period and during equipment installation/collections are summarised in these tables.

Table 11-2: Noise Monitoring Results AL1

Monitoring Location AL1					
Period	Date & Start Time	Measured Noise Levels, dB			Comments
		L_{Aeq}	L_{AFmax}	L_{AF90}	
Daytime	02/07/2024 09:16	61	77	53	Motorway traffic dominant, traffic on local road passing meter during first measurement.
	02/07/2024 09:31	58	77	55	
	02/07/2024 09:46	58	76	54	
	Arithmetic Average of L_{AF90} (dB)			54	

Table 11-3: Noise Monitoring Results UL2

Monitoring Location UL2						
Date	Period	Time	Measured Noise Levels, dB			Comments
			L_{Aeq}	L_{AFmax}	L_{AF90}	
02/07/2024	Daytime	07:00 - 19:00	50	75	43	Local traffic audible, distant motorway traffic audible.
02/07/2024	Evening	19:00 - 23:00	48	72	40	
02/07/2024	Night-time	23:00 - 07:00	45	71	37	

Table 11-4: Noise Monitoring Results UL3

Monitoring Location UL3						
Date	Period	Time	Measured Noise Levels, dB			Comments
			L_{Aeq}	L_{AFmax}	L_{AF90}	
02/07/2024	Daytime	07:00 - 19:00	45	73	35	Local traffic audible, commercial repair activities audible, dog barking, birdsong audible.
02/07/2024	Evening	19:00 - 23:00	41	71	29	
02/07/2024	Night-time	23:00 - 07:00	39	71	30	

11.3.3.3 Noise Survey Discussion

At monitoring location AL1, west of site, the average ambient noise levels at the monitoring location ranged between 58 to 61 dB L_{Aeq} and the background noise levels range from 53 dB to 55 dB L_{A90}. During the monitoring period, the noise from the M7 motorway dominated, with traffic movements on the local road also audible.

At monitoring location UL2, at the centre of site, the average ambient noise level during daytime was 50 dB L_{Aeq} and the background noise level was 43 dB L_{A90}. During evening, the average ambient noise level was 48 dB L_{Aeq} and the background noise level was 40 dB L_{A90}. During night-time the average ambient noise level was 45 dB L_{Aeq} and the background noise level was 37 dB L_{A90}. During equipment installation and collection, the noise from the surrounding road network dominated.

At monitoring location UL3, at the east of site, the average ambient noise level during daytime was 45 dB L_{Aeq} and the background noise level was 35 dB L_{A90}. During evening, the average ambient noise level was 41 dB L_{Aeq} and the background noise level was 29 dB L_{A90}. During night-time, the average ambient noise level was 39 dB L_{Aeq} and the background noise level was 30 dB L_{A90}. During equipment installation and collection, noise from the surrounding road network dominated. Other noise sources included commercial repair activities, a dog barking and birdsong.

11.4 Potential Construction Noise Impacts

The definition of a noise sensitive receiver in the Environmental Protection Agency's 2016 NG4 noise guidance note is 'any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or other area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels'. Noise sensitive receivers are deemed to be locations where the inhabitants can be disturbed by noise or changes in noise levels due to the construction or operation of a development.

11.4.1 Potential Construction Impacts

Noise from the construction phase will arise from deliveries and/or removal of material to and from site, top-soil excavation, preparation of access roads, hardstands and drainage, piling of PV panel frames, construction of the substation, concrete mixing and pouring of foundations where necessary. The assessment also considers noise from the grid connection works between the proposed substation and national grid via connection to the Cushaling-Portlaoise 110kV overhead line and underground connection to the Coolnabacky 110kV Substation.

11.4.2 Construction Noise Criteria

There is no statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project. In the absence of specific noise limits, appropriate emission criteria relating to permissible construction noise levels for a development of this scale may be found in the British Standard BS 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Noise.

The ABC Method from BS 5228-1:2009+A1:2014 is used to derive appropriate noise limits for the proposed development. The threshold limits as defined in Table 11-5 based on existing ambient levels, which if exceeded, signify a potential significant effect. For the appropriate period (e.g. daytime), the ambient noise level is determined and rounded to the nearest 5dB.

From the baseline noise survey, the ambient noise levels during daytime indicate that the site and surrounding receptors are within category A.

The applicable BS 5228 limits for construction noise during all periods are outlined in Table 11-5.

Table 11-5: Applicable Construction Noise Limits

Assessment category and threshold value period (L_{Aeq})	Threshold Value, in decibels (L_{Aeq}, dB)		
	Category A [A)]	Category B [B)]	Category C [C)]
Night-time (23:00 to 07:00hrs)	45	50	55
Evenings and weekends [D)]	55	60	65
Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00)	65	70	75

A) Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values.
B) Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values.
C) Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category A values.
D) 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sundays.

Construction noise has been assessed by comparing predicted construction activities against best practice construction noise criteria at the nearest noise sensitive locations to the construction activities. If the predicted construction noise level meets the relevant BS 5228 noise criteria at the nearest locations, compliance at all other more distant residential locations can be inferred.

11.4.3 Construction Noise Modelling & Results

BS 5228-1:2009+A1:2014 sets out a number of methods for predicting construction noise levels. Methods are presented for stationary and quasi-stationary activities and for mobile plant using a regular well-defined route (e.g. haul roads).

Construction noise predictions have been undertaken using Softnoise Predictor Lim-A software following the prediction methodologies outlined in BS 5228-1:2009+A1:2014. The predictions account for source-receiver distance, reflections and screening, ground attenuation and correction for percentage on-time. The ground cover between the site and the receivers can be described as acoustically soft ground (G=1). However, a conservative ground cover of G=0.75 was used in the construction noise model. For the purpose of this assessment, it has been conservatively assumed that mobile plant will be operating simultaneously and for a percentage on-time[29] of 80%, except for the short-duration activities, such as trucks tipping material, where a percentage on-time of 20% is modelled due to the short duration of this activity. The reality is that some of the plant will only operate intermittently. The parameters outlined above are conservative making the noise modelling assessment a conservative exercise.

Construction works undertaken on-site will be sequential and will follow the phasing outlined in Chapter 4 of this P&E and the CEMP.

[29] Percentage on-time - percentage of the assessment period for which the activity takes place.

11.4.3.1 Site Traffic

Detailed information on construction traffic is presented in Section 8. To summarise, it is estimated that installation phase will lead to approximately 34 no. additional HGV trips (two way), per day, over the duration of the installation works which is estimated to last 18 months. The noise assessment has assumed a certain number of traffic movements within the construction noise calculations based on a "worst case" scenario. For the purpose of this assessment, a maximum number of 34 no. HGV two way trips per day have been modelled and the predicted noise level at the nearest receptors will be below the noise criteria of 65 dB $L_{Aeq,1hr}$.

11.4.3.2 Site preparatory Works

The site preparatory works will involve the removal of overburden, distribution of material and levelling of the site, however it is expected for this development that there will be little, or no grading of the site required and preparatory and groundworks will be limited to the construction of access tracks and drainage infrastructure. The noise emissions from site preparatory works are dealt with in the following sections.

11.4.3.3 Preparation of Access Roads, Drainage and Hardstands

Internal access tracks and drainage are proposed as part of the development. The closest dwellings to this construction activity are H51 to the centre of the site, H95 at the east of the site and H28 to the west of the site. H51 is approximately 70m from this activity, H95 is approximately 75m from this activity and H28 is approximately 80m from this activity. Table 11-6 presents the predicted noise levels from this activity. The highest predicted cumulative noise level from this activity is at H51 (57 dB $L_{Aeq,1hr}$), which is below the noise limit of 65 dB $L_{Aeq,1hr}$. Noise from more distant noise sensitive locations will be lower. In practice, plant will not operate simultaneously at the same location and the predicted noise levels will be lower than those presented in Table 11-6. Furthermore, the nature of this activity is such that the items of plant will not be static for long periods and activity will occur at greater distances resulting in lower noise emissions. Therefore, construction noise will be below the construction daytime noise criteria of 65dB $L_{Aeq,1hr}$. The effects associated with the preparation of access roads, drainage and hardstands are predicted to be moderate, negative and short-term in duration.

Table 11-6: Preparation of Access Roads and Drainage Expected Plant and Predicted Noise Levels

Plant	BS 5228 Ref.	Activity	Percentage on-time (%)	Predicted Noise Level (dB $L_{Aeq,1hr}$)		
				H51	H95	H28
Tracked Excavator (22t)	C2.21	Ground excavation/earthworks	80	48	46	47
Dump Truck (Tipping Fill)	C2.32	Tipping Fill	10	42	40	41
Dozer (14t)	C5.12	Spreading chipping/fill	80	54	52	53
Vibratory roller (3t)	C5.27	Rolling and Compaction	80	44	42	43
Excavator (21t)	C4.65	Trench for drainage	80	49	47	47

Plant	BS 5228 Ref.	Activity	Percentage on-time (%)	Predicted Noise Level (dB $L_{Aeq,1hr}$)		
				H51	H95	H28
Lorry*	C11.9	Delivery and removal of material	34 two-way trips per day	49	51	50
Cumulative				57	56	56
* - Drive-by maximum sound pressure level						

11.4.3.4 Installation of Solar Panels

Solar panel foundations will be piled using Pauselli 700 Solar Pile Driver or equivalent. Following piling, the solar panels will be lifted, placed and secured. Table 11-7 presents the predicted noise levels from this activity at the nearest noise sensitive locations (H60, H95 and H28). The solar panel installation works will occur at approximately 150m, 120m, and 140m from these locations, respectively. Assuming all activities occur simultaneously, the highest predicted noise level is 53 dB $L_{Aeq,1hr}$ which is below the proposed construction daytime noise criteria of 65dB $L_{Aeq,1hr}$. The effects associated with the installation of solar panels are predicted to be moderate, negative and short-term in duration.

Table 11-7: Installation of Solar Panels Expected Plant and Predicted Noise Levels

Plant	BS 5228 Ref.	Activity	Predicted Noise Level (dB $L_{Aeq,1hr}$)		
			H60	H95	H28
Pauselli 700 Solar Pile Driver Ω	-	Piling	18	34	24
Lorry*	C11.9	Delivery of Components 34- two way trips per day	52	53	52
Cumulative			52	53	52
Ω - Noise data sourced from manufacturers datasheet * - Drive-by maximum sound pressure level					

11.4.3.5 Installation of Electrical skids

The electrical skids which will contain inverter stations will be brought to site using a standard articulated lorry. Each of the components will be lifted into position using a telescopic handler and a mobile telescopic crane. Table 11-8 presents the predicted noise levels from this activity. The nearest noise sensitive locations to this activity are H96 to the centre of site, H71 to the east and H29 to the west which are located at a distance of 80m and 250m and 200m respectively from the works. Assuming all activities occur simultaneously, the predicted noise levels are 64 dB, 49 dB and 54 dB $L_{Aeq,1hr}$ at receptors H96, H71 and H29, respectively. This is below the proposed construction daytime noise criteria of 65dB $L_{Aeq,1hr}$. The effects associated with the construction of the installation of electrical skids are predicted to be moderate, negative and short-term in duration.

Table 11-8: Installation of Electrical Skids Expected Plant and Predicted Noise Levels

Plant	BS 5228 Ref.	Activity	Percentage on-time (%)	Predicted Noise Level (dB $L_{Aeq,1hr}$)		
				H96	H71	H29
Telescopic handler	C4.54	Lifting Plant	80	34	45	49
Mobile telescopic crane (80t)	C4.39	Lifting Containers	80	32	39	44
Lorry* (32t)	C11.9	Delivery of material	34 two-way trips per day	64	47	51
Cumulative				64	49	54
* - Drive-by maximum sound pressure level						

11.4.3.6 Construction of 110kV Substation

The main activities associated with the construction of the proposed 110kV Substation are set out in Table 11-9, along with the predicted noise levels at the location where the highest noise levels are predicted from the proposed works, H28, to the southwest of the substation and approximately 300m from the main substation works.

Assuming all activities occur simultaneously, the highest predicted noise level at H28 is 54 dB $L_{Aeq,1hr}$ during the preparation of hardstanding areas. This is below the proposed construction daytime noise threshold of 65dB $L_{Aeq,1hr}$.

The effects associated with the construction of the 110kV substation are predicted to be moderate, negative and short-term in duration.

Table 11-9: Construction of the 110kV Substation Expected Plant & Predicted Noise Levels

Phase	Plant	BS 5228 Ref.	Activity	Percentage on-time (%)	Predicted Noise Level (dB $L_{Aeq,1hr}$) at H28
Site Clearance and Preparation	Tracked excavator (22t)	C2.3	Clearing Site	80	46
	Dozer (11t)	C2.12	Ground excavation/ earthworks	80	49
	Loading Lorry	C10.8	Loading Sand to Lorry	80	47
	Tracked Excavator (25t)	C2.19	Ground excavation/ earthworks	80	46
	Cumulative				53
Preparation and pouring of Foundations	Concrete mixer truck + truck mounted concrete pump + boom arm	C4.32	Concrete pumping	100	47
	Lorry*	C11.9	Delivery of material	Maximum of 34 trips per day	51
	Cumulative				52
Preparation of hardstanding areas	Articulated Dump Truck (23t)	C2.33	Delivery/Removal of Material	Maximum of 34 trips per day	48
	Tracked Excavator (25t)	C2.19	Ground excavation/ earthworks	80	45
	Articulated Dump Truck (23t)	C2.32	Tipping Fill	20	32
	Dozer (14t)	C5.12	Spreading chipping/fill	80	44
	Vibratory roller (3t)	C5.27	Rolling and Compaction	80	34
	Lorry*	C11.9	Delivery of material	Maximum of 34 trips per day	51
	Cumulative				54
Erection of blockwork/ installation	Mobile telescopic crane (80t)	C4.39	Lifting concrete slabs	80	44

Phase	Plant	BS 5228 Ref.	Activity	Percentage on-time (%)	Predicted Noise Level (dB $L_{Aeq,1hr}$) at H28
concrete slabs	Lorry* (32t)	C11.9	Delivery of material	Maximum of 34 trips per day	51
	Cumulative				52
General Construction including installation of electrical and mechanical plant	Generator	C4.84	Power for site cabins	100	41
	Lifting Platform (x2)	C4.57	Lifting Personnel	80	37
	Telescopic handler	C4.54	Lifting Plant	80	45
	Angle grinder (grinding steel)	C4.93	Miscellaneous	80	41
	Cumulative				48
* (Drive-by maximum sound level)					

11.4.3.7 Grid Connection Works

As described within Chapter 2 of this report, the Cappakeel solar farm will be connected to the national grid via a loop in/loop out connection to the Cushaling-Portlaoise 110kV overhead line and an underground connection to the Coolnabacky 110kV Substation, which will be primarily laid within the public road network.

For the purpose of this assessment, grid connection works (including OHL and UGC) are expected to be carried out over approximately a 9-month period and 'rolling road closures' will be implemented for the underground cable route, whereby the site will progress each day along a road, which will have the effect of reducing the impact for residents. The expected plant required during the construction works and predicted noise levels from associated plant at set distances associated with the grid connection works are presented in Table 11-10.

Table 11-10: Expected Plant and Predicted Noise Levels during Grid Connection Works

Plant	Activity	Percentage on-time (%)	A-Weighted Sound Pressure Level, LAeq, dB			
			10m	25m	50m	100m
Road sweeper (C4.90)	Sweeping and dust suppression	10	69	61	54	47
Mini excavator with hydraulic breaker (C5.2)	Breaking Road Surface	10	76	68	61	54
Vibratory roller (C5.27)	Rolling and Compaction	10	73	65	58	51
Wheeled excavator (C5.34)	Trenching	50	70	62	55	48

Plant	Activity	Percentage on-time (%)	A-Weighted Sound Pressure Level, LAeq, dB			
			10m	25m	50m	100m
Hand-held circular saw (petrol) (C5.36)	Cutting Concrete	10	77	69	62	55
Dump truck (tipping fill) (C2.30)	Tipping Fill	10	72	64	57	50
Vibratory plate (petrol) (C2.41)	Compaction	10	73	65	58	51
Tracked Excavator (C2.25)	Excavating	50	66	58	52	45
Crane (C4.43)	Lifting (OHL)	50	67	59	52	46
Generator (C4.84)	Misc	100	74	66	59	52

In total, there are 94 no. occupied residential (including properties classified as both residential and commercial) within 100m of the proposed grid connection route. Given the nature of the grid connection works, construction activities will not occur over an extended period at any one location. The noise levels presented in the table above are predicted maximum levels and are expected to occur for only short periods of time.

There are no NSLs located within 10m of the proposed grid connection route. Within 10-25m of the proposed route, there are 21 no. NSLs. For the closer properties in this grouping, the noise criteria of 65 dB will be exceeded by individual items of plant up to 12 dB. For further properties within this group (at 25 m) the noise criteria will be exceeded by up to 4 dB during hydraulic breaking, concrete cutting and generator use, and will be below the noise criteria during other activities.

There are 54 no. NSLs within 25-50m of the proposed grid connection works. At all NSLs greater than 25m from the proposed grid connection works, noise from individual construction activities meets the noise criteria of 65 dB, except for the hydraulic breaker activity, concrete cutting and generator, which are up to 4 dB above the noise limit.

There are 19 no. noise sensitive locations between 50-100m of the grid connection works. At 50m distance and greater, noise from all activities meets the noise criteria of 65 dB.

The works will be conducted in segments and typically the maximum time outside any one property will be 1-2 days and therefore the impact will be temporary.

In summary, without mitigation, the general grid connection works within 50m are predicted to have a moderate to significant negative effect, which will be temporary in duration. At 50m distance from the works and greater, the effects are expected to be slight to moderate, negative and temporary.

11.5 Potential Operational Phase Impacts

During the operational phase, the static nature of the proposed solar photovoltaic arrays means that there will be no mechanical movement of the solar array. However, as such, there is no predicted noise emission from the solar panels. The potential noise sources on site are from inverter stations connected to the PV panels. It is proposed that there will be a total of 2 no. Electrical skids (containing inverters, transformers and switchgear) located on each of the 44 no. hardstanding areas across the site.

The noise impact from all operational components of the proposed development have been calculated with findings presented in the following sections.

There are no notable sources of vibration associated with the operational phase of the proposed development. Once operational, all access areas of the site will be maintained with an even, paved surface, preventing the potential for vehicle movements causing vibration. Therefore, it is not necessary to specify vibration criteria for the operational phase of the proposed development and the potential for operational vibration impacts on sensitive receptors has been 'scoped out' of this assessment and will not be considered further, as no potential impacts arise.

11.5.1 Operational Noise Criteria

There is no statutory Irish guidance relating to the maximum permissible noise level that may be generated during the operational phase of the proposed solar farm. In the absence of specific noise limits, appropriate emission criteria relating to permissible noise levels for the Environmental Protection Agency (EPA) Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) (Environmental Protection Agency, 2016). (hereafter referred to as EPA NG4) have been used. EPA NG4 provides noise guidance to operator's subject to IPC or Waste Licences. While the Proposed Development does not fall under the remit of the EPA, the EPA's NG4 guidelines are considered the most appropriate noise assessment criteria as they follow best practice principles. Hence, the Proposed Development is appraised against the EPA's NG4 guidelines.

At the time of this assessment, EPA NG4 is currently being revised, with a final version expected to be released in late 2025, following the publication of a draft document and a period of public consultation which closed on 28th February 2025. This assessment has therefore had regard to the guidance set out in the most recent final version of EPA NG4, which is the 2016 document.

11.5.2 Noise Prediction Modelling - Overview

EPA NG4 requires that sites are screened to determine whether they are a 'quiet area' in accordance with the EPA publication Environmental Quality Objectives – Noise in Quiet Areas (2003) (Step 1 of NG4 Screening) or areas of low background noise (Step 2/3 of the screening). This screening is required to determine the most applicable noise limits for sites.

For the site to be in a 'Quiet Area', all of the criteria listed in Table 11-11 must be satisfied. In the case of this site, it does not meet the criteria in Table 11-11 and it is not considered to be a 'Quiet Area'.

Table 11-11: Quiet Area Screening Step 1

Criteria	Response
Is the site >3km away from urban areas with a population >1,000 people?	Yes.
Is the site >10km away from urban areas with a population >5,000 people?	No, the site is within 10km of Portlaoise, Portarlington and Monasterevin, all with populations exceeding 5,000 people.
Is the site >15km away from urban areas with a population >10,000 people?	No, the site is within 10km of Portlaoise, with a population of 23,494.
Is the site >3km away from any local industry?	No, there is a commercial repair facility to the east of the site.
Is the site >10km away from any major industry centre?	No, the site is within 10km of Portlaoise with various industrial facilities.
Is the site >5km away from any national primary route?	Yes, the N80 national primary route is located c. 5.6km south of the site.
Is the site >7.5km away from any motorway or dual carriageway?	No, the site is close proximity (<1km) to the M7 motorway.

Since it is not in a 'Quiet Area', NG4 requires the site to be screened to determine if the site is in an 'area of low background noise' (NG4 Step 3). Background noise levels are examined to see if they satisfy the following criteria:

- Average Daytime Background Noise Level ≤40dB LAF90, and;
- Average Evening Background Noise Level ≤35dB LAF90, and;
- Average Night-time Background Noise Level ≤30dB LAF90.

In order for a site to be considered an 'area of low background noise', all three criteria above must be satisfied. A baseline noise survey was undertaken to determine if the site of the proposed development is considered an 'area of low background noise'.

The survey findings indicate that baseline noise monitoring location UL3, to the east of site, just meets the above criteria and is considered to be an area of low background noise. Therefore, at noise sensitive locations to the east of site, the EPA noise limit for an 'Area of Low Background noise' applies. At all remaining locations, to the west and centre of the proposed development i.e., baseline monitoring locations AL1 and UL2 do not meet the criteria to be considered an 'area of low background noise'. Therefore, at the remaining locations, the standard EPA noise limit for 'other areas' applies.

The applicable NG4 noise limits for the site are outlined below in Table 11-12.

Table 11-12: Guidance Note NG4 Applicable Noise Emission Limits

Period	Noise Limit Area of Low Background Noise East Parcel	Noise Limit All Remaining Locations
Daytime (07:00 to 19:00 Hrs)	45 dB(A) $L_{Ar,T}$	55 dB(A) $L_{Ar,T}$
Evening-time (19:00 to 23:00 Hrs)	40 dB(A) $L_{Ar,T}$	50 dB(A) $L_{Ar,T}$
Night-time (23:00 to 07:00 Hrs)	35 dB(A) $L_{Aeq,T}$	45 dB(A) $L_{Aeq,T}$

In addition to the numerical limit, the NG4 guidance note states that during the daytime and evening periods, rigorous efforts should be made to avoid clearly audible tones and impulsive noise at all noise sensitive locations. A penalty of 5 dB for tonal and/or impulsive elements is applied to the daytime and evening measured $L_{Aeq,T}$ values to determine the appropriate rating level $L_{Ar,T}$. During night-time, no tonal or impulsive noise from the facility should be audible at any noise sensitive location.

11.5.3 Operational Noise Predictions – Overview

Noise levels associated with the electrical skids were predicted according to the International Standard ISO 9613-2:2024 Acoustics - Attenuation of sound during propagation outdoors - Part 2: Engineering method for the prediction of sound pressure levels outdoors, using DGMR iNoise software v2024.3.0.

The modelling assumes a worst case scenario where all sources will operate simultaneously and for 100% of the time. The reality is that many of the sources will only operate intermittently. This makes the noise modelling assessment a conservative/worst case exercise.

The ground cover between the Site and the noise sensitive locations is predominately acoustically soft ground (G=1) and the noise model assumes that the ground cover is G=0.5. Atmospheric conditions of 10 °C and 70 % humidity were used as they represent a reasonably low level of air absorption. Receiver heights of 4.0 m were modelled, which represents a worst case scenario.

11.5.4 Noise Prediction Modelling - Site Noise Sources

Each of the major potential noise sources on-site were identified and reference sound power data assigned. The potential noise sources proposed on site are electrical inverter/skids connected to the PV panels and a 110kV substation.

Up to 88 no. electrical skids are located on 44 hardstandings at various locations throughout the site to serve the solar PV arrays, as shown on the layout plans. For the purpose of this assessment, Fehily Timoney has reviewed manufacturer noise data for a range of electrical inverter/skid types. Following a review of noise data for inverter/skid configurations the reference noise data for SMA SC 2750 inverter is considered worst case and has been used as the basis for this assessment to ensure a conservative assessment. The actual model of electrical skids used in the proposed development will have an equivalent or lower sound power level.

For the purpose of this assessment, 88 no. electrical inverter/skids (2 no. per hardstand) with a sound power level of 94.4 dB L_w were modelled for daytime periods. During the evening and night-time periods, the irradiance levels are lower with an inverter load level less than 40%. For the purpose of this assessment the inverters have been assumed to operate at 50% load level during evening and night time (which is a worst case scenario). This will result in noise reduction, and Fehily Timoney has assumed a reduction of up to 10 dB when operating at 50% load level. For the evening and night-time periods, a sound power level of 84.4 dBA, L_w has therefore been used in the assessment.

A substation is proposed to the west of site, with the location shown in planning application drawings. It is proposed that a transformer will be required to step up the voltage of the electricity to be connected to the grid. Noise predictions have been carried out based on an example transformer to be used at the substation; the TrafoStar 63 MVA. For the purpose of this assessment two no. transformers have been modelled, both with a sound power level of 93 dBA L_w.

The sound power levels used for the purpose of this assessment are provided in Table 11-13. It is expected that as technology advances, there will be reductions in the noise emissions from the solar inverters and substation transformer. Noise emission data represent an expected scenario based on the current noise data available for the solar and substation equipment at the time of the assessment. Any alternative equipment chosen for the operational phase will be required to demonstrate compliance with the noise criteria.

Table 11-13: Octave Band Sound Power Level Data

Plant	Sound Power Level (dBA, L_W) at Octave Band Centre Frequency (Hz)									
	Overall	31.5	63	125	250	500	1k	2k	4k	8k
Electrical Inverter/Skid (Full Output)	94.4	51.1	65.5	74.2	84.2	87.6	86.6	85.2	90.2	77.7
Electrical Inverter/Skid (50% Output)	84.4	41.1	55.5	64.2	74.2	77.6	76.6	75.2	80.2	67.7
110kV Substation Transformer Ω	93.0	87.0	89.0	84.0	84.0	78.0	73.0	68.0	61.0	93.0
Ω - Manufacturer's datasheet provided information on overall sound power levels. Octave band data was sourced from 'An Introduction to Sound Level Data for Mechanical and Electrical Equipment' CED Engineering										

11.5.5 Operational Noise – Results

54 no. receptors in the vicinity of the site were modelled. Of these, 45 no. are residential, seven are mixed-use (residential and commercial) buildings and two are commercial.

The predicted noise levels in Table 11-14 at the areas identified as areas low background noise indicate that the daytime, evening and night-time criteria are met at all locations. The predicted cumulative noise levels at the nearest residential dwellings to the east of the site (H69 and H71) during daytime periods is 41 dB and 40 dB L_{Aeq}, respectively. This is below the daytime noise limit of 45 dB L_{Aeq}. The predicted noise levels during evening and night-time at receptors H69 and H71 are 31 and 30 dB L_{Aeq}. This meets the evening limit of 40 dB L_{Aeq} and the night-time noise limit of 35 dB L_{Aeq}.

Table 11-15 presents the predicted noise levels at the closest NSLs identified as 'other areas', i.e., not areas of low background noise. The results indicate that the daytime, evening and night-time criteria are met at all locations. The predicted cumulative noise levels at the nearest residential dwellings at the west, centre west and centre east of site (H29, H60 and H54) during daytime periods is 44 dB and 45 dB and 46 dB L_{Aeq}, respectively. The predicted noise levels are below the daytime noise limit of 55 dB L_{Aeq} at all locations. The predicted noise levels during evening and night-time at receptors H29, H60 and H54 are 36 dB, 35 dB and 36 dB L_{Aeq}. The predicted noise levels are below the evening limit of 50 dB L_{Aeq} and the night-time noise limit of 45 dB L_{Aeq} at all locations.

Table 11-14: Predicted Operational noise Levels at Nearest NSLs (Receptors identified as areas of low background noise)

Period	Noise Limit	Predicted Noise Levels (L_{Aeq}) at Receptors	
		H69	H71
Daytime (07:00 to 19:00 Hrs)	45 dB(A) $L_{Ar,T}$	41	40
Evening-time* (19:00 to 23:00 Hrs)	40 dB(A) $L_{Ar,T}$	31	30
Night-time* (23:00 to 07:00 Hrs)	35 dB(A) $L_{Aeq,T}$	31	30
*Inverters operating at 50% Output			

Table 11-15: Predicted Operational noise Levels at Nearest NSLs (receptors identified as 'other areas')

Period	Noise Limit	Predicted Noise Levels (L_{Aeq}) at Receptors		
		H29	H60	H54
Daytime (07:00 to 19:00 Hrs)	55 dB(A) $L_{Ar,T}$	44	45	46
Evening-time* (19:00 to 23:00 Hrs)	50 dB(A) $L_{Ar,T}$	36	35	36
Night-time* (23:00 to 07:00 Hrs)	45 dB(A) $L_{Aeq,T}$	36	35	36
*Inverters operating at 50% Output				

The predicted noise levels at other NSLs are lower than those presented above. The operator will commit to ensuring that no tonal or impulsive noise emissions attributable to the site are audible at any NSL. No penalty for acoustic character has therefore been applied to the predicted L_{Aeq} noise levels. While the operational noise limits are met, a new noise source will be introduced into the local soundscape, which may be audible at the closest NSLs. The effects are therefore predicted to be slight to moderate, negative and long term.

11.6 Decommissioning Phase

11.6.1 Impacts during Decommissioning Phase

No scheduled decommissioning is proposed. Consequently, no defined decommissioning noise scenario forms part of this assessment. Noise effects from any future substantial removal or decommissioning would depend on the equipment, methods, duration and receptor conditions applicable to those works and would require a separate assessment.

11.7 Cumulative Impacts

11.7.1 Construction Noise

The potential noise impacts arising from the construction of the proposed development and associated Cappakeel solar farm have been assessed cumulatively. Potential cumulative noise impacts arising from the proposed development along with the other plans and projects in the vicinity of site, as described in Chapter 6 have also been considered. There are no other known construction projects proposed in the vicinity of site, therefore, no cumulative construction noise emissions from the Proposed Development with other developments are considered likely.

11.7.2 Operational Noise

The potential noise impacts arising from the operation of the proposed development and associated Cappakeel solar farm have been assessed cumulatively. Potential cumulative noise impacts arising from the proposed development along with the other plans and projects in the vicinity of site, as described in Chapter 6 have also been considered. Given the distance of the proposed development and associated solar farm development to similar developments that are operational, in-construction or consented, no cumulative impacts are considered likely with regards to operational noise.

11.7.3 Decommissioning Noise

No scheduled decommissioning of the Proposed Development is proposed. A cumulative decommissioning noise scenario has therefore not been defined. Any future proposal would require consideration of potential overlap with other noise-generating activities at that time.

11.8 Mitigation Measures

11.8.1 Construction Phase

During the construction phase there is potential for increased ambient noise levels, however the predicted noise levels are below the 65 dB L_{Aeq} noise limit at the nearest sensitive receptors, with the exception of the grid connection works. Construction works will be carried out in accordance with best practice and in line with recommendations contained within BS 5228-1:2009+A1:2014.

For the proposed grid connection works within residential locations within 50m of the works, noise mitigation measures that should additionally be considered are:

- Phasing of works so that noisier items of plant do not operate simultaneously. Note that phasing works may result in prolonging the grid connection works, so this needs to be considered.
- Local screening of noisier items of plant. Note that a screen that just blocks the line of sight between the source and receiver will provide approximately 5 dB noise attenuation. The maximum reduction achievable from a screen/barrier would typically be 10 dB.

To reduce the impacts of noise on the local community during construction, the following measures are proposed:

- A pre-construction commitment to managing nuisance noise will be agreed through notification and consultation with affected parties, if deemed necessary;
- Working hours at the site during the installation phase will be limited to 07:00 to 19:00 Monday to Saturday inclusive. Work on Sundays or public holidays will only be conducted in exceptional circumstances and subject to prior notification insofar as possible with the local community;
- Construction contractors will be required to comply with the requirements of the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations, 1988 as amended in 1990 and 1996 (S.I. No. 320 of 1988, S.I. No. 297 of 1990 and S.I. No. 359 of 1996), and the Safety, Health and Welfare at Work (Control of Noise at Work) Regulations, 2006 (S.I. No. 371 of 2006);

The main control measures will be control of noise at source using the following methods in line with Clause 8 'Control of noise' of BS 5228-1:2009+A1:2014:

- Operators of all mobile equipment will be instructed to avoid unnecessary revving of machinery (Clause 8.2.1 General);
- Use of appropriate plant and equipment where possible with low noise level generation where possible (Clause 8.2.2 Specification and substitution);
- All construction plant to be used on site should have effective well-maintained silencers (Clause 8.2.3 Modification of existing plant and equipment);
- Noise generating equipment will be located as far as possible away from local noise sensitive areas identified (Clause 8.2.5 Use and siting of equipment); and
- Regular and effective maintenance of site machinery including a full maintenance schedule to ensure that all pieces of equipment are in good working order. With efficient use of well-maintained mobile equipment, considerably lower noise levels than those predicted can be attained (clause 8.2.6 Maintenance).

In addition, the following best practice measures are proposed:

- Training of site staff in the proper use and maintenance of tools and equipment;
- Avoidance of unnecessary noise when carrying out manual operations and when operating plant and equipment;
- Machines that could be in intermittent use will be shut down between work periods or will be throttled down to a minimum;
- Plant start-up will be sequential rather than all together;

- Internal access tracks to be well maintained;
- Plant known to emit noise strongly in one direction will, when possible, be orientated so that the noise is directed away from noise-sensitive locations; and
- Drop heights for materials such as gravels will be minimised whenever practicable.

The noise limits will be met during general construction and the effects associated with the construction phase are predicted to be moderate, negative and short-term in duration.

During grid connection works, there is potential for the noise limit to be exceeded at the closest properties (i.e. at 10 m from the works) by up to 2 dB, following the implementation of mitigation and the use of noise barriers. The effects are predicted to be significant, negative and temporary. At all remaining properties, the effects are expected to be moderate, negative and temporary, following the implementation of mitigation measures.

11.8.2 Operational Phase

The predicted noise levels from the proposed development at the nearest noise sensitive locations are below the noise limits during all periods and no mitigation measures are required beyond standard good practice operations. The effects are predicted to be slight, negative and long term.

Tonal or impulsive noise will not be audible at noise sensitive locations and no penalty for noise character will be applicable. If tonal noise is audible at noise sensitive locations during commissioning, mitigation measures can be implemented in the form of a noise barrier and/or vibration damper to suppress tonal noise.

The acoustic specification of transformers and other noise-generating equipment forming part of the Proposed Development will be checked during procurement against the assumptions and criteria used in the operational noise assessment. Equipment substitutions will be reviewed to confirm that the predicted noise levels and assessed effects remain valid.

Commissioning verification will address noise levels and acoustic character at the relevant noise-sensitive locations. Where required, additional mitigation will be implemented to achieve the applicable project noise criteria. Solar-farm equipment included in cumulative predictions will be identified separately from equipment forming part of this application.

11.8.3 Decommissioning Phase

No scheduled decommissioning is proposed. Noise-control measures for any future substantial removal or decommissioning would be established through an assessment of the specific works and the requirements applicable at that time.

11.9 Residual Impacts

During the construction phase there is potential for increased ambient noise levels. The noise effects from general construction works will be moderate, negative and short-term in duration. During grid connection works, the effects are predicted to be significant, negative and temporary at properties located at 10m from the works. At greater distances, the effects of grid connection works will be moderate, negative and temporary.

It is predicted that operational noise limits will be met at all receptors during daytime, evening and night-time periods and there will be long term, slight to moderate negative effects.

No residual decommissioning effect is assigned because no scheduled decommissioning scenario is proposed under this application.

11.10 References

British Standard BS 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Noise.

Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) (Environmental Protection Agency, 2016)

International Standard ISO 9613-2: 2024 Acoustics -Attenuation of sound during propagation outdoors- Part 2: Engineering method for the prediction of sound pressure levels outdoors

12. ARCHAEOLOGY AND CULTURAL HERITAGE

12.1 Introduction

The assessment has been prepared on behalf of Perigus Energy Ireland Midco Limited, to study the impact, if any, on the archaeological, architectural cultural and historical resource of a proposed substation and grid connection associated with the now permitted Cappakeel Solar Farm, County Laois (ITM 654535, 703149 to 653636, 692844). It was carried out by Johnnie Gallacher of IAC Archaeology, and accompanies this application.

There are three recorded monuments within the 100m study area of the proposed substation, including two enclosures (LA009-065, LA009-066) and a horizontal water mill (LA009-022). The two enclosures are located to the immediate west of the substation and the layout of the development has been developed in order to avoid direct impacts on these monuments. The proposed grid connection will travel to the immediate west of these enclosure before joining the existing road network. Further to the south, the grid connection will travel through a short section of the ZAP associated with Dunamase Castle/Rock of Dunamase, which is a National Monument in State Ownership (LA013-052; Nat. Mon. 615). The proposed grid connection is confined to within the existing roadway within the ZAP. There are no additional recorded monuments located within 50m of the proposed grid connection.

There is one Protected Structure located within the study area of the proposed scheme, which is also listed in the NIAH Building Survey. This comprises a post medieval church located c. 20m east of the grid connection (RPS 379/ NIAH 12801301). The proposed grid connection also passes three former demesnes, all listed in the NIAH Garden Survey, although in each case the grid connection follows the existing roads adjacent to the demesne and does not enter the estate.

The proposed grid connection is partially located within the ZAP associated with the Rock of Dunamase (LA013-052; Nat. Mon. 615), which is a National Monument in State Ownership. It is possible that archaeological features associated with the castle survive beneath the current road surface, which the grid connection will follow as it passes to the southeast of the castle. Excavations associated with the laying of the cabling may result in a negative impact on any such remains.

Archaeological monitoring of all ground disturbances should be carried out within the ZAP for the Rock of Dunamase. This will require Ministerial Consent form the DoHLGH. If any features of archaeological potential are discovered during the course of the works further archaeological mitigation may be required, such as preservation in situ or by record. Any further mitigation will require approval from the National Monuments Service of the DoHLGH.

The proposed substation and a section of the grid connection (within the proposed Cappakeel Solar Farm) is located within undisturbed greenfield in close proximity to known archaeological monuments. There is potential for archaeological features to survive in these areas below the current ground level. Any such features would be directly and negatively impacted by the construction of the substation and grid connection.

It is recommended that prior to the commencement of construction a geophysical survey is carried out across the footprint of the proposed substation and grid connection within the greenfield areas of the scheme. This should be followed by a programme of targeted archaeological test trenching, designed to assess the nature, extent and significance of any archaeological anomalies that are identified. Both programmes of investigation will require a licence from the National Monuments Service of the DoHLGH.

Dependent on the results of these assessments, further mitigation may be required, such as preservation in-situ or by record and/or archaeological monitoring. Any further mitigation will require approval from the National Monuments Service of the DoHLGH.

Following completion of the above mitigation measures, there will be not significant negative impacts up on the archaeological resource.

No direct or indirect impacts have been identified in relation to the proposed scheme and the architectural heritage resource and as such no mitigation is required.

12.2 Key Issues on the Existing Environment

The proposed scheme is located within 20 townlands entirely within County Laois (Table 11-1 and Figure 11-1). The proposed substation site will be located in a greenfield area within the permitted Cappakeel Solar Farm in the townland of Morrett. This Proposed Development was subject to specific archaeological assessment in March 2025 by IAC Archaeology (Brooks 2025). The grid connection is primarily confined to the existing road network in a rural area. The road is mostly bordered by arable farms, as well as some scrubland and scattered settlement, as shown in Figure 2a of the accompanying report.

The Laois County Development Plan 2021-2027 recognises the statutory protection afforded to all Record of Monuments and Places (RMP) sites under the National Monuments Legislation (1930–2014). The development plan lists a number of aims and objectives in relation to archaeological heritage within the submitted Archaeological Impact Assessment (Appendix 7).

The proposed grid connection traverses the ZAP for the Dunamase Castle, also known as the Rock of Dunamase, which is a National Monument in State Ownership (LA013052, Nat. Mon. 615). The ZAP derives from the 1998 RMP map. For clarity, the ZAP is shown on Figure 2b of the accompanying report, and this aligns with the 'Archaeological Significance Zone' as depicted in the Laois County Development Plan 2021-2027.

In addition, there are three recorded monuments within 100m of the proposed substation in the townland of Morett (as shown in Table 2, Figures 2a-c of the accompanying report).

Table 12-1: Recorded archaeological sites within the study areas

RMP No.	Townland	Classification	Distance
LA013-052/ Nat. Mon. 615	Park or Dunamase	Castle - Anglo-Norman masonry castle	c. 80m west (grid connection within the ZAP)
LA009-065	Morett	Enclosure	To the immediate west of substation
LA009-066	Morett	Enclosure	To the immediate west of substation
LA009-022	Morett	Water mill – horizontal wheeled	c. 90m northeast of the substation

There is one structure included on the RPS within study area (Figure 2ab, Table 3 of accompanying report). This is the Holy Trinity Church (RPS 379), which is situated c. 20m east of the proposed grid connection in the townland of Ballycarroll. This structure is also listed in the NIAH Building Survey (NIAH 12801301).

There are no Architectural Conservation Areas.

12.3 Assessment of Impacts

Impacts can be identified from detailed information about a project, the nature of the area affected and the range of archaeological resources potentially affected. Archaeological sites can be affected adversely in a number of ways: disturbance by excavation, topsoil stripping; disturbance by vehicles working in unsuitable conditions; and burial of sites, limiting access for future archaeological investigation. Upstanding archaeology can be affected adversely by direct damage or destruction arising from development, from inadvertent damage arising from vibration, undermining etc. and also by indirect impacts to a building's visual setting, view or curtilage.

It should be noted that the substation site has been specifically designed to avoid direct impacts on the adjacent recorded monuments.

12.3.1 Archaeological Heritage

The proposed grid connection is partially located within the ZAP associated with the Rock of Dunamase (LA013-052; Nat. Mon. 615), which is a National Monument in State Ownership. It is possible that archaeological features associated with the castle survive beneath the current road surface, which the grid connection will follow as it passes to the southeast of the castle. Excavations associated with the laying of the cabling may result in a negative impact on any such remains.

The proposed substation and a section of the grid connection (within the permitted Cappakeel Solar Farm) is located within undisturbed greenfield in close proximity to known archaeological monuments. There is potential for archaeological features to survive in these areas below the current ground level. Any such features would be directly and negatively impacted by the construction of the substation and grid connection.

12.3.2 Architectural Heritage

No direct or indirect impacts have been identified in relation to the proposed scheme and the architectural heritage resource.

12.4 Mitigation

12.4.1 Archaeological Heritage

Archaeological monitoring of all ground disturbances should be carried out within the ZAP for the Rock of Dunamase (LA013-052; Nat. Mon. 615). This will require Ministerial Consent form the DoHLGH. If any features of archaeological potential are discovered during the course of the works further archaeological mitigation may be required, such as preservation in situ or by record. Any further mitigation will require approval from the National Monuments Service of the DoHLGH.

It is recommended that prior to the commencement of construction a geophysical survey is carried out across the footprint of the proposed substation and grid connection within the greenfield areas of the scheme. This should be followed by a programme of targeted archaeological test trenching, designed to assess the nature, extent and significance of any archaeological anomalies that are identified. Both programmes of investigation will require a licence from the National Monuments Service of the DoHLGH.

Dependent on the results of these assessments, further mitigation may be required, such as preservation in-situ or by record and/or archaeological monitoring. Any further mitigation will require approval from the National Monuments Service of the DoHLGH.

Following completion of the above mitigation measures, there will be not significant negative impacts up on the archaeological resource.

12.4.2 Architectural Heritage

No mitigation is required with regards to the architectural heritage resource.

12.5 Conclusion

There are three recorded monuments within the 100m study area of the proposed substation, including two enclosures (LA009-065, LA009-066) and a horizontal water mill (LA009-022). The two enclosures are located to the immediate west of the substation and the layout of the development has been developed in order to avoid direct impacts on these monuments. The proposed grid connection will travel to the immediate west of these enclosure before joining the existing road network. Further to the south, the grid connection will travel through a short section of the ZAP associated with Dunamase Castle/Rock of Dunamase, which is a National Monument in State Ownership (LA013-052; Nat. Mon. 615). The proposed grid connection is confined to within the existing roadway within the ZAP. There are no additional recorded monuments located within 50m of the proposed grid connection.

There is one Protected Structure located within the study area of the proposed scheme, which is also listed in the NIAH Building Survey. This comprises a post medieval church located c. 20m east of the grid connection (RPS 379/ NIAH 12801301). The proposed grid connection also passes three former demesnes, all listed in the NIAH Garden Survey, although in each case the grid connection follows the existing roads adjacent to the demesne and does not enter the estate.

A review of the Excavations Bulletin (1970-2025) has shown that no previous archaeological fieldwork has been carried out within the proposed scheme. Works undertaken in the study area primarily relate to Dunamase Castle.

The field inspection has been carried out as part of this assessment. This confirmed the greenfield nature of the proposed substation site and also confirmed that the recorded enclosures to the west of the site possess no surface expression (LA009-065, LA009066). No previously unrecorded features of archaeological potential were noted within the greenfield areas of the proposed scheme. The field inspection also confirmed that the proposed grid connection follows existing local and regional roads and passes through the ZAP associated with Dunamase Castle, which is a national monument.

13. LANDSCAPE AND VISUAL

13.1 Introduction

The assessment of potential impact on landscape and visual assessment is considered in detail in the Landscape Visual Impact Assessment (LVIA) and associated photomontages and Landscape Management Plan (LMP) (ref LD_CPPKL-SID 3.1 to 3.3), as prepared by Macro Works and enclosed as part of this application.

The enclosed Landscape and Visual Assessment (LVIA) has been prepared to accompany a planning application for a SID substation development in County Laois, northeast of the settlement of Port Laoise.

For clarity, and as shown in the accompanying LVIA included in Appendix 8 of this report, it should be noted that the terms 'Proposed Development' and 'proposed substation and grid connection' are interchangeable in the LVIA report and, where contextually relevant, references are also made to the permitted Cappakeel Solar Farm which the proposed substation is encircled by. It should be noted that electricity generated on the permitted Cappakeel Solar will be transmitted on to the national electricity grid via the proposed substation and grid connection.

The LVIA describes the landscape context of the proposed development and assesses the likely landscape and visual impacts of the proposed development on the receiving environment. Although closely linked, landscape and visual impacts are assessed separately.

13.1.1 Landscape Impact Assessment

Landscape Impact Assessment (LIA) relates to assessing effects of a development on the landscape as a resource in its own right and is concerned with how the development will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character.

13.1.2 Visual Impact Assessment

Visual Impact Assessment (VIA) relates to assessing effects of a development on specific views and on the general visual amenity experienced by people. This deals with how the surroundings of individuals or groups of people may be specifically affected by changes in the content and character of views as a result of the change or loss of existing elements of the landscape and/or introduction of new elements. Visual impacts may occur from; Visual Obstruction (blocking of a view, be it full, partial or intermittent) or; Visual Intrusion (interruption of a view without blocking).

13.2 Mitigation and Restoration Measures

The main mitigation by avoidance measure employed in this instance is the siting of the proposed development in a robust relatively typical rural landscape context comprising relatively flat terrain. The study are is also notably influenced by numerous other development types including, extensive areas of conifer forestry, the M7 motorway corridor, several regional road corridors and the surrounds of the urban settlement of Port Laois. The study area also avails of a high degree of vegetative screening, so that the proposed development will not be a highly prominent feature within the surrounding landscape.

In addition to mitigation by avoidance measures, retention of existing hedgerow boundaries within and around the permitted solar farm boundary aids visual screening, and maintains the existing field pattern. In this respect, the proposed substation and consented solar farm development are not perceived to impose itself on the existing landscape pattern.

In addition to retaining the existing hedgerows within around the consented solar farm, it is also proposed to bolster existing perimeter and internal hedgerows with under-planting and inter-planting of whip transplants (i.e. Hedgerow Type 1 - see Figure 1.10 of accompanying LVIA) in order to ensure dense and consistent screening of the site in perpetuity. This will be undertaken where required to thicken and fill gaps in the existing hedgerow network prior to the construction phase, thus allowing for any growth in the period between a grant of planning permission and construction of the development.

Advanced nursery stock in the form of 8-10cm girth trees will be used to fill any noticeable gaps and plant species will be selected to complement the existing broadleaf hedgerow species mix around the site and will be of local provenance. Where not already exceeded by existing vegetation, it is intended to manage hedgerows up to 3-4m in height. This height will be achieved by a combination of allowing lower sections of existing hedgerows to mature, filling obvious gaps with advanced nursery stock and providing an additional line of whip planting to selected hedgerows that require densification.

For further information, please refer to the enclosed Landscape Mitigation Plan (LMP) for the proposed substation development (ref LD_CPPKL-SID 3.1 to 3.3) prepared by Macro Works and submitted within the drawing pack of this application.

13.3 Identification of Viewshed Reference Points

Viewshed Reference Points (VRP's) are the locations used to study the visual impacts of a proposed development in detail. It is not warranted to include each and every location that provides a view of a development as this would result in an unwieldy report and make it extremely difficult to draw out the key impacts arising from the proposed development. Instead, the selected viewpoints are intended to reflect a range of different receptor types, distances and angles. The visual impact of a proposed development is assessed by Macro Works using up to 6 no. categories of receptor type as listed below:

- Key Views (from features of national or international importance) (KV);
- Designated Scenic Routes and Views (SR/SV);
- Local Community views (LCV);
- Centres of Population (CP);
- Major Routes (MR);
- Amenity and heritage features (AH).

VRP's might be relevant to more than one category and this makes them even more valid for inclusion in the assessment. The receptors that are intended to be represented by a particular VRP are listed at the beginning of each viewpoint appraisal. The Viewshed Reference Points selected in this instance are set out in the Table 13.1 and Figure 13.1, below.

Table 13-1: Outline Description of Selected Viewshed Reference Points (VRPs)

VRP No.	Location	Representative of	Direction of view
VP1	R419 at Coolbanagher	MR	SE
VP2	R445 at Morett north of the M7	MR, LCV	NW
VP3	Local road laneway at Morett west of Morett Castle	LCV	SE
VP4	L78151 local road at Morett	LCV	N & E
VP5	L7816 local road at Killone	LCV	N
VP6	L7812 east of the Heath Golf Club	LCV, AH	E

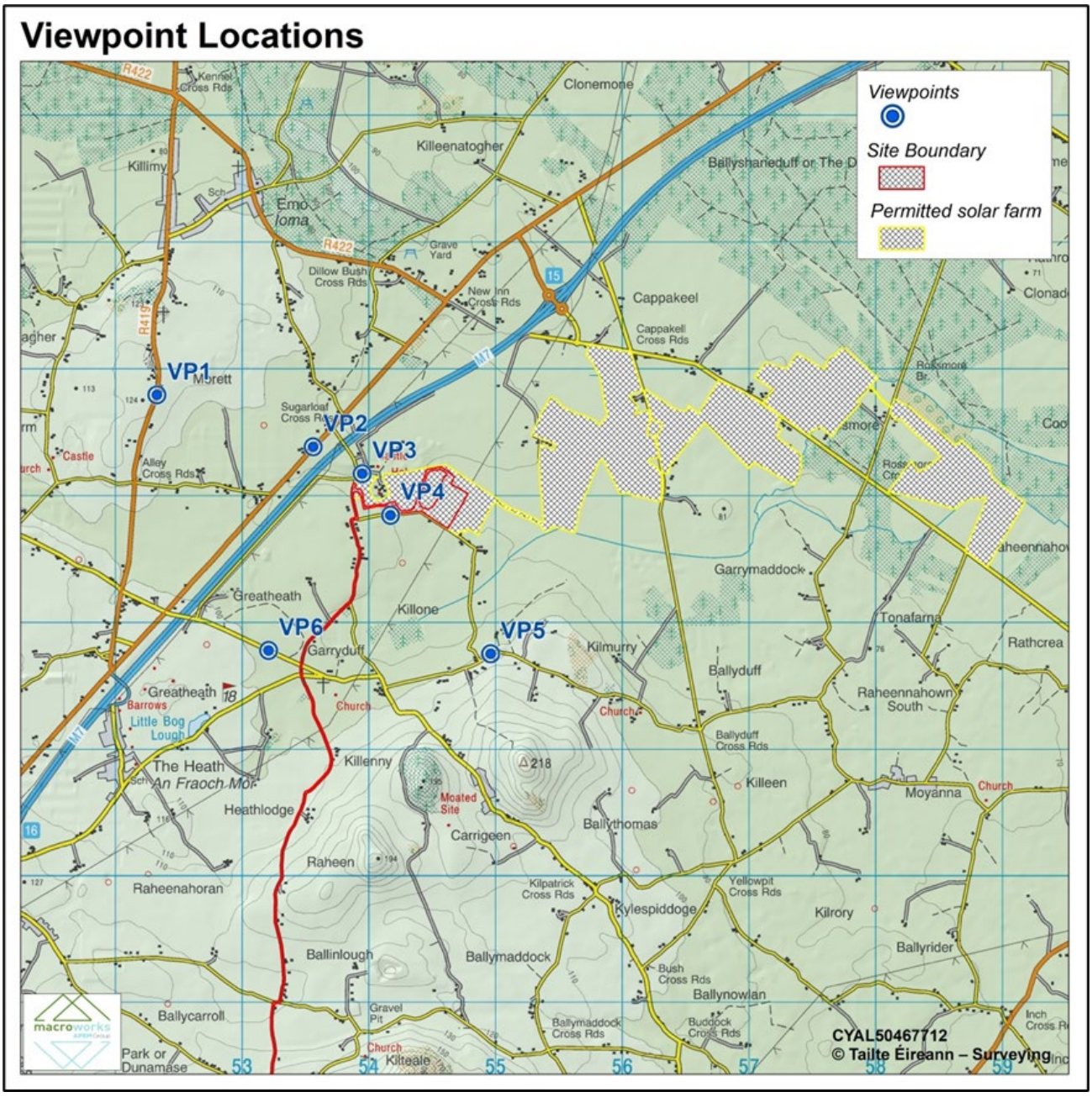


Figure 13-1: Viewpoint Locations

13.4 Impact Assessment

In terms of landscape impacts, the proposed substation development is considered to have only a modest physical impact as it is consolidated within the existing hedgerow network and will not require significant excavation works.

In terms of impacts on landscape character, the proposed substation development will likely be perceived as part of the permitted solar farm development, with the substation compound encircled by permitted panels. The substation development and wider solar farm is contained within a part of the surrounding landscape that has a strong influenced from utilitarian land uses and built features such as major route corridors and existing overhead cable corridors. Furthermore, the proposed substation is relatively discreetly located within a part of the surrounding landscape that avails of dense layers of intervening vegetation.

Much of the site, wider solar farm and its immediate surroundings constitute a productive, modified rural landscape with associated landscape values. Whilst the proposed development may slightly alter the local 'landscape fabric', it does not markedly affect the prevailing landscape pattern or the overriding rural landscape character of the area.

Therefore, combined with the 'Medium-low' magnitude of operational stage landscape impact, the overall significance of operational stage landscape effect was deemed no greater than 'Moderate-slight' and of a Negative quality.

Visual Impacts were assessed at 6 viewpoints throughout the immediate and wider landscape context, representing various viewing distances, angles and receptor types. Whilst some localised parts of the landscape are considered sensitive to change, the surrounding landscape presents with no strong sense of distinctiveness and is influenced by numerous highly anthropogenic land uses, including major route infrastructure, quarries and urban settlements.

The overall significance of visual effect ranged between Slight and Imperceptible, with the majority of the representative views have a limited or no visibility of the proposed substation. In this regard, the proposed substation is considered to be well sited within a more discreet part of the surrounding landscape and can be well visually accommodated where partially visible.

13.5 Conclusion

Overall, it is considered that the proposed substation and wider solar development is a suitably sited and scaled development that is well-screened by the surrounding layers of dense vegetation. Furthermore, in terms of the surrounding landscape and visual policy, it is considered that the proposed development is contained in a robust part of County Laois that can well accommodate a development of this scale and nature. Whilst the combined substation and permitted solar farm development will contribute to some cumulative landscape and visual effects, these are assessed as Not Significant due to the contained nature of the surrounding landscape and robust landscape character of the study area.

Based on the landscape and visual impact judgements provided throughout this LVIA, the proposed Cappakeel SID substation and grid connection is not considered to give rise to any significant residual effect.

14. CONCLUSION

This Planning and Environmental Report accompanies an application to ACP under section 182A of the Planning and Development Act 2000, as amended, for a 110kV substation at Morett, County Laois, a loop-in/loop-out connection to the Cushaling - Portlaoise 110kV overhead line, an underground tail-fed connection to Coolnabacky 110kV Substation, and associated ancillary works. The Proposed Development comprises permanent electricity infrastructure. The separately permitted Cappakeel Solar Farm and its internal 33kV collection network do not form part of this application and are considered where relevant to project need, functional relationship and cumulative effects.

This report is accompanied by all associated supporting reports, documentation and technical analysis, with the accompanying drawing pack setting out the layout design and details of proposed works and development.

As highlighted in Section 3, International and National energy policy has established a need for the proposed development, of which such international and national policy has subsequently been transposed into regional and local planning policy. From this it is clear that the proposed development will contribute positively to achieving the development plan policies and objectives and it will assist in fulfilling national energy targets. In conclusion, the proposed development is in accordance with the proper planning and sustainable development of the area, and had been determined to not be RED III compliant development by ACP.

A detailed description of the proposed development and the nature of the construction and operational phases of the solar farm is provided in Sections 2 and 4. The potential environmental impacts of the proposed works at this location have been outlined, and the report includes all necessary mitigation measures that may be required to minimize the potential environmental impact of the proposed development. The design and layout of the proposed solar farm has taken into consideration the detailed appraisal as set-out in this report together with feedback from consultation undertaken with ACP and Laois County Council.

An EIA screening (section 5) was carried out in accordance with Annex II of the 2014 EIA Directive and Schedule 7 of the Planning and Development Regulations 2001 (as amended). It is considered that the Proposed Development would not give rise to any significant effects on the environment, and therefore, no Environmental Impact Assessment is required.

Given the nature of the construction methods, and following consultations with Laois County Council Roads Department regarding the proposed crossing methodology of the identified Fen area, it is not expected that the Proposed Development will result in direct hydrological impacts. No significant change in the surface water hydrology is demonstrated. Proposals for management of drains and surface water are identified.

The proposed 110kV substation and LI/LO and underground connection are located in Flood Zone C. The LI/LO works have limited overlap with mapped Flood Zones A and B, but the elevated conductors and limited footprint of supporting structures will not materially obstruct flood flows or reduce floodplain storage. Operational fluvial flood risk is assessed as Low.

The proposed drainage strategy comprises interception of upslope runoff, collection and treatment of compound runoff, settlement ponds and diffuse stone outfalls. No direct discharge to an existing natural watercourse is proposed. Potential indirect pathways through groundwater and the existing drainage network are considered in the water-quality and ecological assessments.

Construction stage effects will be controlled through the Construction Methodology, CEMP, Construction Traffic Management Plan and site-specific method statements. Excavations will be limited in extent and duration, construction water treated before discharge, sensitive habitats and retained vegetation protected, and affected roads and lands reinstated.

The ecological assessment identifies potential construction effects associated with sediment, accidental pollution, localised habitat disturbance and disturbance of protected or notable species. Subject to implementation of the final EcIA, NIS, CEMP and crossing-specific measures, no significant residual ecological effects are anticipated.

The archaeological assessment identifies potential effects in greenfield areas close to recorded monuments and where the underground connection passes through the Zone of Archaeological Potential associated with the Rock of Dunamase. Geophysical survey, targeted testing, archaeological monitoring and Ministerial Consent will be undertaken as specified. No significant adverse residual heritage effects are anticipated following mitigation.

Landscape and visual effects will be localised principally around the substation and LI/LO structures at Morett. Operational landscape effects will be no greater than Moderate-Slight in the immediate vicinity and visual effects will range from Slight to Imperceptible. No significant residual landscape or visual effect is anticipated.

The permitted Cappakeel Solar Farm has been considered only where relevant to project need, functional relationship and cumulative effects. It does not form part of the development for which permission is sought.

The Proposed Development comprises permanent electricity transmission infrastructure and is expected to remain operational in perpetuity as part of the National Electricity Transmission Network.

Subject to the implementation of the proposed design, mitigation, monitoring and environmental management measures, the Proposed Development is not expected to give rise to significant adverse environmental effects. It is supported by the applicable national, regional and local policies concerning renewable energy and electricity transmission infrastructure and is consistent with the proper planning and sustainable development of the area.

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